The determinants of shareholders' wealth of acquiring firms in India

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Abstract: Corporate restructuring has become a major component in the financial and economic environment all over the world. Industrial restructuring has raised important issues for business decisions as well as for public policy formulation. Since 1991, Indian industries have been increasingly exposed to both domestic and international competition and competitiveness. The companies started restructuring there operations around their core business there M & A. But M & A is an area of potential good and harm in corporate strategy including manufacturing industry. Therefore, an attempt has been made to analyze the security returns and to find out the net wealth increase or decrease to the shareholders of acquiring firms. In India, there are totally 58 manufacturing companies which have undergone mergers and acquisitions during 2000, 2001 & 2002. Thirty percentage from the total population was taken as sample size (i.e., 17 companies out of 58). The present study is mainly based on secondary data. The Market Model and Market Adjusted Returns Model analysis are used as tools of analysis.

Key words: corporate restructuring; mergers and acquisitions; accounting ratios; cumulative abnormal returns; independent and dependent variables

1. Introduction

A company may grow internally, or externally. The objective of the firm in either case is to maximize the wealth of the existing shareholders. Most corporate growth occurs by internal expansion, which takes place when a firm's existing divisions grow through normal capital budgeting activities. The mergers, takeovers, divestitures, spin-offs and so on, referred to collectively as Corporate Restructuring, an external growth have become a major trend in the financial and economic environment all over the world. The industrial restructuring has raised important issues both for business decisions as well as for public policy formulation. On the more positive side, M & As may be critical to the healthy expansion of business firms as they evolve through successive stages of growth and development. The successful competition in international markets may depend on capabilities obtained in a timely and efficient fashion through M & As. Since 1991, Indian industries have been increasingly exposed to both domestic and international competition. The competitiveness has become imperative for survival. Hence, in recent times, companies have started restructuring their operations around their core business activities through M & As. Indian manufacturing industry is classified into seven categories-Food & Beverages, Textiles, Chemicals, Non-Metallic Mineral Products, Metal and Metallic Products, Machinery, Miscellaneous Manufacturing and Diversified.

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2. Review of literature

A brief review of select studies has been presented in the following pages.

Ball and Brown (1968) studied the relationship between earnings and stock prices and found that the abnormal returns in the month of announcements are associated with earnings, which in turn imply that the information about earnings affects the stock prices. The accounting data, other than earnings also, have been found to be associated with factors affecting the stock prices. A number of bankruptcy studies already provided evidence that accounting information, in the form of ratios, can be used to predict bankruptcy.

Watts and Zimmerman (1986) assisted that bankruptcy reduces the firm's future cash flows, and that the estimation of a firm's cash flows involves the assessment of the probability of bankruptcy. Therefore, the use of accounting ratios to predict bankruptcy is similar to predicting future cash flows, which affect stock prices.

Bowen, Burgstahler, and Daley (1986) found evidence that accrual earnings are superior to cash flow measures in the prediction of future cash flows.

In another study, Beaver, Kettler and Scholas (1970) have shown that the accounting information is associated with the risk of the firm. Risk is the other factor affecting the stock prices under the CAPM.

The above literature provides an overview of different valuation models associated with the valuation of mergers and acquisitions along with some empirical studies. An attempt has been made in this study to evaluate the determinants of shareholders' wealth of acquiring firms taking the models used in the above studies.

3. Research design

3.1 Statement of the problem

It is true that dramatic events like mergers, takeovers, restructuring and corporate controls occupy the business newspapers almost daily. Further they have become central focus of public and corporate policy issues. Some assert that the activities of mergers and acquisitions represent a new force in creativity and productivity. Some others view it as blight on our economy. If management pursues policies of shareholders' wealth maximization, then shareholders should not suffer wealth decreases as a result of their company merging with other companies. Therefore an attempt has been made to analyze the security returns in order to find out the net wealth increase or decrease to the shareholders' wealth of acquiring firms.

3.2 Objectives of the study

The present study proposes is to identify the strength of influence during pre- announcement on the shareholders' wealth of firms engaged in mergers and acquisitions.

3.3 Hypotheses of the study

The present study tests the following null hypothesis.

There is no significant influence of shareholders' wealth during event days of mergers and acquisitions announcement.

3.4 Methodology of the study

(1) Selection of the sample: While selecting sample companies, all industries coming under manufacturing sector were taken into consideration to constitute the total population. In the manufacturing sector, there are totally 58 companies which have undergone mergers and acquisitions during 2000, 2001 & 2002. The sample companies were identified at random with the help of Lottery Method and accordingly 30% from the total population was

taken as sample size (i.e. 17 companies out of 58). The details of sample size are given in Table 1.

