International Journal of Research in Advent Technology, Vol.7, No.6S, June 2019
E-ISSN: 2321-9637
Available online at www.ijrat.org

The Research Paper (Case Study) on: "The study of stock price dynamics around merger & acquisition case study of Indian firm Hindalco with Canadian firm Novalis".

Dr. Kapil Arora, Ajay Kumar Pandey

Abstract— The merger and Acquisition financial strategy has been the dominant sustainable management practice among Indian corporate particularly after economic liberation since early nineties despite the literature study on M&A , concluding that in majority of cases Acquirer company stock value decreases while stock value of target company increases after the merger. Still the merger & acquisition activity has been continuously increasing among Indian corporate also. Amid this backdrop this research studies the landmark merger of the Indian Aluminium raw material smelting and refining company Aditya Birla group Hindalco with Canada based Aluminium sheet production company Novalis. This merger was confirmed on 16.May.2007 with deal value of $6 billion in anticipation that low cost Aluminium supply from Hindalco and high cost Aluminium sheet production from Novalis with its further sales in the market of US, Europe and Canada would increase and cover the 50% of Hindalco revenue, thus increasing its profit margin substantially. This case study analyse this merger in terms of stock value of Hindalco increase and decrease post merger one year period to observe how market perceives this merger as is reflected through its stock price after merger in comparison to Hindalco-Novalis vertical merger anticipation. An Overall average gain in the Hindalco stock price after merger would indicate market perception of this merger as success and overall average loss of Hindalco stock value would indicate market perception of this merger as not successful. Thus the stock price dynamics of this prestigious Indian corporate merger case is studied for assessing the impact of merger.

The event study methodology is applied to study the impact of merger and acquisition on stock price dynamics (increase and decrease) of Hindalco for one year post merger period. The Abnormal Return (AR) and its adding up in subsequent days known as Cumulative Abnormal Return (CAR) is calculated using share price of Hindalco from BSE two years period before merger and one year period after merger confirmation date. The statistical inference of pre and post merger AR and CAR is assessed using SPSS software. The findings as is observer through post merger one year period CAR indicates that for most of the period there is significant decrease in CAR while for few period there is significant increase in CAR also, it states the through this Hindalco-Novalis merger, the stock value of Hindalco is eroded albeit with latent potential of its stock price gain also, therefore the stock dynamics of this merger reflects financial loss to Hindalco, which is also corroborated by financial analysis of Hindalco financial health post merger five year period. The study also indicates attainment of some synergies in this merger process.

Key Words: Stock Price Dynamics, Vertical Merger, Event Study Methodology, Abnormal Return, Cumulative Abnormal Return.**Introduction**

Highlight a section that you want to designate with a certain style, then select the appropriate name on the style menu. The style will adjust your fonts and line spacing. Do not change the font sizes or line spacing to squeeze more text into a limited number of pages. Use italics for emphasis; do not underline.

To insert images in *Word*, position the cursor at the insertion point and either use Insert | Picture | From File or copy the image to the Windows clipboard and then Edit | Paste Special | Picture (with "Float over text" unchecked).

IJRAT reserves the right to do the final formatting of your paper.

I. INTRODUCTION

The Merger and Acquisition (M&A) has been a dominant finance strategy not only in developed countries like US,UK and Europe but also in emerging economy like India to experience major breakthrough in terms of size, operation and scale .

The efficacy of M&A strategy can be assessed in term of share performance and financial performance of Acquirer firms both for short term and long term post merger period. This research case is an attempt to study both the share price impact and financial performance impact of one of the most prominent M&A case – Indian Aditya Birla Group,

doi: 10.32622/ijrat.76S201950

Hindalco with Canadian firm Novalis for long term period so as to come to definitive and clear conclusion.
The time scale for assessing the wealth increase is a significant consideration. The consideration of long term analysis of shareholder return is dependent on the efficiency perception of stock market that how effectively they factor in the future benefit and cost of M&A and reflect effectively into the share price at the time of merger. Then the time interval ('event window') that exhaust all the valuation effect of the merger ('event') is short. Analysis of any value change outside this window is not relevant and value changes outside the window is not connected to the event and are random. This short window places significant reliability on the effectiveness of capital market to incorporate before-hand and every information concerning merger into the stock price. However several studies stated that stock market reaction to merger events like accounting information, merger announcement, initial public offering, rights issue and dividend information impact the share valuation during merger announcement period, this evidence of 'stickiness' in stock market pricing suggest that stock market take some time to digest these event information or await more information to assess not only the extent of benefit but also the probability of their realization. Therefore the recent empirical studies have extended the event window up to longer period of one, two, three, five and even seven years.

But the longer event window create another problem that acquirer firm valuation undergoes change due to changes in strategic, operational or financial policies, which are not incorporated in longer window, thus the outcome of larger window becomes murkier. Hence the relevant effects of merger are likely to cover in window of one year post merger. This research case has therefore studied 'one year' post merger stock price abnormal return window and five year post merger financial performance window so as to effectively assess the impact of merger on stock price as well as financial performance.

II. REVIEW OF LITERATURE:

There has been significant body of literature available to assess the impact of merger and acquisition of acquirer and target firm shareholders, this study is focussed primarily on studies related to acquirer firm shareholder.

Andrade et al., 2001; Berkovitch and Narayanan., 1993; Bradley et al., 1983; Dennis and McConnell, 1986, studied the impact of merger and acquisition on acquirer firm shareholders and found post merger, share value of acquirer firm may increase or decrease but if the merger motive is synergy based then acquirer firm realizes positive wealth gain. Synergy results when the combined value of the firm after merger is greater than the sum of individual value of acquirer and target firm separately.

Trautwein, 1990; Yook, 2003, further found that positive wealth gain to acquirer firm is attributed to synergy, when there is operational synergy – combining firm in same industry; financial synergy-combined financial leverage with firms having different financial resources or managerial synergy – combining different managerial resources.

Jensen (1986) stated that merger and acquisition are likely to reduce the value of the firm, the availability of free cash flow reduces the value of firm.

Shleifer and Vishney (1989) stated that manager might make investment that increases managerial value but this does not increase shareholder return.
Further, zero or negative return are realised to be driven by hubris (Roll, 1986), managerialism (Seth et al., 2000) and empire building (Shleifer and Vishney, 1989)

Weston and Weaver (2001) observed that acquirer firm gains, when mergers are efficiency enhancing. Merger and Acquisition does not lead to gain if it is motivated by hubris or agency intention.
There are numbers of study on merger and acquisition, which documented that positive gain accrues to the acquirer firm shareholders which includes Beitel et al., 2004; Cakici et al., 1996; Doukas et al., 2002; Eckbo and Thorburn,2000; Kiymaz, 2003; Kohers and Kohers,2000; Maquieira et al., 1998; Markides and Ittner,1994; Schwert, 1996. The findings of these studies reported positive return varying from 0 to 7 percent in different windows, before and after merger announcement date.

On the contrary, there are further more literary work on merger and acquisition, which suggest negative return, varying from 1 to5 percent to the acquirer firm in different windows, before and after merger announcement; these includes work by Beitel et al., 2004; Corhay and Rad,2000; Datta and Puia, 1995; DeLong, 2001; Doukas et al, 2002; Goergen and Renneboog, 2004; Houston et al., 2001; Mitchell and Stafford,2000; Mulherin and Boone,2000; Sirower,1997; Walker, 2000.

