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Single factor analysis on Mergers and Acquisitions done by Tata Group
Case of TCS-CMC Using Market adjusted model for Event Study Analysis

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***Abstract*—** This study presents the effect of Mergers and Acquisition on stock prices of Tata Consultancy Services. We examine shareholder wealth gains of Tata Consultancy Services that acquired CMC. This study analyzed shareholders wealth of Tata Consultancy Services as a result of global merger and for this we using the event negative and insignificant cumulative abnormal returns of nearly negative nine percent.

The findings of the study have the following implication for the investors

1.Investors who invested after two days gets positive returns

2.These investors who invested after two days and hold for minimum 5 days to 7 days get CAR return from 2%to 5%.

3.An investor can faces loss if the shares of the acquiring company are purchased two days prior to the announcement day and sold two days after the announcement day.

4.Pre-Event window (-2, -5, -10) days and Post-Event window (+2, +5, +10) days Cumulative abnormal return were negative.

To capture the impact on stock prices as a result of global M&A using the event study methodology. Using the single-factor model the study finds that the cumulative abnormal returns (CAR) of the Tata Consultancy Services are negative and insignificant.

The merger announcements of Tata Consultancy Services have negative and insignificant shareholder wealth effect for bidder firm.

The aim is to understand the shareholder wealth effects of merger.

Keywords—Merger & Acquisition, Event Study

Introduction

Mergers and acquisitions are a high risk form of business activity involving the collective annual investment of millions of rupees and affecting the working lives of millions of employees and the share holder's wealth. It has been suggested that in the long term between 50-80 per cent of all mergers are considered to be financially unsuccessful (Marks, 1988b), and in terms of financial return, represent 'at best an each way bet' (Lorenz, 1986). Although mergers and acquisitions frequently fail to achieve the financial synergy or '2 + 2 = 5 effect' (Hovers, 1973) initially expected, the popularity of this form of business activity has not diminished (Farrent, 1970; Jemison & Sitkin, 1986; Bruckman & Peters, 1987).

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To analyze the impact of merger on shareholder wealth we used 'event study methodology' which measures the specific impact of corporate decisions on shareholder wealth. This technique is widely used in practice to assess the change in shareholder wealth generated by announcements of corporate events (e.g., security offerings, mergers, lawsuits, earnings).

The event study methodology is designed to investigate the effect of an event on a specific dependant variable. A commonly used dependent variable in event studies is the stock price of the company. The definition of such an event study will be 'a study of the changes in stock price beyond expectation (Abnormal returns) over a period of time (event window). We attribute the abnormal returns to the effects of the event.' The event study methodology seeks to determine whether there is an abnormal stock price effect associated with an event. From this, the researcher can infer the significance of the event. The key assumption of the event study methodology is that the market must be efficient. Given an efficient market, the effects of the event will be reflected immediately in the stock prices of the company. This will allow us to observe the economic effect of the event over a relatively short period.

Event Study Analysis

An event study attempts to measure the valuation effects of a corporate event, such as a merger or earnings announcement, by examining the response of the stock price around the announcement of the event.

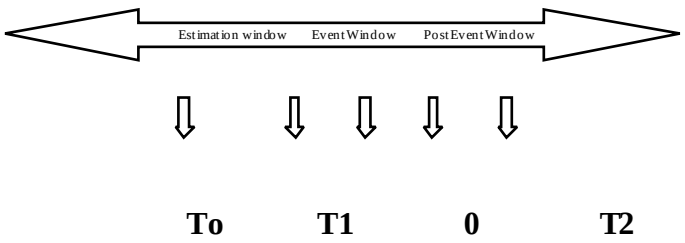
One underlying assumption is that the market processes information about the event in an efficient and unbiased manner. Thus, we should be able to see the effect of the event on prices.

The event that affects a firm's valuation may be: 1) within the firm's control, such as the event of the announcement of a stock split. 2) Outside the firm's control, such as a macroeconomic announcement that will affect the firm's future operations in some way.

Various events have been examined: –mergers and acquisitions –earnings announcements –issues of new debt and equity –announcements of macroeconomic variables –IPO's –dividend announcements. –etc.

Event Study Design

Time-line • The time-line for a typical event study is shown below in event time: - The interval T0-T1is the estimation period - The interval T1-T2 is the event window - Time 0 is the event date in calendar time - The interval T2-T3 is the post-event window - There is often a gap between the estimation and event periods.



