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Research Article

Probability of success of Indian Mergers and Acquisitions (M&As) –An Analysis

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ABSTRACT

Mergers and acquisitions have become common in the recent years for the companies to grow inorganically. How efficient these inorganic growths are is a concern for discussion. The present study is an attempt to analyse the performance of M&As by considering the short-term performance of the share prices through event study and the financial performance through Return on Equity (ROE) analysis. The study considers a sample of 08 listed Indian companies which have undergone M&A but the scope is made limited to the acquirer companies. The analysis is done for the period of 11 years which includes the event year, 5 years before the event and 5 years after the event. In the present study, it is a sad truth that the majority of the companies shoot up its ROE by through financial leverage. The financial leverage is more than one in all the companies considered under study indicates higher debt than equity. Companies are magnifying its returns through fixed cost bearing capital which is comparably a highly risky as ROE fell sharply if the assets decrease than expected. For the purpose of testing of hypothesis t-test has been employed. Based on the average abnormal returns of all the 8 companies together, it is inferred that the abnormal returns around the event are not statistically significant and the market does not allow its investors to make extra returns from their investments. It is concluded that the markets are efficient and it will absorb all the related information by not allowing the investors to make an additional profit than normal and also the probability of success of mergers and acquisitions is only 25% as 2 among 8 companies having positive impact on its stock prices in the short horizon.

Keywords: Event study, Abnormal return, ROE, Mergers and acquisitions.

1. Introduction

Event studies are conducted to assess the impact of the any event such as dividend announcement, stock splits, mergers and acquisitions etc on the performance of specified company's stock. Event studies have dominated in the area of finance (Mackinlay, 2024). It is to know whether the event has any impact (positive or negative) on the stock prices around the occurrence of any event. The impact of the event studies is measured though abnormal returns. (Mackinlay, 2024) The market model to detect the abnormal performance of the company's stock prices which can be utilised in conducting event studies. It is also a direct measure of testing the efficiency of the market in a particular time point (Brown & Warner, 1980). If the market is efficient, then the information about the company will be fully reflected in the stock prices of that particular company by not allowing the investors to make any extra profit over and above the normal return. (Fama et al., 2024) supported the efficient market hypothesis as the stock prices reflects all the available information.
The Dupont analysis, which is known as the Return on Equity analysis is the combination three ratios namely, Net Profit Margin, Asset turnover and the financial leverage.

$$\text{Return on Equity} = \frac{Net\ Income}{Shareholder's\ Equity}$$

Return on equity = Net Profit Margin X Asset Turnover X Financial Leverage

$$\text{Return on Equity} = \frac{Net\ Income}{\text{Sales}} \times \frac{Sales}{\text{Total Assets}} \times \frac{\text{Total Assets}}{Shareholder's\ Equity}$$

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The remainder of this paper is arranged as follows. Section 1 outlines the introduction to the mergers and acquisitions, event study and Return on Equity (ROE). Section 2 deals with review of literature, objectives and hypothesis, Section 3 includes the methodology following Section 4 with analysis and interpretation and lastly, Section 5 with findings, suggestions and Conclusion.

