

**SHARE ANALYSIS IN POWER GENERATION AND SUPPLY INDUSTRY
IN INDIA**

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ABSTRACT

This paper focuses attention on specific aspects of investor decisions relating to investment in stocks in Power Generation and Supply. The study was made with the database i.e. capitaline.com and the study will help investors in selecting the shares in power generation and supply industry. Analysis was made based on Stepwise Multiple Regression. Demand and financial factors, internal and external, are considered in the share analysis. Finally the influences of determinants of investment in shares are examined in Power Generation and Supply Industry in India.

Keywords: Determinants, Share Price, Multiple Regression, Power Generation and Supply, Industry Analysis.

I. Introduction

Any investment is risky, and as such investment decision is difficult to make. Investment decision is based on availability of money and information on the economy, industry and company are on the share prices ruling and expectation of the market and of the companies in question as also on the market sentimental. In the stock market investment decision refers to making a decision regarding the buy and sell orders.

It is necessary for a common investor to the study balance sheet and Annual Report of the company and decide on whether to buy that company share or not.

In industry analysis, the key factors to be looked into, by the analyst are past sales and earnings performance, stage of growth of the industry, the government policy towards the industry, labour conditions, competitive conditions and industry share prices & their relative Earnings Per Share etc.

The analyst has to be extremely careful in identifying the stage of industry.

It was mentioned in the 'security analysis and portfolio management' (V.A.Avadhani,2008), (Punithavarthy Pandian,2011) , and (Rangnatham, Madhumati,2012) .

II. Objectives, Methodology & Limitations

Objectives

To suggest the best company shares of some selected companies in the Power Generation & Supply industry in India .

To analyze determinants of investment in shares in Power Generation & Supply Industry.

To analyze the best models, which determines the investment behaviors in shares through stepwise multiple regression analysis.

Methodology

Source of Data

The data relating to the different economic variables of companies have been collected from database 'capitaline.com'.

The data collected is the data relating to the individual sample companies in Power Generation & Supply Industry. The Industry, for the purpose of study, means the aggregate of sample units in the Industry. Thus the cross section data of micro level economic variables is added to makeup the Industry data.

Period of Study

The present study covers a period of 6 years from 2008 to 2013. A period of 6 years can be considered to be long enough to analyze the share prices of companies/industries.

The Sample Selection

The selection criteria of companies for inclusion in the sample of study have been that :

1. Companies must have been incorporated on or before 2004 i.e. 10 years before the period for which analysis has been started here so that minimum period of at least 5 years must have been elapsed for them to establish themselves.
2. Companies must be continuously profit making companies in all 6 years (which is study period year) so as to ensure that only which made profits on consistent basis are included.

Based upon above selection criteria a total of following 5 firms contribute the size of sample for the purpose of this study.

1. National Thermal Power Corporation (NTPC)
2. Tata Power Company Ltd
3. Reliance Power Ltd
4. Neyveli Lignite Corporation Ltd
5. Power Grid Corporation of India Ltd

Variables

A list of variables- both dependent and independent- that are used in this study are presented

Dependent Variable

1. SP_t = Share price

Independent Variables

1. $S_{t-(t-1)}$ = Change in sales
2. $P_{t-(t-1)}$ = Change in profit
3. GB_t = Gross block
4. NW_t = Net worth

Stepwise Regression

The present study is mainly based on step wise multiple regression analysis. This technique begins with simple correlation matrix and enters into regression of the independent variables most highly correlated with the dependent variable. Using partial coefficients generated

with respect to other variables the computer program and then selects the next variable to enter the model.

Stepwise regression permits the analyst to start with a large number of variables that might have predictive values and then use the model to select the particular variables that appear to provide the prediction.

Statistical Analysis

The data used in this study was processed by using computer package, SPSS. The multiple linear stepwise regression was run in order of importance in terms of explanatory powers of different variables influencing the dependent variable in the study. In other words, which dependent variable has the greatest effect in determination of dependent variable.

How sensitive is dependent variable to fluctuations in independent variables? This technique is adopted in order to obtain a realistic picture of importance of various independent variables, which influence share prices in Power Generation and Supply industry in India.