Therefore, despite plethora of literature available on implication of merger and acquisition, the empirical evidence on stock value gain to acquirer firm is not conclusive. In other words, the existing literary

doi: 10.32622/ijrat.76S201950

work on finance and business strategy indicates that wealth effects on acquirer firm after merger and acquisition is mixed. The empirical finding on this subject is varied. While some studies reported negative CARs, other documents zero or positive CARs.

In a review paper on wealth performance of acquirer firm Bruner (2002) suggested that mixed result makes the conclusion of acquirer firm wealth gain more complex.

Kale and Singh (2005) studied value creation through merger in the post liberalization period in India. The study divides the period in two divisions 1992-97 and 1998-2002. The stock gain to the acquirer firm during the 1992-98 phases is five percent positive abnormal return post merger against the return to Indian firms who do not go merger and acquisition, the stock return during this phase is same for related and unrelated acquisition. The stock gain to the acquirer firm is more in 1992-97 phase than in 1998-2002 phase and during the phase 1998-2002,there is difference in stock return between related and unrelated acquisition, the stock gain is more for related mergers (+ 3.5%) than unrelated mergers (+1%).

In recent works, Barai and Mohanty (2010), Gubbi et al (2010), Karels et al (2011) and Zhu and Malhotra (2008) observed positive returns to acquirer firms in cross border mergers in emerging markets. These studies analyze the Indian markets as the special case. Rani et al (2010) have observed that primary motive of Indian mergers during the period 2003-2008 have been to take advantage of synergies, operating economies, increased market share and financial economies in order of importance as the desired synergies to be gained through corporate merger in India.

III. RESEARCH METHODOLOGY:

3.1 Objectives of the Study:

To determine the impact of M&A activity on financial health of Hindalco Industried Limited.
To determine the impact of M&A activity on stock price of Hindalco Industries Limited.
To determine the dynamics of stock price around M&A of Hindalco.

3.2 Hypothesis :

For Hindalco Industries Limited M&A case under study, following hypothesis are postulated:

Null Hypothesis:H#1: There is no significant impact of Merger and Acquisition on Hindalco Industries Limited stock price.

Alternate Hypothesis: H#2*:* There is significant impact of Merger and Acquisition on Hindalco Industries Limited stock price.

3.3 Event Study Technique / Method

In order to study the merger of Hindalco Industries Limited with Novalis on the post-merger share price of Hindalco Industries Limited, the Event study requires, merger confirmation date, Abnormal Return for Hindalco and Cumulative Abnormal Return; which are calculated as follows:

Merger confirmation date: (t=0) is the date on which the merger of Novalis by Hindalco Industries Limited in US$ 6 billion is confirmed by both Hindalco and Novalis shareholders, after much deliberations, which is taken as event day, 16.May.2007. t = -1,-2 and t = +1, +2 are the 1-day,2-day share price of Hindalco before 16.May.2007 and 1-day, 2-day share price of Hindalco after 16.May.2007, which constitute 2-day event window.
Likewise 5 day, 10 day, 15 day, 20 day, 30 day, 50 day, 70 day ,100 day, 150 day, 200 day and 260 day event windows are taken as event study, which are share prices of Hindalco up to 5 day, 10 day, 15 day, 20 day, 30 day, 50 day, 70 day, 100 day, 150 day, 200 day and 260 day before and after event day 16.May.2007. 250 trading days before 16.May.2007 is 2.May.2006 and 250 trading days after 16.May.2007 is 29.May.2008, so the share price data of Hindalco is taken from 2.May.2006 to 29.May.2008 constituting 250 day window before and after event date, which is further divided into 260, 200,150,100,70,50, 30,20,15,10, 5 and 2 day event window before and after event date. For benchmarking the market return, the one year estimation period before event window is taken between 2.May.2006 and 6.May.2005. The share price of Hindalco is taken from BSE website for the mentioned period.
To choose the event window for merger event is crucial as, if the event window is too large or far removed from merger date, the risk characteristics of the sample firm may have changed in the interval or if the event window is too short, the total impact of the merger would have been missed. Therefore 250 day window (covering approximate 1 year before and after the event day) is considered for the event study.

Abnormal Return (AR)*:* It measures the stock market's initial reaction to a merger event and division of any gains from any new information which becomes available to the market. Daily share price changes are tracked to compute daily

doi: 10.32622/ijrat.76S201950

Abnormal Return (AR_{it}) for the security i as on a particular day (t) by employing Market Model.

$AR_{it} = R_{it} - E(R_{it})$ .... Eq. (1)

Where, t= Day measured relative to an event.

AR_{it} = Abnormal Return on security i for day t.

R_{it} = Return on Security i during t.

It is calculated by taking, (stock price on day (t) – stock price on (t-1) day/ stock price on (t-1) day).

$E(R_{it})$= Expected rate of return on security i that it would ordinarily earn for a given level of market performance for day t.

This is measured using the market model denoted by the equation (2)

$E(R_{it}) = \alpha + \beta_i R_{mt}$ .... Eq. (2)

The study deduced the market performance by taking the BSE Sensex as the market benchmark. Values of α and β were estimated by regressing R_{it} (dependent variable) on R_{mt} (independent variable) for the 100 day period ranging from the period 6.May.2005 to 2.May.2006 (-250 day of event window), this is estimation window, to ensure that the parameter estimates were not contaminated with the confirmation day of the merger process. Market model parameters were calculated based on these 100 data points.

The Expected Return is calculated on excel sheet using intercept function on R_{it} (Hindalco return, x-axis) and R_{mt} (BSE return, y-axis) as α adding with slope function using R_{it} and R_{mt} as β and multiplying by R_{mt} (BSE return).

Finally Abnormal Return (AR) is calculated on excel sheet using equation (1), by subtracting Expected Return from actual Hindalco return , R_{it} .

Cumulative Abnormal Return (CAR)*:* In the days surrounding the merger (equation 3) were needed to examine whether shareholders of merging firm (Acquirer firm) gained from the merger.

$CAR = \sum_{t=K}^{T} AR_{it}$ ....Eq. (3)

Where CAR is the cumulated excess return from day –K through T.

IV. THE HINDALCO-NOVALIS MERGER: THE MERGER DEAL:

The 16.May 2007, marks the landmark merger confirmation day for Hindalco Industries Ltd., the leading Aluminium manufacturing company of Aditya Birla group from India with Atlanta based Novalis Inc.- a leading rolled Aluminium sheet producing company of Canada. The 17.May.2007 the next trading day after merger confirmation is taken as the event day for this case study. The Novalis now becomes the subsidiary of Hindalco. This merger ranks the Hindalco as the world's largest producer of the rolled Aluminium products , a leading primary Aluminium producer in Asia and copper producer in India. The Novalis merger with Hindalco, a downstream vertical merger, same industry merger covering production value chain, where smelting, refining and alumina sourcing capacity of Hindalco would be extended with Aluminium rolled sheet production technology and capacity of Novalis; was an all cash deal by paying all outstanding common shares of Novalis with the rate of US$ 44.93 per share, totalling a whopping US$ 6 billion. This transaction was finalised and approved by Novalis shareholders on 10.May.2007.