2. Review of Literature

(Brown & Warner, 1980) uses various abnormal return calculation measures used in detecting it and highlighted the role of each measure. It also provides the methodologies' used in conducting the event studies. **(Brown & Warner, 1985)** highlighted the importance of utilising the daily stock returns in conducting the event studied. The power of event studies is high when daily returns are used than the monthly returns. **(Kothari & Warner, 2007)** suggested that the event studies in the short horizon are more reliable than the long horizon event studies as there will be some limitations associated with it and also suggested to use daily stock returns over monthly stock returns. If the investors buy and hold the stock throughout for a long period of time, than BHAR is used. (**Antoniuk & Leirvik, 2024)** analyse the daily stock prices from July 2009 to December 2016 to analyse how climate change risk is accountable by the market 118 ETFs from six different industries. The results show that, the energy industry has high exposure for abnormal returns. **(Ritesh Dubey, 2013)** analysed the factors affecting on the stock price changes thought event study analysis of various events such as inflation, crude oil price, money supply etc. The study found that these events have significant impact on the stock prices. (**Warner & Kothari, 1997)** conducted a long horizon event study by considering the data for the period of 36 months from the event month. Found that the CARs for the longer period are highly skewed. Concluded that the CARs in the long horizon are positive for the randomly selected companies. **(Almazari, 2012**) conducted a financial performance analysis of Jordanian Arab commercial bank for the period from 2000 to 2009. Dupont analysis has been applied and found that there is a steady financial performance and minimal growth in the return on equity and also found that this bank had lesser dependence on the financial leverage. **(Parzonko et al., 2023)** changes in return on equity of EU dairy farms have been analysed for the period from 2004 to 2020 and found the various driving factors of return on equity over the period. Global conditions and administrative regulations have also have an impact on the return on equity. **(Mubin et al., 2014)** undertaken a study to know the determinants of increase and decrease in the level of ROE. ROE is considered to be the worthwhile indicator of company's performance. Found that the indebt analysis of five factors affecting ROE can have greater influence on the analysis. **(Soliman, 2024)** a comprehensive analysis of Dupont and its conceptual contribution to the literature are been studied and results show that the Dupont components are more viable in representing the operating characteristics of a firm. **(Mubin et al., 2014)** tried to find out the most consistent components among the Dupont analysis such as profitability, efficiency and leverage. The data of 51 companies for the period from 2004 to 2012 are studied. It is found that the assets turnover is changing from industry to industry whereas the equity multiplier and the profitability are comparably more consistent.

Objectives

1. To analyze the financial performance of the companies before and after the event through ROE.
2. To test whether the abnormal returns around the event date are different from the expected returns on the stock.

Hypothesis

H_0: The abnormal returns around the event date are not different from the expected returns on the stock.
H_1: The abnormal returns around the event date are different from the expected returns on the stock.

3. Methodology

The research study is analytical in nature. The data required for the study are collected from the secondary sources. The data related to mergers and acquisitions and financial statements are collected from CMIE database. Other secondary data are collected from various websites such money control, yahoo finance and the respected company websites. The study is based on the companies involved in mergers and acquisitions for the period of three years between 2015 and 2018 so as to get five years period post the acquisition to study the ex post financial performance of the selected companies. The event study analysis and ROE analysis are applied and for the purpose of event studies daily stock returns are used (Brown & Warner, 1985) to yield the reliable results.

Sample

The total number of companies involved in Mergers & Acquisitions during the study period (01/04/2015 to 31/03/2018) are to be 1048. The scope of the present study is restricted only to the acquirers companies (foreign acquirer companies are excluded) which brings down the sample size to 374. For the purpose of the study and for easy access to the necessary data, the selected companies must be listed either in Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) which in turn reduce the sample size to 280. The deals having available with the date of stock exchange announcement and the deal completed date are only considered. By keeping the time consideration, 08 companies are considered to be the final sample.

Table 01: Showing the Profile of the Sample Companies

Sl. No.	Company Name	Industry group	Main product/service group
1	Aryaman Financial Services Ltd.	Other fee based financial services	Merchant / investment banking services
2	Astral Ltd.	Plastic tubes, pipes, fittings & sheets	Tubes, pipes & hoses of polyethylene
3	Axis Bank Ltd.	Banking services	Banking services
4	Bharti Airtel Ltd.	Telecommunication services	Cellular mobile phone service
5	Bodal Chemicals Ltd.	Organic chemicals	H acid
6	Borosil Renewables Ltd.	Glass & glassware	Float glass & surface polished glass
7	Cholamandalam Investment & Finance Co. Ltd.	Auto finance services	Auto financing services
8	Crisil Ltd.	Business services & consultancy	Business services & consultancy