Models Built

This study is conducted on the basis of three models. These three models have been tested in the case of each company. They are

1. Adding Model
2. Constant Model
3. Elimination Model

The above three models have been tested in each case with intercepted term. Thus altogether 7 equations are estimated in each case.

Adding Model

It may be noted that in this model, an independent variable has been entered into the model at an earlier step, and then another variable independent variable is added to the first one and then another variable etc. So ultimately all the independent variables are added and tested under this model.

The following are the equations, which are estimated this model.

1. $SP_t = b_0 + b_1S_{t-(t-1)}$
2. $SP_t = b_0 + b_1S_{t-(t-1)} + b_2P_{t-(t-1)}$
3. $SP_t = b_0 + b_1S_{t-(t-1)} + b_2P_{t-(t-1)} + b_3GB_t$

4. $SP_t = b_0 + b_1S_{t-(t-1)} + b_2P_{t-(t-1)} + b_3GB_t + b_4NW_t$

Constant Model

In this model the first two independent variables (change in sales and change in profit) are kept as constant variables because these two very closely related to the dependent variables, and the third variable is changed in each model.

The following are the equations, which are estimated under this model.

1. $SP_t = b_0 + b_1S_{t-(t-1)} + b_2P_{t-(t-1)} + b_3GB_t$

2. $SP_t = b_0 + b_1S_{t-(t-1)} + b_2P_{t-(t-1)} + b_3NW_t$

Elimination Model

In elimination mode, the estimated equations are not constant but the number of equations depends on the significance of the variable which proved to be insignificant.

The following procedure is adopted while estimating the equation. Initially, all the independent variables are included in the model. Based upon the significance of 't' values, the variable with the least 't' value is dropped and then again the equation is estimated with the remaining independent variables. Again the variable with at the least 't' value is dropped and the equation is estimated. This process is continued till all the independent variables in the equation have proved to be significant either 5% or at 10% level. So the number of equations varies depending upon the significance of variables in each case of companies.

The above 7+ equations are estimated for all the 5 companies and industry aggregate. The total number of estimated equations are as follows:

For 5 companies & industry aggregates in two cases (both gross block and plant & machinery):

In Adding Model6×4=	24
In Constant Model6×2 =	12
In Elimination Model =	<u>18</u>
Total =	<u>54</u>

Thus altogether 54 equations have been estimated with all the necessary tests, using the data for 6 years in each case. To find out the effect of different independent economic variables on share prices of companies during the period of study, the Multiple Linear Regression Analysis is used with all its limitations.

Selection of Best Model

The following procedure is adopted to select best model in each case from out of the 7+ estimated equations.

Step-I

Out of the 7+ estimated equations in each case, all those equations, whose Multiple Correlation coefficients are found to be significant at 5% level on their calculated 'F' values are picked up for further analysis.

Step-II

The equations thus picked up to step-I above are further screened in following way:

- 1) The values of intercept term (b_0) and regression coefficient (b_1, b_2, b_3) are tested at 5% level of significance based on their calculated 't' values. If only one equation is found to be significant in which all the explanatory variables are significant at 5% level, then that equation is taken as the best model to analyze share prices of company. If, on the other hand, there are two or more equations in which all explanatory variables are found to be significant at 5% level, the procedure explained in step III is followed.
- 2) But if, in company, there is not even a single equation in which all the independent variables show significant effect at 5% level, the significance level is relaxed and the impact of the variable is tested at 10% level wherever necessary. That is, the variables, which are not significant at 5% level, are tested at 10% level of significance. However, this has happened in a very few cases in this study. If only one equation is found in which the explanatory variables are significant at 5% level or 10% level, then that model is selected as the best model to describe the share prices of company. On the other hand, if there are two or more than two equation in which the independent variables are significant at 5% or 10% level, the procedure explained that in step III is followed to decide the best model.

Step III

As stated in step II, if there are two or more equations in which all the explanatory variables are significant that particular equation whose R^2 is the highest chosen the best equation to analyze the share prices of company.

Limitations of The Study

This study has following limitations:

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- 1) The accounting years of sample companies are not common and the closing of the accounting years is over all the 6 months of the years. So industry accounting years is not uniform.
- 2) The data for study are taken in absolute year values as given in capitaline.com and no price deflator is used to adjust for the inflationary trends.