The Novalis was spinned off from Montreal based Alcan two years earlier than merger due to antitrust concerns and the fact that the vertical integration between Novalis and Alcan was not beneficial as Aluminium rolled product was priced on the model of summation of Metal cost and its fabrication charge where both were not complementing each other. The spinned off Novalis incurred losses up to the magnitude of US$ 2.5 billion till the merger in May.2007 as the price capping on its Aluminium can sheets sales due to its earlier contracts and rising Aluminium metal prices had snapped its profit potential, At that time Hindalco started negotiating its merger. It became meaningful as after Novalis merger with Hindalco, the contract would also be severed besides that after the merger the Hindalco with its smelting and refining capacities and proximity with Bauxite ore and captive coal mines would have transported primary Aluminium with much lower cost and after manufacturing Aluminium rolled products and selling it in American and European markets, a high potential of profits may be realised. But this cause for Hindalco-Novalis merger is refuted by some Canadian commentators, they argue that Novalis is not affected by metal price and Smelting facility and capacity as it obtained metal ingots from London Metal Exchange and the volatility in metal price is absorbed in the spread of its cost and fabrication charges, the products are sold at the price which covers the volatility spread, 80% is metal cost and 20% is fabrication cost and after the contract period would be over, Novalis would have regained all its profit.

doi: 10.32622/ijrat.76S201950

It was argued that Novalis shareholders agreed for its merger with Hindalco as its competitor bidder Alcoa from Pittersburg, though willing to dole out cash piles would have gone the Alcan way as Alcoa had vast resources of Aluminium mines but it was speculated that it may be merged in vertical integration downstream with another company and afterwards Novalis would have been left out, but there is no such possibility with Hindalco.
On the flip side, Novelis had ended up inheriting a debt load of almost $2.5 billion on a capital base of less than $500 m during the spin-off process. Though it marginally reduced debt, it made some losses too. On a net worth of $322 m, Novelis had a debt of $2.33 billion with a debt-equity ratio of 7.2.

In order to attract more business from soft drink manufacturers, Novelis promised four customers that it would not increase product prices even if raw material prices went up beyond a point. Raw material prices shot up by 39% a few months after Novelis signed those contracts. Novelis was forced to sell its products at lower prices than raw material costs to these four customers. These four customers like Coca Cola and General Motors accounted for 20% of Novelis's US$9 billion revenue. The management's judgement led to losses of $350 m in 2006.

The Hindalco-Novalis merger termed by some investor as ‘cheap buy’ by Hindalco due to incurring losses by Novalis does not appear rational as between 2005 and 2007 Novalis share prices increased from average US$23 TO US$44, an increase of around 90 percent and on the basis of that Novalis had bargained a good deal price for its shareholders, a mammoth US$ 6 billion which also includes its loan of US$ 2.5 billion. The share price offered by Hindalco was at 16.5% premium over prevailing market share price of Novalis.

The merger plan was accomplished through statutory plan of arrangement under Canadian law, under this arrangement a Special purpose Vehicle (SPV) AV Metals Inc as wholly owned subsidiary of Hindalco Industries was created which acquired 75,415,536 common shares of Novalis representing its 100% issued and outstanding common shares. Immediately after closing, AV Metal Inc. transferred all the shares of Novalis to its subsidiary AV Aluminium Inc.. After the Transaction is over, Novalis is delisted from New York Stock Exchange and Toronto Stock Exchange.

4.1 Aluminium Industry:
Aluminium, a silvery white metal, was the most abundant metallic element in the earth's crust and the most widely used non-ferrous metal. Aluminium did not occur in metallic form in nature. Bauxite was the principal aluminium ore from which aluminium was obtained. Approximately 25% of the world's aluminium production came from recycling aluminium scrap and the rest 75% from primary production. Its unique combination of properties like light weight, strength, flexibility, recyclability made aluminium ideal for a wide range of applications. Aluminium found a number of applications in packaging (e.g. beverage cans), transport (e.g. aircraft manufacturing, alloy wheels), electrical equipments, building and architecture (e.g. windows, roofing). The price of primary aluminium (ingots/billets) was market determined at LME (London Metal Exchange) whereas the upstream products' prices were determined by individual companies depending on the product quality. Prices of alumina were market determined but not traded at LME. That is, alumina prices were based on the prices of aluminium. Historically alumina traded at 13-15% of the price of aluminium.

4.2 Novalis Background:
It is world’s leading Aluminium rolled products producer, 19% of world’s Aluminium rolling sheets and products are produced by Novalis. It is largest rolling aluminium producer in Europe and South America and second largest in North America and Asia.

It produced aluminum sheet and foil products for customers in high-value markets including automotive, transportation, packaging, construction and printing. Its customers included General Motors, Ford, Anheuser-Busch, Alean, Kodak, Coca Cola among others. Novelis' ten largest customers accounted for 40% of net sales in 2005.
Novalis is also world leader in recycling of used beverage cans; it recycled around 35 billion of beverage cans annually (2006-07). It had operations in 11 countries with 12,300 employees.

4.3 Hindalco Background:
Hindalco Industries Limited, the Mumbai based flagship company of the Aditya Birla Group, was structured into two strategic businesses — aluminium and copper. Established in 1958, Hindalco commissioned its aluminium facility at Renukoot in Uttar Pradesh in 1962. It had grown to become the country's largest integrated producer of aluminium and ranked in the top quartile of low cost producers in the world. Hindalco's stock was traded on the Bombay Stock Exchange, the National Stock Exchange of India Limited and the Luxembourg Stock Exchange. A key aspect of Hindalco's strategy was continuous growth.

doi: 10.32622/ijrat.76S201950

The Company had taken two major initiatives in this direction in the recent past. In 1999, the company acquired a 74.6% controlling stake in Indian Aluminium Co. Ltd. (INDIAL), a leader in the alumina and semi-fabricated business. The second of the initiatives was a brown-field expansion of facilities. The expansion added 100,000 TPA to smelting capacity along with a 210,000 TPA increase in Alumina Refining Capacity and matching augmentation of power generation capacity. Hindalco had launched several brands like Aura for alloy wheels, Freshwrapp for kitchen foil and Ever Last for roofing sheets in the recent years".

Hindalco Industries Limited owned a 51% shareholding in Aditya Birla Minerals, which had mining and exploration activities in Australia. The company owned two R&D centres at Belgaum, Karnataka and Taloja, Maharashtra.

Birla Copper, Hindalco's copper division, was situated in Dahej in the Bharuch district of Gujarat. The copper unit at Dahej was the world's largest, single location copper smelter with a smelting capacity at 0.5 m TPA. The plant was backed by captive power plants, oxygen plants and by-product facilities for fertilizers and precious metals. A captive jetty with cargo-handling capacity of over 4 m TPA facilitated easy import of copper concentrate and other raw materials.

4.4 Deal Financing:

The Hindalco-Novalis merger transaction was executed through a Special Purpose Vehicle (SPV) AV Metal Inc., created as wholly owned subsidiary of Hinalco Industries Ltd in Canada, where all the Novalis outstanding common shares were transferred equalling the payment of US$ 6 billion by the SPV to the Novalis Inc. The US$ 3.5 billion out of US$ 6 billion was paid in cash by the SPV and remaining US$ 2.5 billion, loan amount of Novalis was also transferred to SPV, which has US$ 1 billion as term loan and US$1.5 billion as High Yield Loan, thus the transaction has increased the Debt Equity ratio of the Hindalco.

The cash component of US$ 3.5 billion was arranged as loan of US$ 2.8 billion from a consortium of three Banks, UBS, ABN AMRO and Bank of America, out of which US$ 1.4 billion was Bridge Loan with a Coupon Rate of 7.2 percent, after one year these three Banks would underwrite the Bridge Loan with UBS as lead lender, UBS being also the financial Advisor of Hindalco. The remaining US$ 700 million of cash component was arranged as US$ 450 million from the treasury of Hindalco and US$ 300 million from Essel Mining and Industries, a closely held company of the Group. The Hindalco after merger was expecting 50% of its revenue accruing through overseas operations and financing of Deal amount in the process.