(2) Source and collection of data: The present study is mainly based on secondary data which were collected from the Prowess Corporate Database Software. Further, the available secondary data were collected from the Annual Reports, Published Research Reports by various industries, and research organization, books, periodicals and websites like www.sebi.gov.in, www.indiainfoline.com and www.rbi.org. (See Table 2)

(3) Tools used for analysis: The present study has analyzed share price reaction, by using the following tools.

Table 1 List of manufacturing companies merged between 01.04.2000 and 31.03.2002

S. No.	Name of the sector	Total merged companies	Sample merged companies (30%)
1	Food & Beverages	8	2
2	Textiles	11	3
3	Chemicals	11	3
4	Non-Metallic Mineral Products	4	1
5	Metal & Metallic Products	9	3
6	Machinery	12	4
7	Miscellaneous Manufacturing & Diversified	3	1
Total		58	17

Source: Computed from Prowess Database Software in CMIE.

Table 2 Name of sample merged & merging manufacturing companies between 01.04.2000 and 31.03.2002

S. No	Merged company	Merging company	Date of merger
A	Food & Beverages		
	1. Saptarishi Agro Industries Ltd	Global Green Company Ltd	Nov. 28. 2000
	2. Cadbury India Ltd	Cadbury Schweppes PLC Group	Feb. 22.2002
B	Textiles		
	3. My Fellow Fashions (Exports) Ltd	Mr. MVVR Varma Group	Jun.19. 2000
	4. DCL Polyesters Ltd	Synergy Syuthetics (PVT) Ltd	Jul.18. 2000
	5. Forbes Gokak Ltd	Man-Made Fibres (PVT) Ltd	Feb.01.2002
C	Chemicals		
	6. Modi Rubber Ltd	Shri Vinay Kumar Modi Group	Jul.23.2001
	7. Castrol India Ltd	Castrol Limited Group	Oct.24.2001
	8. Matrix Laboratories Ltd	Shri N Prasad	Mar.27.2002
D	Non-Metallic Mineral Products		
	9. Sri Vishnu Cement Ltd	Zuari Cement Ltd	Apr.23.2002
E	Metal & Metallic Products		
	10. Indian Aluminium Co. Ltd	Hindalco Industries Ltd	Jun.24.2000
	11. Sandvik Asia Ltd	Sandvik AB	May.26.2001
	12. Wartsila India Ltd	Wartisila Corp. Group	Nov.6.2001
F	Machinery		
	13. Philips India Ltd	Koninklijke Philips Electronics Group	Dec.12.2000
	14. Otis Elevator Co. (INDIA) Ltd	Skanska AB Group	Aug.10.2001
	15. Skanska Cementation India Ltd	Alfa Laval Investments AB	Aug.14.2001
	16. Alfa Laval (INDIA) Ltd	N. A. Sirur(Hubli) Private Group	Feb.05.2002
G	Miscellaneous Manufacturing & Diversified		
	17. Foseco India Ltd	Burmah Castrol PLC Group	Dec.02.2001

Source: http://www.sebi.gov.in/ and Prowess Database Software in CMIE.

(a) Multiple linear regression model is:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots\ldots\ldots\ldots + \beta_{13} x_{13} + \ldots \quad (1)$$

Where, the response (dependent variable) variable "y" is related to the 13 explanatory (independent) variables. The parameters β_j, where j = 0, 1 ... 13, are known as the regression coefficients. Each regression coefficient, β_j, indicates the expected amount of change in the dependent variables 'y' (here CAR surrounding the

announcement day) per unit change in the associated independent variable (financial variable) x_i while holding all other independent variables constant.

(b) Standard Event Study methodology has been adopted to determine the Abnormal Returns (ARs) and Cumulative Abnormal Returns (CAR) for the sample company involved in acquiring other companies. To estimate the acquiring companies' abnormal returns (AR*it*), the two methods namely Market Model and Market Adjusted Returns Model have been used.

(c) The market model assumes that stock returns are determined by the ordinary least squares equation and abnormal returns are calculated by using parameters estimated from this model. The equation for Market Model Abnormal Returns is given by

$$MMAR_{it} = R_{it} - \alpha_i - \beta R_{mt} \quad (2)$$

Where, $MMAR_{it}$ is the Market model abnormal returns on security "I" over time "t"; R_{it} is the returns on security "I" at time "t"; R_{mt} is the market returns (BSE 100) at time "t"; α & β are the OLS parameters estimated for security "I" over the 90 trading days before and 30 days after the merger events.