Source: CMIE Database

Table 02: Showing the Event dates for the selected sample companies

Sl. No.	Acquirer	Target	Event Date	Event Name
1	Aryaman Financial Services Ltd.	Escorp Asset Mgmt. Ltd.	28-May-16	Board of Directors approval
			01-Jun-16	Deal Completed
			01-Jun-16	Stock Exchange Announcement
2	Astral Ltd.	Resinova Chemie Ltd. [Merged]	17-Sep-15	Board of Directors approval
			02-Nov-15	Deal Completed
			17-Sep-15	Stock Exchange Announcement
3	Axis Bank Ltd.	Max Life Insurance Co. Ltd.	29-Feb-16	Stock Exchange Announcement
			29-Feb-16	Deal Completed
4	Bharti Airtel Ltd.	Bharti Digital Networks Pvt. Ltd. [Merged]	23-Mar-17	Stock Exchange Announcement
			23-Mar-17	Deal Completed
5	Bodal Chemicals Ltd.	Trion Chemicals Pvt. Ltd. [Merged]	16-Mar-17	Stock Exchange Announcement
			16-Mar-17	Deal Completed
6	Borosil Renewables Ltd.	Borosil Ltd.	14-Jan-16	Stock Exchange Announcement
			14-Jan-16	Board of Directors approval
			28-Jan-16	Deal Completed
7	Cholamandalam Investment & Finance Co. Ltd.	White Data Systems India Pvt. Ltd.	23-Dec-15	Stock Exchange Announcement
			16-Mar-16	Deal Completed
			23-Dec-15	Board of Directors approval
8	Crisil Ltd.	Pragmatix Services Pvt. Ltd. [Merged]	15-Nov-17	Stock Exchange Announcement
			24-Jan-18	Deal Completed

Source: CMIE Database

Statistical tools used:

An event study methodology has been used to know the extent to which the stock prices perform abnormally around the event time. Abnormal returns can be utilised to test for the market efficiency in the prevailing conditions (Warner & Kothari, 1997).

For this purpose, the day on which the stock market announcement happened about mergers and acquisition is considered to be the event day and an event window of 10 days before and after and an estimation window of 150 days are considered to calculate the expected return on stock based on the benchmark return. The analysis is done by considering the daily stock prices rather than monthly or annual stock prices as daily stock prices are considered to be the precise for calculating abnormal returns (Kothari & Warner, 2007). Here, the expected returns are calculated using market model, which is one of the commonly used technique (Warner & Kothari, 1997). Return on equity (ROE) is used to measure the financial performance of the companies before and after the merger and acquisition event.

4. Analysis and Interpretation

5.

Table 03: Showing the t-statistics of Cumulative Abnormal Returns during the Event Window

t-statistics of Cumulative Abnormal Returns during the Event Window							
Sl. No.	**Company Name**	**1 Day before and after**	**2 Day before and after**	**3 Day before and after**	**4 Day before and after**	**5 Day before and after**	**Significance**
1	Aryaman Financial Services Ltd.	-0.3808	-0.0772	-0.0455	-0.0835	-0.1146	Not statistically significant
2	Astral Ltd.	-0.1072	-0.0542	-0.0571	-0.0812	-0.0025	Not statistically significant
3	Axis Bank Ltd.	-3.4077	-2.8809	2.2240	0.6097	0.2550	significant on 1,2 (negatively significant) and 3 days (positively significant) before and after the event.
4	Bharti Airtel Ltd.	-7.5268	-5.5299	-2.2736	-7.0626	-5.6129	statistically significant till 5 days before and after the event, event has the negative impact on the stock prices
5	Bodal Chemicals Ltd.	-0.5837	-1.5250	1.8346	-1.0325	0.2486	Not statistically significant
6	Borosil Renewables Ltd.	-0.2496	-0.4406	-2.7392	-4.6434	-4.2087	statistically significant on 3,4 and 5 days before and after the event, event has the negative impact on the stock prices
7	Cholamandalam Investment & Finance Co. Ltd.	2.4036	2.9603	-0.6941	-1.4296	-3.2096	significant on 1,2 (positively significant) and 5 days (negatively significant) before and after the event. Positive impact on stock prices two days before and after and later on it has impacted negatively.
8	Crisil Ltd.	-11.8755	-19.6533	-18.8445	-14.1649	-11.1191	significant negatively, the event has negative impact on the stock prices for 5 days before and after
Average Abnormal Return		**-0.0831**	**-0.0231**	**-0.0018**	**-0.0632**	**-0.0490**	Not statistically significant for all the companies together