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We have to first decide on the event that we wish to investigate, and then collect data of company that had went through such an event. The data that we need includes the merger date (eg. date of a merger and acquisition event), the stock prices of the company before and after the event (eg -140(**To - T1**), -10(**T1 - 0**), **0 (**Event day), +10(**0 - T2**)).

Getting Parameter Estimates

Alpha and Beta are the two parameter estimates and are determined in estimation period. Alpha is the intercept of the regression line and stands for risk free rate. Beta is the slop coefficient of the regression line and stands for systematic risk. In the formula, is the daily return of market index in estimation period and is the average daily return of market index in estimation period. Similarly, is the daily return of individual share price in estimation period and is the average daily return of individual share price in estimation period.

Getting the Abnormal Returns

After Alpha and Beta have been obtained, the focus should be turned to Event Period, in which the daily expected return of individual share price can be obtained by replacing the parameter estimations to event period. The formula is shown in the following figure.

$E(R_s)= \alpha + \beta R_m$

Daily expected return of individual share price can be determined by replacing the Alpha and Beta from estimation period here. Then the daily abnormal return in test period can be calculated by applying this equation. Please see the equation below:

$AR_s = R_s – E(R_s)$

The daily abnormal return of the individual share price in test period equals the difference between the daily actual return in test period and the daily expected return in test period. After that, the cumulative abnormal return in test period and average abnormal return in test period can be calculated based on the daily abnormal return in test period. These are the typical required results for supporting further analysis of the event to see whether this event leads to a positive or negative effect on the value of the company.

Steps of Event Study

1. Identify specific calendar event dates of a company and set it as an event date point.

2. Determine the length of both event period and estimation period.

3. Download the historical files of both share price and stock market index data. The data files should contain the calendar dates of both estimation period and event period.

4. Calculate the daily returns of both individual share price and market index data. Normally, daily returns are used, so the returns shall be daily returns. These are actual returns.

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5. Calculate the two parameter estimates Alpha and Beta by using the return generating model to the data from the estimation period.

6. Get back to event period and use the two parameter estimates get from the estimation period to determine the (daily) expected return of the share price in event period.

7. Calculate the (daily) abnormal returns in event period and derive cumulative abnormal return and average abnormal return in event period.

8. Do significant test for the required results.

Company Profile

Tata Consultancy Services Limited (TCS) is an Indian worldwide data innovation (IT) administrations and counseling organization in Mumbai, Maharashtra, India. It is an auxiliary of the Tata gathering and works in 149 areas crosswise over 46 nations. TCS is the second biggest Indian organization by showcase capitalization. TCS is presently positioned among the most important IT administrations brands around the world. In 2015, TCS was positioned 64 in the Forbes World's Most Innovative Companies positioning, making it both the most elevated positioned IT administrations organization and the top Indian organization. It is the biggest IT specialist organization on the planet. Starting at 2018, it has been positioned eleventh on the Fortune India 500 list. In April 2018, TCS turned into the primary Indian IT organization to reach $ 100 billion market capitalization, and after the subsequent Indian organization (obtained by Reliance Industries in 2007), its market capitalization at Bombay was Rs 79,79,332.81 crore ($ 102.6 Billion). Offer Market. In 2016–2017, parent organization Tata Sons possessed 70% of TCS, and over 70% of Tata Sons' profits were produced by TCS. In March 2018, Tata Sons chose to sell TCS shares worth $ 1.25 billion out of a discount bargain.

Company Profile

CMC Limited is a data innovation administration, counseling and programming organization headquartered in New Delhi, India. The CMC is a piece of the Tata Sons and is claimed by Tata Consultancy Services. CMC was consolidated as 'PC Management Corporation Private Limited' on 26 December 1975. The Government of India holds 100 percent of the value share capital and is claimed by the Government of India. On 19 August 1977 it was changed to an open restricted organization. In October 2001, CMC was privatized by the Government of India available to purchase Tata Consultancy Services (TCS), Asia's largest programming administration organization in India. It is among the top ten organizations in India. CMC Limited is a data innovation administration, counseling and programming organization headquartered in New Delhi, India. The CMC is a piece of the Tata Sons and is claimed by Tata Consultancy Services. CMC was consolidated as 'PC Management Corporation Private Limited' on 26 December 1975. The Government of India holds 100 percent of the value share capital and is claimed by the Government of India. On 19 August 1977 it was changed to an open restricted organization. In October 2001, CMC was privatized by the Government of India available to purchase Tata Consultancy Services (TCS), Asia's largest programming administration organization in India. It is one of the top ten organizations in India. To serve and grow its customers in the UK and Europe, CMC opened a branch office in London in 2000. The following year, the administration snatched 51 per cent of the value of Tata Sons Ltd's CMC through a significant deal and the CMC turned into a segment. Of the Tata Sons . As per its process of offering all inclusive goods and administrations, CMC opened a branch office in Dubai to take