(d) The Market Adjusted Returns Model assumes that ex ante and expected returns are the same and equal for all companies in any period and equal to the expected returns of the market index. The Market Adjusted Returns Model could also be considered as a special case of the Market Model with the parameters $\hat{\alpha}_i = 0$ and $\hat{\beta}_i = 1$. The equation for Market Adjusted Abnormal Returns ("MAAR") is:

$$MAAR_{it} = R_{it} - R_{mt} \quad (3)$$

Where, $MAAR_{it}$ is the market adjusted abnormal returns on security "I" over time "t"; R_{it} is the returns on security "I" at time "t"; R_{mt} is the market returns (BSE 100) at time "t".

3.5 Analysis of determinants of shareholders' wealth of acquiring firms was made as detailed below

3.5.1 Results of sectoral effect on abnormal returns during the event days of merger and acquisition announcement

In order to know whether the abnormal returns for companies under different sectors differ significantly from each other during M & A events, a regression analysis with dummy coded independent variables, representing sectors were carried out and the results are presented in Table 3.

The results show that the regression model for Market Model (MM) based abnormal returns with sectoral is fitted significantly (F value = 1.84, $p < 0.10$) where the regression model for Market Adjusted Model (MAM) based abnormal returns with sectoral is fitted insignificantly. From the regression results for MM based AR, it can be observed that intercept term (-0.0172) which represents the omitted category (here food sector) is significant at 10 per cent level. The average AR is -0.0256 (-0.0172 + (-0.0084) for acquiring firms under textile sector, -0.0001 (-0.0172+0.0171) for chemical sector, -0.0085 for metal, -0.0055 for machinery and for firms under non-metal and others, it is -0.0201. The significant negative intercept term implies that the average AR for food sector is negative and significantly less than that of textile and non-metal & others and more than that of other sectors. A similar trend is also visible in the case of average MAM based AR but none is significant from the others.

3.5.2 Results of factor analysis of accounting variables

The factor analysis is used to seek common characteristics underlying the accounting variables. To avoid redundancy among them (to remove multicollinearity among the variables in use) as well as to avoid the loss, the information from semi-independent accounting data is used for the analysis. The results of the factor analysis are presented in Table 4.

Table 3 Results of regression the sectoral effect on abnormal returns during the event days of merger and acquisition announcement

Dependent variable: AR (31 days event period)

Independent factor	Abnormal return	
	Market model based	Market adjusted model based
Intercept 1 (Food)	-0.0172*	-0.0108
	-(1.98)	-(1.19)
Intercept 2 (Textiles)	-0.0084	0.0013
	-(0.75)	(0.11)
Intercept 3 (Chemicals)	0.0171	0.0099
	(1.53)	(0.84)
Intercept 4 (Metal)	0.0087	0.0047
	(0.78)	(0.41)
Intercept 5 (Machinery)	0.0117	0.0094
	(1.10)	(0.85)
Intercept 6 (Non metal & others)	-0.0029	-0.0039
	-(0.24)	-(0.30)
R square	0.0173	0.0046
F value of the model	1.84*	0.48
Degrees of freedom	5, 521	5, 521

Notes: *Significant at 10% level; Figures in brackets shows "t" values.

Table 4 Results factor analysis of accounting variables

Accounting variable	Factor 1	Factor 2	Factor 3	Factor 4
	Profitability and growth	Firm size	Liquidity	Financial leverage and cash position
EBIT to shareholders equity	0.89	0.02	0.08	-0.21
EBIT to sales	0.83	-0.20	-0.06	0.43
Total debt to total assets	0.07	0.17	0.24	-0.89
Current assets to current liability	0.09	-0.05	0.94	-0.25
Quick assets to current liability	-0.14	0.05	0.98	0.03
Cash position to sales	-0.21	0.30	-0.15	0.64
Cash position to total debt	0.33	-0.37	0.01	0.71
Market capitalization	0.20	-0.89	0.02	0.20
Total assets	-0.29	-0.85	-0.01	0.06
Growth in sales	0.59	0.35	-0.50	0.12
Growth in assets	0.66	0.31	-0.28	-0.47
Explained variance	2.59	2.04	2.27	2.26
Proportion of total variance (in %)	23.54	18.57	20.63	20.58

Notes: Variance explained by all four factors is 83.32%, High factor loadings are boldfaced.