III. Analysis of Regression Result in Power Generation and Supply Industry

This section deals with the study of share price of sample firms taking into consideration dependent variable Share Price (Y) in Power Generation & Supply industry in India. This study deals with 4 explanatory variables, which influence share prices (Y). This study is conducted on the basis of three models. They are Adding model, Constant model and Elimination model. In adding model there are four estimated equations. In Constant models there are two estimated equations and in Elimination model the estimated equations are not constant but the number of equations depend on the significance of independent variables.

The following abbreviations are used in tables (1-4):

NF - The number of firms, where the explanatory variable has shown an impact.

5% - The number of equations in which explanatory variable is significant at 5% level.

10% - The number of equations in which explanatory variable is significant at 10% level.

PI - Power Generation & Supply Industry (the indicate the number of equations that are estimated)

AM - Adding Model

CM - Constant Model

EM - Elimination Model

Table 1

Explanatory Variable: Change in Sales

	AM	CM	EM
NF	5	2	2
5%	1	1	0
10%	0	0	0
PI	4	2	2
5%	2	1	0
10%	0	0	1

Table 2

Explanatory Variable: Change In Profit

	AM	CM	EM
NF	4	2	2
5%	0	1	0
10%	0	0	0
PI	4	2	2
5%	2	1	0
10%	0	0	1

Table 3

Explanatory Variable: Gross Block

	AM	CM	EM
NF	4	2	2
5%	1	2	0
10%	1	1	0
PI	4	2	2
5%	0	1	0
10%	1	0	0

Table 4

Explanatory Variable: Net Worth

	AM	CM	EM
NF	2	0	2
5%	0	1	0
10%	0	0	0
PI	4	2	2
5%	0	0	1
10%	0	0	0

1. Change in sales

As shown in table(1), the independent variable ‘change in sales’ is said to be effective in all five firms in adding model. One equation is found to be significant at 5% level of significance and no equation is found at 10% level of significance. In constant model, two firms can be seen affected, one equation is found to be significant at 5% level of significance and no equation is found at 10% level of significance. In elimination model, two firms can be seen affected, and no equation was found to be significant at 5% or 10% level of significance.

In Power Generation and Supply Industry, there are four equations in Adding model, two in Constant model, two in Elimination model were found to be effective. From which, two equations in Adding model, one equation in Constant model, no equation in Elimination model were significant at 5% level of significance. Whereas at 10% level of significance, no equation in adding model, and in constant model was found to be and one equation in elimination model was found to be significant.

2. Change in profit

As shown in table(2), the independent variable 'change in profit' is said to be effective in four firms in adding model. No equation is found to be significant at 5% level of significance or 10% level of significance. In constant model, two firms can be seen affected, one equation is found to be significant at 5% level of significance and no equation is found to be at 10% level of significance. In elimination model, two forms can be seen affected, and no equation was found to be significant at 5% or 10% level of significance.

In Power Generation and Supply Industry, there are four equations in Adding model, two in Constant model, two in Elimination model were found to be effective. From which, two equations in Adding model, one equation in Constant model, no equation in Elimination model were significant at 5% level of significance. Whereas at 10% level of significance, no equation in adding model, in constant model was significant and one equation in elimination model was found to be significant.

3. Gross block

As shown in table(3), the independent variable 'gross block' is said to be effective in four firms in adding model. one equation is found to be significant at 5% level of significance and one equation is found at 10% level of significance. In constant model, two firms can be seen affected, two equations are found to be significant at 5% level of significance and one equation is found at 10% level of significance. In elimination model, two forms can be seen affected, and no equation was found to be significant at 5% or 10% level of significance.

In Power Generation and Supply Industry, there are four equations in Adding model, two in Constant model, two in Elimination model were found to be effective. From which, no equation in Adding model, one equation in Constant model, no equation in Elimination model

were significant at 5% level of significance. Whereas at 10% level of significance, one equation in adding model, no equation in constant model or in elimination model was found to be significant.