V. EVENT STUDY:

Table 1: Event study: Hindalco M&A with Novalis : Event Date : 16.May.2007. : Deal Valuation: US$ 6 Billion.

S.No.	Day Window		Pre-Merger Mean	Std. Error Mean (SE)	Post-Merger Mean	Std. Error Mean (SE)	Correlation	t-value	Degree of Freedom (df)	Sig.(2-tailed) p-value	Significance Yes(Y) / No(N)
1	2 Day	Abnormal Return (AR)	-0.0026	.0047	-0.0133	.0021	1.0000	4.0570	2	0.1540	N
		Cumulative Abnormal Return (CAR)	-0.5145	.0036	-0.5260	.0077	1.0000	2.8520	2	0.2150	N
2	5 Day	Abnormal Return (AR)	-0.0018	.0053	-0.0078	.0033	-0.7850	0.7280	4	0.5070	N
		Cumulative Abnormal Return (CAR)	-0.5105	.0035	-0.5365	.0053	0.1690	4.4260	4	0.0110	Y

doi: 10.32622/ijrat.76S201950

3	10 Day	Abnormal Return (AR)	-0.0019	.0046	-0.0077	.0022	0.6620	1.6280	9	0.1380	N
		Cumulative Abnormal Return (CAR)	-0.5110	.0026	-0.5490	.0056	0.1850	6.5650	9	0.0000	Y
4	15 Day	Abnormal Return (AR)	-0.0008	.0034	-0.0006	.0046	-0.2870	-0.0360	14	0.9720	N
		Cumulative Abnormal Return (CAR)	-0.5097	.0020	-0.5526	.0059	-0.1240	6.5600	14	0.0000	Y

Source: Author's computation and compilation using SPSS software.

2-Day: On average, the decrease in post-merger AR (M = - 0.0133, SE = 0.0021), just two days after the event day 16.May.2007, than pre-merger AR (M = - 0.0026, SE = 0.0047) is statistically of no significance as t(1) = 4.0570, p(.15) > .05, r = 1.00, thus validating Null Hypothesis of insignificant decrease in post-merger AR.
On average, the decrease in post merger CAR (M = - 0.5260, SE = 0.0077) than pre-merger CAR (M = - 0.5145, SE = 0.0036) is statistically of no significance as t(1) = 2.8520, p(.21) > .05, r = 1.00, thus validating Null Hypothesis of insignificant decrease in post-merger CAR.

5-Day: On average, the decrease in post-merger AR (M = - 0.0078, SE = 0.0033) than pre-merger AR (M = - 0.0018, SE = 0.0053) is statistically of no significance as t(4) = 0.7280, p(.50) > .05, r = - 0.7850, thus validating Null Hypothesis of no significant decrease in post-merger AR.

On average, the decrease in post-merger CAR (M = - 0.5365, SE = 0.0053) than pre-merger CAR (M = - 0.5105, SE = 0.0035) is statistically significant as t(4) = 4.4260, p(.01) < .05, r = 0.1690, thus validating Alternate Hypothesis of significant decrease in post-merger CAR.

10-Day: On average, the decrease in post-merger AR (M = - 0.0077, SE = 0.0022) than pre-merger AR (M = - 0.0019, SE = 0.0046) is statistically of no significance as t(9) = 1.6080, p(.13) > .05, r = 0.6620, thus validating Null Hypothesis of no significant decrease in post-merger AR.
On average, the decrease in post-merger CAR (M = - 0.5490, SE = 0.0056) than pre-merger CAR (M = - 0.5110, SE = 0.0026) is statistically significant as t(9) = 6.5650, p(0.00) < .05, r = 0.1850, thus validating Alternate Hypothesis of significant decrease in post-merger CAR.

15-Day: On average, the slight increase in post-merger AR (M = - 0.0006, SE = 0.0046) than pre-merger AR (M = - 0.0008, SE = 0.0034) is statistically of no significance as t(14) = - 0.0360, p(.97) > .05, r = -0.2870, thus validating Null Hypothesis of no significant increase in post-merger AR.

On average, the decrease in post-merger CAR (M = - 0.5526, SE = 0.0059) than pre-merger CAR (M = - 0.5097, SE = 0.0020) is statistically significant as t(14) = 6.5600, p(0.00) < .05, r = - 0.1240, thus validating Alternate Hypothesis of significant decrease in post-merger CAR.

Table 2: Event study: Hindalco M&A with Novalis : Event Date : 16.May.2007. : Deal Valuation: US$ 6 Billion.

S.No.	**Day Window**		**Pre-Merger Mean**	**Std. Error Mean (SE)**	**Post-Merger Mean**	**Std. Error Mean (SE)**	**Correlation**	**t-value**	**Degree of Freedom (df)**	**Sig.(2-tailed) p-value**	**Significance Yes(Y) / No(N)**

doi: 10.32622/ijrat.76S201950

5	20 Day	Abnormal Return (AR)	-0.0002	.0027	0.0043	.0044	0.2430	-0.9480	19	0.3550	N
		Cumulative Abnormal Return (CAR)	-0.5078	.0018	-0.5249	.0121	-0.0790	1.3690	19	0.1870	N
6	30 Day	Abnormal Return (AR)	0.0018	.0026	0.0038	.0032	0.0490	-0.4940	29	0.6250	N
		Cumulative Abnormal Return (CAR)	-0.5141	.0031	-0.4870	.0129	0.1370	-2.1050	29	0.0440	Y
7	50 Day	Abnormal Return (AR)	-0.0007	.0024	0.0022	.0029	-0.1430	-0.7110	49	0.4800	N
		Cumulative Abnormal Return (CAR)	-0.5230	.0031	-0.4706	.0097	0.1810	-5.3920	49	0.0000	Y
8	70 Day	Abnormal Return (AR)	-0.0026	.0027	-0.0008	.0023	0.0980	-0.5320	69	0.5960	N
		Cumulative Abnormal Return (CAR)	-0.5028	.0065	-0.4806	.0078	-0.3360	-1.8950	69	0.0620	N

Source: Author's computation and compilation using SPSS software.

20-Day: On average, the increase in post-merger AR (M = 0.0043, SE = 0.0044) than pre-merger AR (M = -0.0002, SE = 0.0027) is statistically of no significance as t(29) = - 0.9480, p(.35) > .05, r = 0.2430 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the decrease in post-merger CAR (M = - 0.5249, SE = 0.0121) than pre-merger CAR (M = - 0.5078, SE= 0.0018) is statistically not significant as t(29) = 1.3690, p(.18) > .05, r = - 0.0790; thus validating Null hypothesis of statistically insignificant decrease in post-merger CAR.

30-Day: On average, the increase in post-merger AR (M = 0.0038, SE = 0.0032) than pre-merger AR (M = 0.0018, SE = 0.0026) is statistically of no significance as t(29) = - 0.4940, p(.62) > .05, r = 0.0490 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the increase in post-merger CAR (M = - 0.4870, SE = 0.0129) than pre-merger CAR (M = - 0.5141, SE= 0.0031) is statistically significant as t(29) = - 2.1050, p(.04) < .05, r = 0.1370; thus validating Alternate hypothesis of statistically significant increase in post-merger CAR.