The observation of results from the table shows that factor analysis provides four factors with eigen values above 1, accounting for 83.32 per cent of the total variance in the original data set, i.e., in the accounting variables.

Among the four extractable factors, first factor accounts for 23.54 per cent in the data set. Similarly, 18.57 per cent, 20.63 per cent and 20.58 per cent of the variance are accounted for by the second, third and fourth factors respectively in the accounting variables used for the study. As far as the factor loadings are concerned, the loadings of profitability variables-EBIT to shareholders equity (0.89) and EBIT to sales (0.83), and loadings of growth variables-Growth in sales (0.59) and Growth in assets (0.66) with factor 1 are much higher than that of with other three factors. Similarly, size variables–Market capitalization (-0.89) and Total assets (-0.85) have high loadings with Factor 2, liquidity variables–Current assets to current liability (0.94) and Quick assets to current liability have high loading with Factor 3, and Factor 4 is highly loaded with both Financial leverage variables – Total debt to Total asset (-0.89) and Cash position variables–Cash position to sales (0.64) and Cash position to total debt (0.71). Based on the factor loading of the accounting variables, the first factor is christened "Profitability and Growth", second factor as "Firm Size", third one as "Liquidity" and third factor as "Financial leverage and Cash position". The factor scores of the above four newly extracted variables are used in the multiple regression analysis.

3.5.3 Results of cross sectional determinants of abnormal returns (MM) during 31 days surrounding merger and acquisition announcement variables

Table 5 Results of cross sectional determinants of abnormal returns (MM) during 31 days surrounding merger and acquisition announcement with accounting variables

Dependent variable: CAR [-15, 15]

Independent variables	Regression equation		
	Full model	Model 1	Model 2
Intercept	-0.0443	-0.0531	-0.3502
	-(0.22)	-(0.29)	-(2.94)
Unsystematic risk	-12.9683*	-12.6857*	
	-(1.86)	-(1.95)	
Market volatility	17.6240*	17.5027**	7.7109
	(2.09)	(2.18)	(1.11)
Profitability and growth	0.1433***	0.1434***	0.2014***
	(3.06)	(3.21)	(5.42)
Firm size	0.0051		
	(0.18)		
Liquidity	-0.3001***	-0.2993***	-0.2494***
	-(6.68)	-(7.01)	-(6.57)
Financial leverage and cash position	-0.1235**	-0.1217**	-0.0475
	-(2.29)	-(2.40)	-(1.28)
R square	0.9125	0.9122	0.8817
Adjusted R square	0.8599	0.8723	0.8423
F value of the model	17.37***	22.85***	22.37***
Degrees of freedom	6,10	5,11	4,12

Notes: ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level. Figures in bracket show "t" values.

As far as the determinants of 31 days CAR during M & A announcement is concerned, the full model and

two subset models regression results presented in Table 5 indicate that fit of the model 1 (subset model) is much better than other two. The variance, which is adjusted for degrees of freedom, is explained by the variables in subset model 1 in dependent factor-31 days. The adjusted R square is 87.23 per cent. Further, the beta coefficients for all the explanatory variables in the model 1 are statistically significant. Among the five explanatory variables, only two-market volatility and, profitability and growth-have positive signs whereas the sign of the remaining variables is negative. This, in turn, reveals that market volatility during the event days and pre-announcement profitability and growth dominated 31 days CAR positively while it was reverse in the case of other three variables. That is, high market volatility and high profitability and growth incur significantly positive CAR while high unsystematic risk of the acquiring firms with high liquidity and with high financial leverage and cash position incur significantly negative CAR during the period of M & A announcement.

3.5.4 Results of cross sectional determinants of abnormal returns (MAM) during 31 days surrounding merger and acquisition announcement

Table 6 Results of cross Sectional determinants of abnormal returns (MAM) during 31 days surrounding merger and acquisition announcement

Dependent variable: CAR [-15, 15]

Independent variables	Regression equation		
	Full model	Model 1	Model 2
Intercept	-0.4803***	-0.5329***	-0.4866***
	-(3.21)	-(4.50)	-(4.07)
Unsystematic risk	5.3387	7.8272**	9.8625***
	(0.99)	(2.29)	(3.00)
Market volatility	9.6866	7.3689	
	(1.51)	(1.47)	
Profitability and growth	0.2852***	0.2977***	0.2951***
	(7.74)	(10.05)	(9.52)
Firm size	0.0572**	0.0553**	0.0542**
	(2.61)	(2.62)	(2.46)
Liquidity	-0.2180***	-0.2054***	-0.1870***
	-(6.47)	-(7.96)	-(7.91)
Financial leverage and cash position	-0.0246		
	-(0.61)		
R square	0.9486	0.9467	0.9362
Adjusted R square	0.9178	0.9226	0.9150
F value of the model	30.79***	39.12***	44.06***
Degrees of freedom	6,10	5,11	4,12

Notes: ***Significant at 1% level; **Significant at 5% level. Figures in bracket show "t" values.