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advantage of the heterogeneous markets of West Asia and Africa. In 2004, the administration gave its 26.5 percent stake in CMC to the general society. The Board of Directors of CMC elected on 16 - October - 2014 to blend the organization with its parent organization Tata Consultancy Services Limited. CMC transitioned with TCS on 1 October 2015.

Data analysis

- Study based on historical files of Tata Consultancy Services are price and stock market index data with their rate of return.
- Historical files of both share price and stock market index data around the event date -10, <0>, +10with their return.

Case -(BSE:532540,NSE-TCS)TCS -CMC-16-10-14 Tata Consultancy Services Limited (TCS.BO) BSE - BSE Real Time Price. Currency in INR					Market Model (Abbr.: mm)							
Date	TCSRET	MKTRET	TCSRET	MKTRET	AR	T-TEST	SIGNIFICANT?	Window	CAR	t(no. of days in window)	t-statistics of CAR	SIGNIFICANT?
11/3/2014	1136.63	27860.38	-0.59%	-0.02%	-0.0076	-0.53	NO	10	-0.0692	10	-1.5459	NO
10/31/2014	1143.33	27865.83	1.81%	1.88%	0.0104	0.73	NO	9				
10/30/2014	1122.85	27346.33	2.18%	0.91%	0.0172	1.21	NO	8				
10/29/2014	1098.59	27098.17	1.39%	0.81%	0.0096	0.67	NO	7				
10/28/2014	1083.47	26880.82	0.81%	0.48%	0.0048	0.34	NO	6				
10/27/2014	1074.77	26752.90	0.24%	-0.13%	0.0010	0.07	NO	5	-0.1037	5	-3.2761	YES
10/22/2014	1072.19	26787.23	0.78%	0.79%	0.0035	0.25	NO	4				
10/21/2014	1063.90	26575.65	0.42%	0.55%	0.0007	0.05	NO	3				
10/20/2014	1059.50	26429.85	-0.88%	1.22%	-0.0144	-1.02	NO	2	-0.1089	2	-5.4415	YES
10/17/201	1068.9	26108.5	-9.14%	0.42%	-0.0945	-	YES	1				

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4	1	3				6.65						
10/16/2014	1171.20	25999.34	-0.77%	-1.34%	-0.0053	-0.38	NO	0				
10/14/2014	1180.31	26349.33	-0.76%	-0.13%	-0.0090	-0.63	NO	-1				
10/13/2014	1189.34	26384.07	1.53%	0.33%	0.0125	0.88	NO	-2	0.0035	2	0.1751	NO
10/10/2014	1171.32	26297.38	-1.00%	-1.28%	-0.0078	-0.55	NO	-3				
10/9/2014	1183.11	26637.28	0.92%	1.48%	0.0028	0.20	NO	-4				
10/8/2014	1172.29	26246.79	-1.91%	-0.10%	-0.0206	-1.45	NO	-5	-0.0221	5	-0.6973	NO
10/7/2014	1194.96	26271.97	-1.54%	-1.12%	-0.0137	-0.96	NO	-6				
10/1/2014	1213.54	26567.99	1.36%	-0.24%	0.0126	0.88	NO	-7				
9/30/2014	1197.14	26630.51	-1.08%	0.13%	-0.0130	-0.91	NO	-8				
9/29/2014	1210.17	26597.11	3.12%	-0.11%	0.0298	2.10	YES	-9				
9/26/2014	1172.95	26626.32	-0.92%	0.60%	-0.0128	-0.90	NO	-10	-0.0192	10	-0.4281	