50-Day: On average, the increase in post-merger AR (M = 0.0022, SE = 0.0029) than pre-merger AR (M = - 0.0007, SE = 0.0024) is statistically of no significance as t(49) = - 0.7110, p(.48) > .05, r = - 0.1430 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the increase in post-merger CAR (M = - 0.4706, SE = 0.0097) than pre-merger CAR (M = - 0.5230, SE= 0.0031) is statistically significant as

doi: 10.32622/ijrat.76S201950

t(49) = - 5.3920, p(0.00) < .05, r = 0.1810; thus validating Alternate hypothesis of statistically significant increase in post-merger CAR.

70-Day: On average, the increase in post-merger AR (M = - 0.0008, SE = 0.0023) than pre-merger AR (M = - 0.0026, SE = 0.0027) is statistically of no significance as t(69) = - 0.5360, p(.59) > .05, r = - 0.0980 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the increase in post-merger CAR (M = - 0.4806, SE = 0.0078) than pre-merger CAR (M = - 0.5028, SE= 0.0065) is statistically significant as t(69) = - 1.8950, p(.06) > .05, r = 0.6520; thus validating Null hypothesis of statistically insignificant increase in post-merger CAR.

Table 3: Event study: Hindalco M&A with Novalis : Event Date : 16.May.2007. : Deal Valuation: US$ 6 Billion.

S.No.	**Day Window**		**Pre-Merger Mean**	**Std. Error Mean (SE)**	**Post-Merger Mean**	**Std. Error Mean (SE)**	**Correlation**	**t-value**	**Degree of Freedom (df)**	**Sig.(2-tailed) p-value**	**Significance Yes(Y) / No(N)**
9	100 Day	Abnormal Return (AR)	-0.0018	.0020	-0.0008	.0019	0.0230	-0.3640	99	0.7170	N
		Cumulative Abnormal Return (CAR)	-0.4609	.0080	-0.4999	.0063	0.0880	3.9730	99	0.0000	Y
10	150 Day	Abnormal Return (AR)	-0.0018	.0015	0.0003	.0018	-0.0800	-0.8360	149	0.4050	N
		Cumulative Abnormal Return (CAR)	-0.3972	.0094	-0.5104	.0049	0.3760	12.7150	149	0.0000	Y
11	200 Day	Abnormal Return (AR)	-0.0019	.0012	0.0006	.0016	0.0090	-1.1880	199	0.2360	N
		Cumulative Abnormal Return (CAR)	-0.3501	.0092	-0.5115	.0042	0.1710	17.0040	199	0.0000	Y
12	260 Day	Abnormal Return (AR)	-0.0020	.0012	0.0008	.0015	0.0400	-1.4340	259	0.1530	N
		Cumulative Abnormal Return (CAR)	-0.2877	.0101	-0.4770	.0053	-0.4930	13.9230	259	0.0000	Y

Source: Author's computation and compilation using SPSS software.

100-Day: On average, the increase in post-merger AR (M = - 0.0008, SE = 0.0019) than pre-merger AR

doi: 10.32622/ijrat.76S201950

(M = - 0.0018, SE = 0.0020) is statistically of no significance as t(99) = - 0.3640, p(.71) > .05, r = 0.0230 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the decrease in post-merger CAR (M = - 0.4999, SE = 0.0063) than pre-merger CAR (M = - 0.4609, SE= 0.0080) is statistically significant as t(99) = 3.9730, p(0.00) < .05, r = 0.0880; thus validating Alternate hypothesis of statistically significant decrease in post-merger CAR.

150-Day: On average, the increase in post-merger AR (M = 0.0003, SE = 0.0018) than pre-merger AR (M = -

0.0018, SE = 0.0015) is statistically of no significance as t(149) = - 0.8360, p(.40) > .05, r = - 0.0800 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the decrease in post-merger CAR (M = - 0.5104, SE = 0.0049) than pre-merger CAR (M = - 0.3972, SE= 0.0094) is statistically significant as t(149) = 12.7150, p(0.00) < .05, r = 0.3760; thus validating Alternate hypothesis of statistically significant decrease in post-merger CAR.

200-Day: On average, the increase in post-merger AR (M = 0.0006, SE = 0.0016) than pre-merger AR (M = - 0.0019, SE = 0.0012) is statistically of no significance as t(199) = - 1.1880, p(.23) > .05, r = 0.0090 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the decrease in post-merger CAR (M = - 0.5115, SE = 0.0042) than pre-merger CAR (M = - 0.3501, SE= 0.0092) is statistically significant as t(199) = 17.0040, p(0.00) < .05, r = 0.1710; thus validating Alternate hypothesis of statistically significant decrease in post-merger CAR.

260-Day: On average, the increase in post-merger AR (M = 0.0008, SE = 0.0015) than pre-merger AR (M = - 0.0020, SE = 0.0012) is statistically of no significance as t(259) = - 1.4340, p(.15) > .05, r = 0.0400 thus validating Null Hypothesis of statistically insignificant increase in post-merger AR.

On average, the decrease in post-merger CAR (M = - 0.4770, SE = 0.0053) than pre-merger CAR (M = - 0.2877, SE= 0.0101) is statistically significant as t(259) = 13.9230, p(0.00) < .05, r = - 0.4930; thus validating Alternate hypothesis of statistically significant decrease in post-merger CAR.

Table 4: Event study: Hindalco M&A with Novalis : Event Date : 16.May.2007. : Deal Valuation: US$ 6 Billion:Findings.

S.No.	**Day Window**	**Post Merger Abnormal Return (AR)**	**Post Merger Cumulative Abnormal Return (CAR)**
1.	2-Day	Decrease (↓), Statistically of no-significance.	Decrease (↓), statistically of no significance.
2.	5-Day	Decrease (↓), Statistically of no-significance.	Decrease (↓), statistically significant.
3.	10-Day	Decrease (↓), Statistically of no-significance.	Decrease (↓), statistically significant.
4.	15-Day	Increase (↑), Statistically of no-significance.	Decrease (↓), statistically significant.
5.	20-Day	Increase (↑), Statistically of no-significance.	Decrease (↓), statistically of no significance.
6.	30-Day	Increase (↑), Statistically of no-significance.	Increase (↑), statistically significant.
7.	50-Day	Increase (↑), Statistically of no-significance.	Decrease (↓), statistically significant.
8.	70-Day	Increase (↑), Statistically of no-significance.	Increase (↑), statistically of no significance.
9.	100-Day	Increase (↑), Statistically of no-significance.	Decrease (↓), statistically significant.
10.	150-Day	Increase (↑), Statistically of no-significance.	Decrease (↓), statistically significant.
11.	200-Day	Increase (↑), Statistically of no-significance.	Decrease (↓), statistically significant.
12.	260-Day	Increase (↑), Statistically of no-significance.	Decrease (↓), statistically significant.

doi: 10.32622/ijrat.76S201950

VI. EVENT ANALYSIS OF HINDALCO MERGER WITH NOVALIS:

The Hindalco, the major Aluminium smelting, refining and sourcing company of not only India but of Asia, merger with Novalis, the major rolled Aluminium sheet producing company of Canada with market coverage of US, Canada and Europe; finalized with the total debt funding of $6 billion involving loans of $2.5 of Novalis, was confirmed on 17.May.2007. The Hindalco expectation from this merger, with high prices of Aluminium and further market coverage of US, Canada and Europe was of steep increase in its overall earning and overseas market accounting for 50% of it. The liquidity crunch in international financial market in September.2008 and subsequent decrease in international commodity prices including Aluminium had casted its effect as much lower overall revenues than expected and financial hardship in paying debt funding of $6 billion. These facts are reflected in Event Analysis.