Regarding the factors determining the 31 days CAR during M & A announcement, three models–one full model and two subset model are fitted and results of models are presented in Table 6. The perusal of the results from the table reveals that the adjusted R square of the subset model 1 is the 0.9226 which is higher than that of full model (0.9178) and subset model 2 (0.9150). This in turn reveals that subset model 1 is the best fitted model and this is a more appropriate model for further interpretation. It is surprising to see from the beta coefficients of

the selected model (subset model 1) that unsystematic risk is positive and significant whereas market volatility becomes insignificant. The other significant variables are same as that in the regression model for 21 days CAR. The overall analysis reveals that acquiring firms' internal risk, profitability, growth and size are also higher during pre-announcement period inviting significantly positive CAR whereas liquidity position attracts significantly negative CAR during 31 days surrounding the M & A announcement.

3.6 Findings of the study

The reaction in the market was negative in the case of unsystematic risk during normal days. The liquidity, leverage and cash position of the sample acquiring firms during abnormal days were higher. That is, investors should have expected the acquiring firms' risk, liquidity, leverage and cash position to be at a reasonable level, setting aside their doubts over M & A process.

It is found that the pre-event period unsystematic risk, event period market volatility, profitability and growth, firm size and liquidity are the dominant factors determining the acquiring firms' abnormal returns during 5 days surrounding the M & A announcement.

It is understood that CAR during the 0 day and 3 days surrounding the M & A announcement can be determined by event period market volatility, liquidity and financial leverage and cash position. On the other hand, if event window becomes wider, profitability, growth and firm size would also become the dominant factors along with market volatility, liquidity, financial leverage and cash position in determining MAM based CAR of acquiring firms.

3.7 Suggestions of the study

All sample companies provide lesser returns to the investors. Hence steps are to be taken for improving the shareholders' wealth performance by improving the positive CARs. This will attract the investors to invest in these companies.

As the market responded significantly in two days and one day after announcement of M & A of the acquiring firms under Food Sector but adversely, the management of other sectors should educate the investors and study the market implications to benefit the investors.

The belief that the value of the firm could decrease due to dilution of capital has to be removed from the minds of public, shareholders and other stakeholders by way of educating them through workshops, conferences etc. It is suggested that the acquiring firm may educate the investors regarding the various benefits of M & A.

The profitability and growth have negative influence on Full Model and Model-1 and the same is the trend for market volatility also. Hence the sample companies should take steps like cost reduction, increasing profit and sales to convert negative returns to positive returns for profitability and growth.

As there was a downfall of 48.38% in the wealth of shareholders of acquiring firms under Food Sector consequent upon the announcement of M & A, appropriate steps should be taken to identify the reasons for the market reaction. It is suggested that further research by R & D department of respective firms may be initiated to identify the reasons and account for the reduction of shareholders' wealth.

Corporates should integrate two firms with same business culture, such as promotion systems, organization structure and labour union, to get better shareholders' value.

3.8 Scope for further research

Studies with similar objectives could be initiated with reference to other sectors like banking sector, IT sector etc.

The study with similar objectives of security price reaction to the announcement of de-merger decision of

companies under different sectors could also be made.

The identification of factors influencing the reaction of security price of various industrial sector stocks to the announcement of information will be of immense use.

Impact of mergers and acquisitions on financial performance and shareholders' wealth of acquirer and acquiring firms may also study.

4. Conclusion

In this paper, the influence of financial information of acquiring firm during the period before announcement of M & A has been empirically analyzed. The financial variables considered are Profitability, Growth, Size, Liquidity, Financial Leverage and Cash Position. Apart from the above financial variables, internal risk of the firm during normal days and also market volatility during event day of M & A announcement were also analyzed. From the results of the analysis it is understood that various accounting information related to financial characteristics (accounting information) of acquiring firms have significant influence and effect on event period.

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