4. Net Worth

As shown in table(4), the independent variable 'change in sales' is said to be effective in two firms in adding model. No equation is found to be significant at 5% level of significance or at 10% level of significance. In constant model, no firms can be seen affected, one equation is found to be significant at 5% level of significance and no equation is found to be at 10% level of significance. In elimination model, two forms can be seen affected, and no equation was found to be significant at 5% or 10% level of significance.

In Power Generation and Supply Industry, there are four equations in Adding model, two in Constant model, two in Elimination model were found to be effective. From which, no equations in Adding model or in Constant model, one equation in Elimination model were significant at 5% level of significance. Whereas at 10% level of significance, no equation in any model was found to be significant.

IV. Selection of the Best Equation

NTPC:

In this company, in adding model, four equations were estimated. From which the variable 'change in sales' was found to be significant at 10% level of significance. In constant model, two equations and in the elimination model three equations were estimated. From which no explanatory variable was found to be significant.

The best equation was selected out of all models consisting of only one variable i.e. 'change in sales'.

In our study, the debt-equity ratios were 0.56, 0.6, 0.62, 0.66, 0.71 in years '09, '00, '11, '12, and '13, which is less than normal standard i.e. 1:1, which is not favorable to the individual shareholder. And current ratios were 2.32, 2.41, 2.4, 1.95, 1.65, in years '09, '00, '11, '12 and '13, which is good sign for company to meet its working capital. And Research and Development expenditure was found to be 7.3, 9.3, 22, 31.98, 33.71 in years '08, '09, '00, '11, and '12, which means the company is looking forward for further expansion.

Tata Power Company Ltd:

In this company, in adding model, four equations were estimated. From which the variables ‘change in sales, change in profit, and gross block’ were found to be significant at 5% level of significance. In constant model, two equations were estimated. From which the variables ‘change in sales, change in profit, and gross block’ were found to be significant at 5% level of significance and variable ‘Net Worth’ was found to be significant at 10% level of significance. In elimination model, three equations were estimated. From which the variables ‘change in sales, change in profit, and gross block’ were found to be significant at 5% level of significance.

The best equation was selected out of all models consisting variables - ‘change in sales, change in profit, and gross block’ significant at 5% level of significance.

In our study, according to tables, the debt-equity ratios were 0.49, 0.57, 0.59, 0.65, 0.75 in years ’09, ’00, ’11, ’12, and ’13, which is not favorable to the individual shareholder. And current ratios were 1.64, 1.93, 1.48, 0.95, 0.84, in years ’09, ’00, ’11, ’12, and ’13, which show that ratios were good in first 2 year but declined in later years. And R&D(Research and Development) expenditure was found to be 3.42, 2.88, 152.26, 8.14, 13.57 in years ’08, ’09, ’00, ’11, and ’12, which means the company is looking forward for further expansion.

Reliance Power Ltd:

In this company, in adding model, four equations were estimated. From which the variables ‘change in sales, change in profit, and gross block’ were found to be significant at 5% level of significance. In constant model, two equations were estimated. From which the variables ‘change in sales, change in profit, gross block and net worth’ were found to be significant at 5% level of significance. In elimination model, two equations were estimated. From which the variables ‘change in sales’ was found to be significant at 5% level of significance.

The best equation was selected out of all models consisting variables i.e. ‘change in sales, change in profit, and gross block’ significant at 5% level of significance.

In our study, the debt-equity ratios were 0, 0, 0.05, 0.05, 0.06 , in years ’09, ’00, ’11, ’12, ’13, which is not favorable to the individual shareholder. And current ratios were 27.23, 186.36, 6.75, 4.1, 2.29, in years ’09, ’00, ’11, ’12, ’13 , which is good sign for company to meet its working capital.

Neyveli Lignite Corporation Ltd:

In this company, in adding model, four equations were estimated. From which the variables 'change in sales, net worth, and gross block' were found to be significant at 10% level of significance. In constant model, two equations were estimated. From which the variables 'change in sales, change in profit, and net worth' were found to be significant at 5% level of significance and variable 'gross block' was found to be significant at 10% level of significance. In elimination model, three equations were estimated. From which the variables 'change in sales, change in profit, gross block, net worth' were found to be significant at 10% level of significance.