The average post-merger Abnormal Return (AR) of Hindalco stock in Event Analysis states that it decreased for initial 2, 5 and 10 days which are statistically insignificant and further started increasing for 15, 20, 30, 50, 70, 100, 150, 200 and 260 days, which too are all statistically insignificant comparable to average same days pre-merger respectively. This indicate that market had information about future profitable aspects of this merger and which is incorporated into share price post merger particularly for initial one year; but this latent potential is not enough because of statistically insignificant ARs to translate itself into its assimilation over initial one year post merger period into increase in stock value reflected through Cumulative Abnormal Return (CAR). The CAR which is addition of all previous ARs, indicates through event analysis that CAR decreased for initial 2, 5, 10, 15, and 20 days which are all statistically significant barring 2 days which is statistically insignificant due to decrease in ARs also for initial 10 days but on 30 day CAR increases that too statistically significant which also is effect of AR increase 15 days afterwards. The CAR again decreased for 50 day which is statistically significant and increased for 70 days though statistically insignificant but afterwards CAR started decreasing continuously for 100, 150, 200 and 260 days and all these decreases are statistically significant. Therefore for one year post merger trading days CAR decreased for 2, 5, 10, 15, 20, 50, 100, 150, 200 and 260 days and it increases for only 30 and 70 days, indicating overall average post-merger Hindalco stock value erosion comparable to pre-merger one year period.

Thus the stock price dynamics of Hindalco through Event Study indicates that market has overall not perceived this Hindalco-Novalis merger as profitable one as for most of the post merger one year trading days CAR decreased means decrease in stock value but the CAR increase for 30 and 70 days is the silver lining of this merger and it indicates market acknowledges the future profitable potential of this merger.

doi: 10.32622/ijrat.76S201950

VII. FINANCIAL ANALYSIS:

TABLE 5: FINANCIAL ANALYSIS: HINDALCO M&A WITH NOVALIS : EVENT DATE : 16.MAY.2007. : DEAL VALUATION: US$ 6 BILLION.

		2003	**2004**	**2005**	**2006**	**2007**	**Pre-Merger Average**	**2008**	**2009**	**2010**	**2011**	**2012**	**Post-Merger Average**
	Investment Valuation Ratios												
1	Operating Profit Per Share (Rs)	133.29	160.06	244.94	21.79	34.6	**118.94**	26.64	17.12	15.29	18.59	15.65	**18.66**
2	Net Operating Profit Per Share (Rs)	540.68	671.39	1,026.42	97.95	157.96	**498.88**	155.79	106.81	101.68	124.1	138.89	**125.45**
3	Free Reserves Per Share (Rs)	613.9	683.89	760.51	77.84	103.16	**447.86**	138.43	86.31	98.72	108.14	118.08	**109.94**
	Profitability Ratios												
4	Operating Profit Margin(%)	24.65	23.83	23.86	22.25	21.9	**23.30**	17.1	16.03	15.04	14.98	11.26	**14.88**
5	Profit Before Interest And Tax Margin(%)	18.78	18.25	18.59	17.35	18.55	**18.30**	13.64	12.07	11.41	11.87	8.49	**11.50**
6	Gross Profit Margin(%)	24.59	23.42	23.74	22.08	22.27	**23.22**	14.02	12.48	11.59	12.08	8.67	**11.77**
7	Cash Profit Margin(%)	16.41	18.15	18.42	18.75	16.72	**17.69**	14.31	13.76	10.89	12	10.18	**12.23**
8	Net Profit Margin(%)	11.64	13.51	13.66	14.29	13.76	**13.37**	14.56	11.87	9.84	8.99	8.41	**10.73**
9	Return On Capital Employed (%)	13.08	14.05	17.53	15.37	19.07	**15.82**	12.44	9	7.46	8.9	6.15	**8.79**
10	Return On Net Worth(%)	9.4	12.23	17.34	17.23	20.65	**15.37**	16.54	9.38	6.86	7.19	7.1	**9.41**
	Liquidity And Solvency Ratios												
11	Current Ratio	1.2	1.06	1.03	1.12	1.22	**1.13**	1.08	1.2	1.02	0.96	1.01	**1.05**
12	Quick Ratio	1.04	0.83	0.58	0.73	0.66	**0.77**	0.53	0.88	0.39	0.34	0.55	**0.54**
13	Debt Equity Ratio	0.39	0.37	0.5	0.51	0.59	**0.47**	0.48	0.35	0.23	0.24	0.46	**0.35**

doi: 10.32622/ijrat.76S201950

14	Long Term Debt Equity Ratio	0.31	0.31	0.45	0.31	0.52	**0.38**	0.37	0.25	0.19	0.17	0.35	**0.27**

		2003	**2004**	**2005**	**2006**	**2007**	**Pre-Merger Average**	**2008**	**2009**	**2010**	**2011**	**2012**	**Post-Merger Average**
	Debt Coverage Ratios												
15	Interest Cover	9.36	8.87	11.83	11.37	20.9	**12.47**	13.63	10.43	4.3	5.89	10.22	**8.89**
16	Total Debt to Owners Fund	0.39	0.37	0.5	0.51	0.59	**0.47**	0.48	0.35	0.23	0.24	0.46	**0.35**
17	Inventory Turnover Ratio	5.14	5.35	4.1	2.83	4.32	**4.35**	4.32	5.16	3.63	3.43	3.8	**4.07**
18	Debtors Turnover Ratio	11.99	11.07	14.12	11.16	13.3	**12.33**	12.46	13.13	15.48	18.41	19.72	**15.84**
	Management Efficiency Ratios												
19	Investments Turnover Ratio	6.19	6.43	4.76	3.22	4.89	**5.10**	4.32	5.16	3.63	3.43	3.8	**4.07**
20	Fixed Assets Turnover Ratio	1.32	1.24	1.58	1.57	2.3	**1.60**	1.53	1.37	1.42	1.67	1.85	**1.57**
21	Total Assets Turnover Ratio	0.58	0.66	0.83	0.79	0.93	**0.76**	0.74	0.57	0.57	0.64	0.57	**0.62**
	Cash Flow Indicator Ratios												
22	Dividend Payout Ratio Net Profit	21.27	18.18	13.95	13.09	6.91	**14.68**	7.93	10.29	13.48	13.43	13.26	**11.68**
23	Dividend Payout Ratio Cash Profit	14.63	13.19	10.31	9.95	5.68	**10.75**	6.57	7.98	9.98	10.16	10.13	**8.96**
24	Earning Retention Ratio	81.46	79.82	84.47	86.07	93.16	**85.00**	89.78	88.17	82.57	87.04	85.72	**86.66**
25	**Earnings Per Share**	62.95	90.71	143.28	14.28	22.12	**66.67**	23.31	13.12	10.01	11.16	11.68	**13.86**