Source: Authors Computation

Here, the inference is on t-statistic is drawn based on the fact that, if calculated t-value > t-table value (1.96), statistically significant, then the abnormal returns around the event date are different from the expected returns on the stock. If calculated t-value < t-table value (1.96), statistically Not significant, then the abnormal returns around the event date are not different from the expected returns on the stock. Based on the average abnormal returns of all the 8 companies together, it is inferred that the abnormal returns around the event are not statistically significant and the market does not allow its investors to make extra returns from their investments. It is concluded that the markets are efficient and it will absorb all the related information by not allowing the investors to make an additional profit than normal.

Table 04: Showing Return on Equity (ROE) for the sample companies for the event year, pre-event period and post-event period.

Return on Equity (%) for the Sample Companies								
	Aryaman Financial Services Ltd.	**Astral Ltd.**	**Axis Bank Ltd.**	**Bharti Airtel Ltd.**	**Bodal Chemicals Ltd.**	**Borosil Renewables Ltd.**	**Cholamandalam Investment & Finance Co. Ltd.**	**Crisil Ltd.**
Pre M&A	1	24	18	8	-51	97	5	42
	3	22	19	5	-46	5	8	44
	3	21	16	5	34	3	12	32
	3	25	16	8	51	6	16	33
	2	25	17	10	37	6	16	35
Event Year	4	12	16	6	37	5	14	29
Post M&A	9	13	7	3	17	18	16	32
	10	17	1	2	17	6	17	29
	6	17	7	-44	9	7	19	27
	3	15	2	-40	4	0	19	30
	2	17	7	12	9	15	13	31

Source: Authors Computation

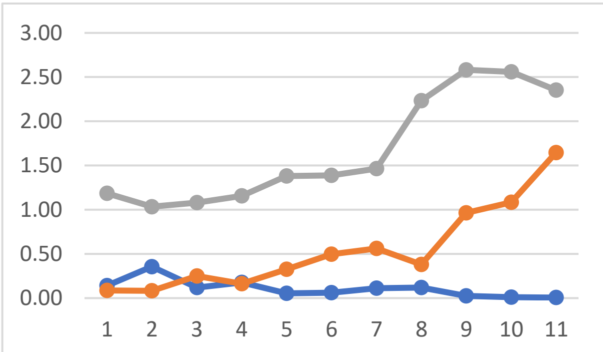
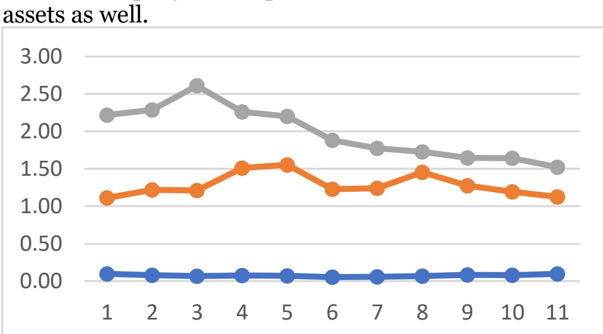
Table 05: Showing the descriptive statistics of ROE for the period of 11 years including the event year, pre and post the event.