The best equation was selected out of all models consisting of variables- 'change in sales, change in profit, gross block, and net worth' were found to be significant at 10% level of significance.

In our study, the debt-equity ratios were 0.37, 0.41, 0.37, 0.34, 0.29 , in years '09, '00, '11, '12, '13 , which is not favorable to the individual shareholder. And current ratios were 2.22, 2.12, 2.14, 2.23, 2.38, in years '09, '00, '11, '12, '13 which is good sign for company to meet its working capital. And R&D(Research and Development) expenditure was found to be 5.96, 6.17, 8.67, 10.55, 10.61 in years '08, '09, '00, '11, '12 , which means the company is looking forward for further expansion.

Power Grid Corporation of India Ltd:

In this company, in adding model, four equations were estimated. From which the variables 'change in sales, change in profit, gross block, and net worth' were found to be significant at 5% level of significance. In constant model, two equations were estimated. . From which no explanatory variable was found to be significant. In elimination model, three equations were estimated. From which the variables 'change in sales, change in profit, gross block, and net worth' was found to be significant at 5% level of significance.

The best equation was selected out of all models consisting of variables- 'change in sales, change in profit, gross block, net worth' significant at 5% level of significance.

In our study, according to tables, the debt-equity ratios were 1.77, 2.03, 2.01, 2.1, 2.45 which are good sign for investor to get more Earnings Per Share. And current ratios were 0.69, 0.69, 0.78, 0.73, 0.52, in years '09, '00, '11, '12, '13 which are lower than standard ratio.

Industry: Power Generation and Supply:

In this company, in adding model, four equations were estimated. From which the variables 'change in sales, change in profit, and gross block' were found to be significant at 5% level of significance. In constant model, two equations were estimated. From which the variables 'change in sales, change in profit, and gross block' were found to be significant at 5% level of significance. In elimination model, two equations were estimated. From which the variables 'net worth' was found to be significant at 5% level of significance and 'change in sales, change in profit' significant at 10% significance level.

The best equation was selected out of all models consisting of variables 'change in sales, change in profit, gross block, net worth' were found to be significant at 5% level of significance.

In our study, the debt-equity ratios were 4.32, 4.90, 4.49, 6.56, 8.06 which are good sign for investor to get more Earnings Per Share and current ratios were 2.08, 2.15, 2.75, 2.19, 1.84, in years '09, '00, '11, '12, '13 which is good sign for company to meet its working capital.

V. Findings and Conclusion

The summary of the analysis is presented in the table, the following conclusions are drawn.

1. The major finding of the study is that, the adding model is the most appropriate model in analyzing share prices of companies.
2. The results of this analysis suggest that 'change in sales' is more important determinant for analyzing share prices.
3. 'Change in Profit, Gross Block & Net Worth' are also significant determinants to analyze share prices.
4. 'Debt-Equity ratio and Current ratio's are found to have effect on share price as they are related to Earnings Per Share and working capital.
5. In study, it is found that, 'R&D (Research and Development)' play important role in analysis of share prices as it is related to expansion decisions of the company.

REFERENCES:

1. Avadhani, V.A. (2008), Security Analysis and Portfolio Management, Himalaya Publishing House, Mumbai.
2. Punithavarthy Pandian(2011), Security Analysis and Portfolio Management, Vikas Publishing House, Noida.
3. Ranganatham and Madhumati(2012), Security Analysis and Portfolio Management, Pearson Publishers, New Delhi.
4. Prem Kumar., 1985 'growth Of Industrial Corporation in India Structure, Strategy And Determinants', Chandigarh, (Deep & Deep Publication).
5. Kuth E., 1963. 'Capital Stock Growth: A Micro Econometric Approach ', North Holland Publishing Company.
6. Bonton, E. Gup. December 1980. 'The Financial Consequences Of Corporate Growth', The Journal Of Finance.
7. Krishna, K.L., and Kishnamurthy, K.1974. 'Investment Functions For Corporate Sector, Towards An Econometric Model Of Indian Economy Part III', Report Submitted To ICSSR, Mimeo.
8. Ranganadhan, M., and Madhumati R. March 1996, 'Market Price as an Influence of Investment Decision', Finance India.