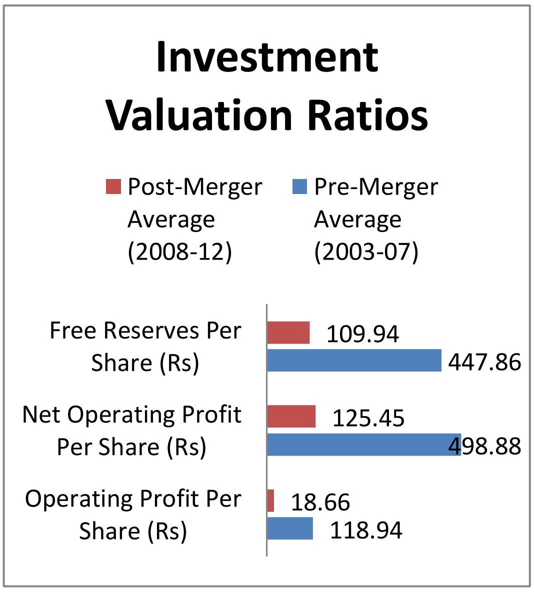
doi: 10.32622/ijrat.76S201950

VIII. FINANCIAL ANALYSIS OF HINDALCO MERGER WITH NOVALIS:

8.1 Investment Valuation Ratios:

Investment Valuation Ratios

	Pre-Merger Average (2003-07)	**Post-Merger Average (2008-12)**	**Impact Outcome**
Operating Profit Per Share (Rs)	118.94	18.66	↓ **84.31%**
Net Operating Profit Per Share (Rs)	498.88	125.45	↓ **74.85%**
Free Reserves Per Share (Rs)	447.86	109.94	↓ **75.45%**



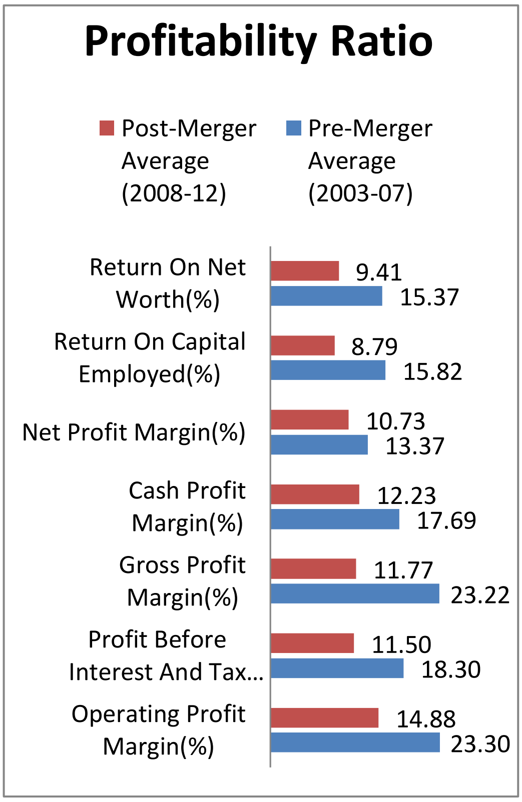
8.2 Analysis of Investment Valuation Ratio:

The Invest valuation for Hindalco-Novalis deal are compared for, average post merger five years after event date in May, 2007 which are 2008,2009,2010, 2011 and 2012 and average five years before pre-merger which are 2007, 2006, 2005, 2004 and 2003. The observation through this comparison for Operating Profit per share which is Revenue minus Cost of Goods Sold (COGS) minus marketing, sales, administrative and other overhead indirect costs per share or simply EBIT- Earnings before Interest and Tax per share; is negative, an decrease of 84.3 % indicating highly reduced earning capacity post merger. The observation for Net Operating Profit per share which is simply Profit After Tax (PAT) per share also indicates decreases of 74.8%, an obvious indication of financial loss for Hindalco merger Novalis, post-merger. Not only this Free Reserves per share which is profit amount earmarked for dividend payment per share are decreased by 75.5% for post merger period, clearly indicating decreased dividend for Hindalco shareholders post merger and hence erosion of Hindalco stock value post merger. The decrease in Investment Valuation Ratios also indicates spread out larger equity base due to merger of Hindalco and Novalis

8.3 *Profitability Ratios:*

Profitability Ratios

	Pre-Merger Average (2003-07)	**Post-Merger Average (2008-12)**	**Impact Outcome**
Operating Profit Margin(%)	23.30	14.88	↓ **36.12%**
Profit Before Interest And Tax Margin(%)	18.30	11.50	↓ **37.19%**
Gross Profit Margin(%)	23.22	11.77	↓ **49.32%**
Cash Profit Margin(%)	17.69	12.23	↓ **30.87%**
Net Profit Margin(%)	13.37	10.73	↓ **19.72%**



doi: 10.32622/ijrat.76S201950

Return On Capital Employed(%)	15.82	8.79	↓ **44.43%**
Return On Net Worth(%)	15.37	9.41	↓ **38.75%**

8.4 *Analysis of Profitability ratios:*

The Hindalco-Novalis merger deal was confirmed on 17.May.2007 and at that time Aluminium prices are quite good and Hindalco expected that semi-finished Aluminium products would be finished into high quality rolled Aluminium sheets at Novalis thus decreasing Aluminium sheet production cost and coverage of US, Canada and Europe market would increase revenue, thus increased profits. But Hindalco could not reduce the Aluminium sheet production cost and decrease in Aluminium price contributed to reduction of profitability for Hindalco. The heavy debt funding of $6 billion for this deal and consequent international liquidity crisis further acerbated the Hindalco profitability post merger.

Operating Profit Margin the exclusion of all, Cost of Goods Sold and Indirect costs like Marketing, Sales, Distribution, Administration and salaries from the Revenue, on an average post merger period declined by 36%; the Profit before Interest and Tax margin is similar to Operating Profit Margin except that here other expenses like advance and other miscellaneous payments covering all expenses excluding interest and tax are included, declined by 37%. Besides these, the Gross Profit Margin, which is revenue up and above Cost of Goods Sold (COGS) is also declined by 49%. All these profit margins indicate the earning capacity of merged Hindalco-Novalis entity and decline in all these ratios indicate increase in COGS (Direct costs) and indirect and overhead costs for the whole group and further low Aluminium prices and demand shrinkage in international market for the whole group.

The Net Profit margin, which is revenue up and above all COGS, Indirect expenses and Interest and Tax or otherwise known as Profit after Tax (PAT) is also declined by 19.7% post merger period, the cash profit margin, the proportion of cash out of Net profit margin is further declined by 30.9% for post merger period. This steep decline in overall profits for Hindalco merger with Novalis clearly indicates decreased revenue and increased cost for the merged entity.

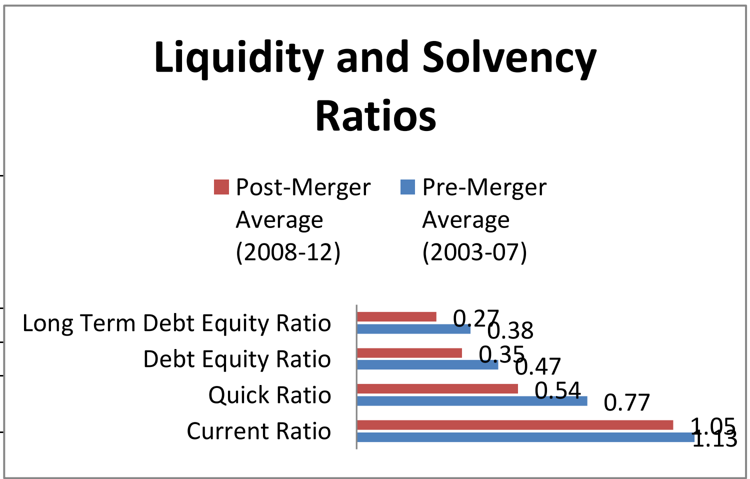
The decline in Return on Capital Employed (ROCE) by 44% post merger period, which is how much EBIT is more than the Total Debt (All interest bearing debts), is the clear sign of the inefficiency of capital employed which may be due to decline in revenue because of decline in commodity prices including Aluminium product in international market and recessionary international market condition due to international liquidity crisis the post merger period.