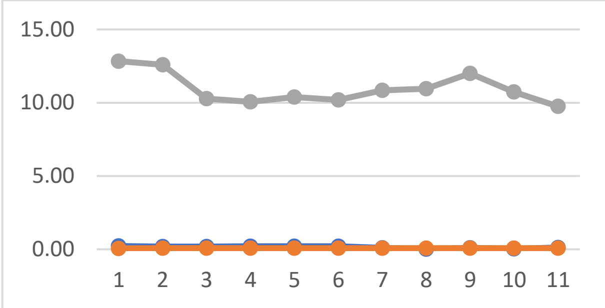
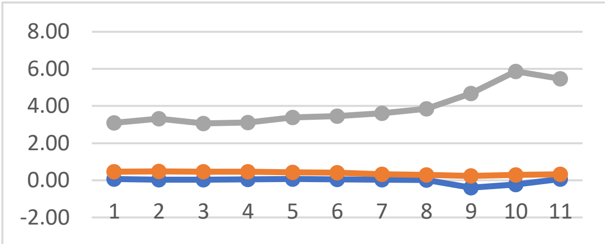
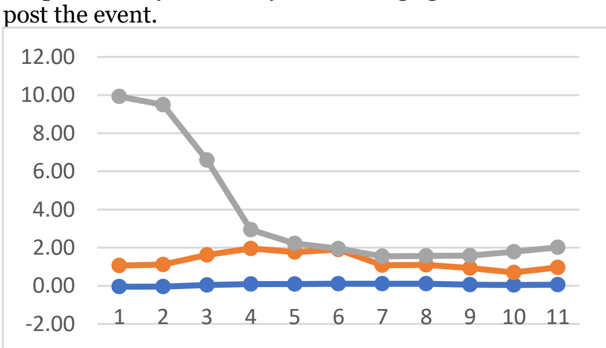
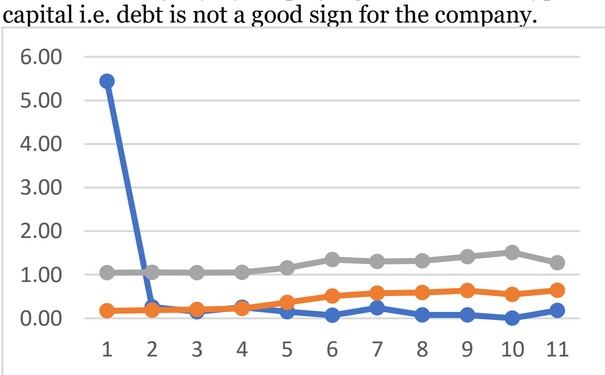
Descriptive statistics	**Aryaman Financial Services Ltd.**	**Astral Ltd.**	**Axis Bank Ltd.**	**Bharti Airtel Ltd.**	**Bodal Chemicals Ltd.**	**Borosil Renewables Ltd.**	**Cholamandalam Investment & Finance Co. Ltd.**	**Crisil Ltd.**
Mean	4%	19%	11%	-2%	11%	15%	14%	33%
Standard Error	1%	1%	2%	6%	10%	8%	1%	2%
Median	3%	17%	16%	5%	17%	6%	16%	32%
Standard Deviation	3%	5%	7%	20%	33%	28%	4%	5%
Kurtosis	78%	-151%	-150%	187%	49%	1005%	38%	86%
Skewness	137%	-1%	-49%	-182%	-109%	313%	-93%	131%
Range	9%	13%	18%	56%	102%	97%	14%	17%
Minimum	1%	12%	1%	-44%	-51%	0%	5%	27%
Maximum	10%	25%	19%	12%	51%	97%	19%	44%
Sum	48%	209%	125%	-23%	117%	168%	155%	364%
Count	11	11	11	11	11	11	11	11

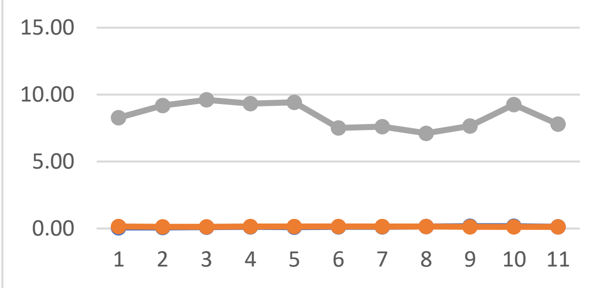
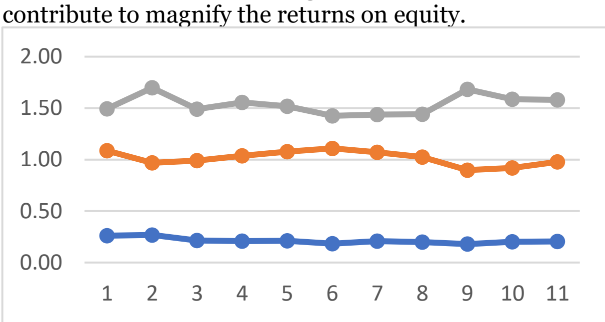
Source: Excel Output