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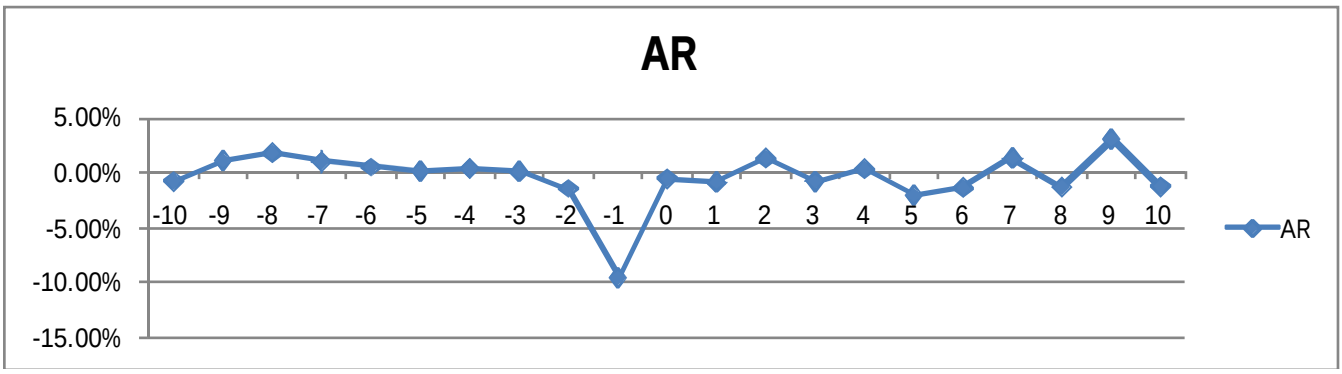

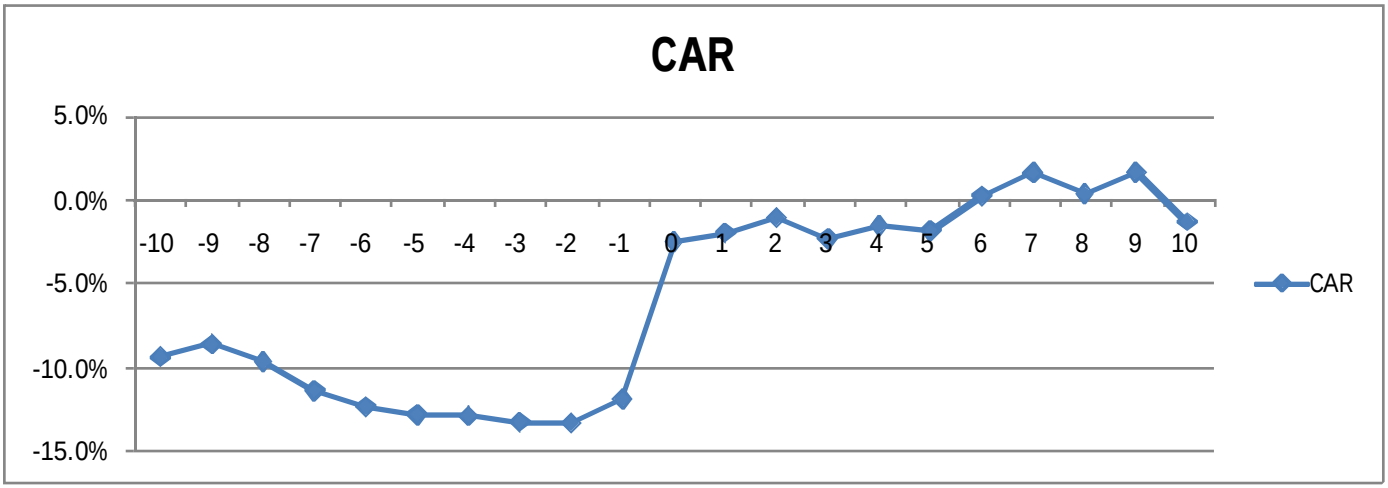

Conclusion:

An event study methodology has been used to explore the short-term shareholder wealth of the Tata Consultancy Services around the M&A event date i. e. 16th Oct. 2014. The merger of the CMC ltd. with the Tata Consultancy Services has been studied. This is the first study of stock market valuation and estimation of abnormal returns and cumulative abnormal returns using market model in the context of Indian mergers. The return was negative on the date of merger and insignificant. This event decrease in the value to the shareholders of bidder firm till second day after the announcement of merger and later on recovers the losses in next seven days. The findings of the study are relevant. It emerges that merger announcement in the Indian industry have not always positive and significant shareholders wealth effect for the bidder firm.

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