It is analyzed from the above descriptives of the ROE of the sample companies that, the mean ROE of the Crisil ltd. Is 33% which is creating value towards the investors whereas the mean ROE of Bharti Airtel Ltd. is -2 which is bad sign for the company and not creating any value towards its investors. The returns are unpredictable for Bodal Chemicals Ltd. as its standard deviation is 10%, comparably high. The returns are highly consistent for the companies such as Aryaman Financial Services Ltd., Astral Ltd., and Cholamandalam Investment & Finance Co. Ltd., as its deviations are 1% from its mean value**.**

Table 06: Showing the ROE analysis and its Graphical representation with inferences.

Sl. No.	**Name of the Acquirer Company**	**Net Profit Margin**	**Asset Turnover**	**Financial Leverage**	**Inference**
1	**Aryaman Financial Services Ltd.**	0.1401	0.0863	1.1857	The return on equity is majorly derived from the use of leverages in the company which is a bad sign and not sustainable in the future. 
		0.3558	0.0824	1.0344	
		0.1192	0.2494	1.0798	
		0.1756	0.1631	1.1547	
		0.0546	0.3267	1.3803	
		0.0603	0.4966	1.3886	
		0.1111	0.5632	1.4651	
		0.1206	0.3802	2.2323	
		0.0235	0.9634	2.5823	
		0.0112	1.0834	2.5585	
		0.0061	1.6469	2.3544	
2	**Astral Ltd.**	0.0799	1.2185	2.2860	The returns are derived from having more of debt than equity throughout, but post the event, it is decreasing and the company makes profits out of efficient use of its assets as well. 
		0.0678	1.2130	2.6098	
		0.0734	1.5118	2.2618	
		0.0731	1.5549	2.2021	
		0.0531	1.2266	1.8832	
		0.0591	1.2400	1.7736	
		0.0681	1.4528	1.7260	
		0.0821	1.2769	1.6451	
		0.0787	1.1944	1.6430	
		0.0968	1.1261	1.5232	
3		0.2204	0.0625	12.8379	

	Axis Bank Ltd.	0.1918	0.0771	12.5836	The company's profitability and efficiency go hand in hand at a very lower level then the level of leverage employed in the company. The major chunk of return on equity is derived from leverage, which is not sustainable in the future. 
		0.1924	0.0799	10.2706	
		0.2053	0.0796	10.0622	
		0.2085	0.0765	10.3948	
		0.2016	0.0758	10.2016	
		0.0875	0.0739	10.8453	
		0.0098	0.0662	10.9598	
		0.0899	0.0688	12.0061	
		0.0295	0.0687	10.7467	
		0.1121	0.0640	9.7528	
4	**Bharti Airtel Ltd.**	0.0596	0.4549	3.1033	The profitability goes negative during the post-merger period and the company has more of leverage due to which its return on equity is increasing. Such type of growth does not last longer in the future. 
		0.0283	0.4800	3.3251	
		0.0323	0.4681	3.0654	
		0.0563	0.4682	3.1173	
		0.0714	0.4277	3.3806	
		0.0444	0.4102	3.4504	
		0.0264	0.3298	3.6037	
		0.0209	0.2935	3.8531	
		-0.3970	0.2347	4.6766	
		-0.2328	0.2908	5.8696	
		0.0713	0.3205	5.4640	
5	**Bodal Chemicals Ltd.**	-0.0485	1.0676	9.9230	There was a higher level of debt employed before the event and it has decreased during the post-merger. Here, the profitability, efficiency and leverage go hand in hand post the event. 
		-0.0439	1.1116	9.4926	
		0.0314	1.6190	6.5984	
		0.0878	1.9567	2.9436	
		0.0945	1.7605	2.2100	
		0.0992	1.8949	1.9486	
		0.1046	1.0848	1.5424	
		0.0993	1.0961	1.5659	
		0.0630	0.9355	1.5771	
		0.0324	0.6987	1.7886	
		0.0481	0.9662	2.0101	
6	**Borosil Renewables Ltd.**	5.4374	0.1711	1.0443	There was a huge fall in the profitability of the company, and even went negligible post the event. The returns here are derived majorly by employing the fixed cost type of capital i.e. debt is not a good sign for the company. 
		0.2581	0.1912	1.0569	
		0.1475	0.2041	1.0502	
		0.2519	0.2250	1.0512	
		0.1543	0.3618	1.1593	
		0.0689	0.5077	1.3500	
		0.2372	0.5792	1.3015	
		0.0773	0.5917	1.3170	
		0.0788	0.6349	1.4140	
		0.0017	0.5491	1.5126	
		0.1785	0.6416	1.2739	
7	**Cholamandalam**	0.0450	0.1419	8.2675	The profitability and efficiency go negligible creates a high range from leverage. The debt levels are higher than
		0.0701	0.1237	9.1803	

	Investment & Finance Co. Ltd.	0.0950	0.1319	9.6094	the acceptable level and it seems the way in which company magnifies its return on equity and not from its core operations. 
		0.1198	0.1410	9.3357	
		0.1123	0.1522	9.4213	
		0.1196	0.1556	7.5206	
		0.1364	0.1511	7.5999	
		0.1533	0.1534	7.1196	
		0.1773	0.1390	7.6616	
		0.1689	0.1233	9.2596	
		0.1210	0.1360	7.8110	
8	**Crisil Ltd.**	0.2618	1.0863	1.4921	Event though the company has a higher leverage ratio compared to its profitability and efficiency, company is efficient in terms of utilizing its available resources to contribute to magnify the returns on equity. 
		0.2682	0.9701	1.6974	
		0.2142	0.9911	1.4907	
		0.2066	1.0369	1.5552	
		0.2109	1.0772	1.5193	
		0.1836	1.1095	1.4255	
		0.2077	1.0702	1.4379	
		0.1986	1.0255	1.4410	
		0.1790	0.8981	1.6821	
		0.2025	0.9189	1.5863	
		0.2038	0.9780	1.5798	

Source: Authors Computation

Analysis of company's performance through return on equity in one of the commonly used methods in the recent years. It analyses the company's overall performance in terms of its profitability, efficiency and leverage in its capital structure. If the company drives its ROE from profitability, it is inferred to has a strong operational ability and can be more sustainable in the future. Increased efficiency can also be sustainable for the future but the leverage is not. In the present study, it is a sad truth that the majority of the companies shoot up its ROE by through financial leverage. The financial leverage is more than one in all the companies considered under study indicates higher debt than equity. Companies are magnifying its returns through fixed cost bearing capital which is comparably a highly risky as ROE fell sharply if the assets decrease than expected.

Findings

The financial leverage is more than one in all the companies considered under study indicates higher debt than equity. Companies are magnifying its returns through fixed cost bearing capital which is comparably a highly risky as ROE fell sharply if the assets decrease than expected. For the purpose of testing of hypothesis t-test has been employed. Based on the average abnormal returns of all the 8 companies together, it is inferred that the abnormal returns around the event are not statistically significant and the market does not allow its investors to make extra returns from their investments. It is concluded that the markets are efficient and it will absorb all the related information by not allowing the investors to make an additional profit than normal and also the probability of success of mergers and acquisitions is only 25% as 2 among 8 companies having positive impact on its stock prices in the short horizon.

Suggestions and Conclusion

If the company having sound operations with efficient use of the available resources, than it is advisable to have more leverage to magnify the return on equity (ROE) on the flip case it will be very dangerous for the companies to achieve longer sustainability. From the analysis, it is concluded that the markets are efficient and it will absorb all the related information by not allowing the investors to make an additional profit than normal and also the probability of success of mergers and acquisitions is only 25% as 2 among 8 companies having positive impact on its stock prices in the short horizon.

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