The Return on Net Worth (RONW) which is ratio of PAT and Net Worth (Shareholder's Capital) is also declined by 38.7% post merger period signalling that shareholder's capital is not efficiently utilized for profit generation.
The deep decline in all profitability ratios also indicates heavy loss to Hindalco after its merger of Navalis.

8.5 Liquidity And Solvency Ratios:

Liquidity And Solvency Ratios

	Pre-Merger Average (2003-07)	**Post-Merger Average (2008-12)**	**Impact Outcome**
Current Ratio	1.13	1.05	↓ **6.39%**
Quick Ratio	0.77	0.54	↓ **29.94%**
Debt Equity Ratio	0.47	0.35	↓ **25.42%**
Long Term Debt Equity Ratio	0.38	0.27	↓ **30.00%**



doi: 10.32622/ijrat.76S201950

8.6 *Analysis of Liquidity and Solvency Ratios:*

The decrease in Current Ratio which is ratio of Current Assets (Cash, Marketable Securities, Accounts Receivables and Inventory) and Current Liabilities (Debt and Accounts Payable) by 6.39% indicates liquidity crunch for Hindalco post merger period. The Quick Ratio which indicates easier and instantaneous liquidity position as it is ratio of Current asset minus Inventories and Current Liabilities, here Inventories are excluded from Current Assets as converting inventories into cash usually takes some time; is also decreased by 29.9%. The decrease in both Current and Quick ratios indicates severe liquidity crunch and revenue shortfall and also financial stress to pay debt funding of $6 billion of this merger deal.

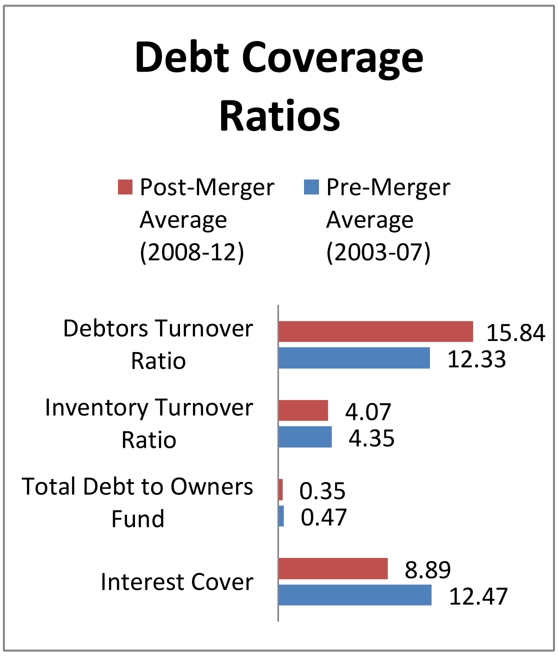
The Debt Equity ratio (D/E), is the ratio between Total Debt (Lender's money) and Total Net Worth (Shareholder's equity), which is decreased by 25.4% post merger period, this is because of much expanded equity base. The post merger D/E ratio is 0.35, which is much less than conventional 2:1 D/E ratio, it indicates both high debt as well as expanded equity base for Hindalco.

The long term Debt Equity ratio which covers period of more than one year is also decreased by 30% for post merger period but at average of 0.27 which is much below normal 2:1 ratio. These Liquidity and Solvency ratios indicates that though Hindalco has liquidity decline post merger period but with expanded equity base it has managed its high debt of $6 billion efficiently.

8.7 Debt Coverage Ratios:

Debt Coverage Ratios

	Pre-Merger Average (2003-07)	**Post-Merge r Average (2008-12)**	**Impact Outcome**
Interest Cover	12.47	8.89	↓ **28.65%**
Total Debt to Owners Fund	0.47	0.35	↓ **25.42%**
Inventory Turnover Ratio	4.35	4.07	↓ **6.44%**
Debtors Turnover Ratio	12.33	15.84	↑ **28.48%**



8.8 Analysis Of Debt Coverage Ratios:

The Interest Coverage ratio, which is ratio between EBIT and Interest is an indicator of debt servicing capability of the firm, it conveys how many times interest payment can be covered by basic earning which is overall earnings before interest and tax; is declined by 28.6% means post merger Hindalco EBIT is declined as well as its Interest amount due to debt funding of $6 billion.

The debt funding of $6 billion is reflected in decrease of Total Debt to Owners Fund (Total Net Worth) by 25.4%.

The Inventory Turnover ratio which conveys how quickly Inventories are converted into receivables through sales is ratio between Sales and Average Inventory; is declined by 6.44%. It indicates both decline in Aluminium price and its demand in inernational market.

The Debtors Turnover ratio, which conveys how quickly Accounts Receivables (Debtors) are converted into sales or cash, is increased by 28.3% in post merger period which is a positive sign indicating reliable credit worthy customers who honours credit sales on time and provides regular streaming cash flow to Hindalco.

doi: 10.32622/ijrat.76S201950

The above Debt Coverage Ratios conveys that Hindalco has not been able to increase enough of earning from merger of Novalis effectively post merger.

8.9 Management Efficiency Ratios:

Management Efficiency Ratios

	Pre-Merger Average (2003-07)	**Post-Merger Average (2008-12)**	**Impact Outcome**
Investments Turnover Ratio	5.10	4.07	↓ **20.20%**
Fixed Assets Turnover Ratio	1.60	1.57	↓ **2.12%**
Total Assets Turnover Ratio	0.76	0.62	↓ **18.47%**

8.9 Analysis Of Management Efficiency Ratios:

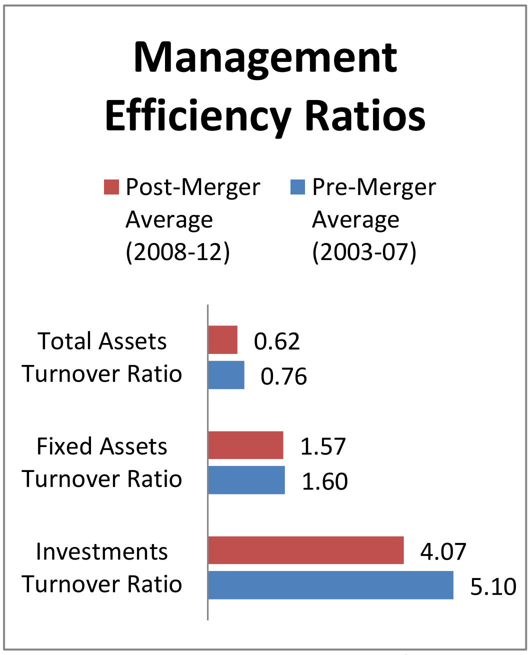
The Investment Turnover Ratio, which is ratio between Sales and Investment (ROCE or Net Asset, Net Worth plus Total Debt) and conveys how efficiently lender's and shareholder's money is converted into sales (cash); is declined by 20.2% post merger period, indicating poor sales and reduced earning.

The Fixed Asset turnover Ratio, which is ratio between Sales and Net Fixed Asset (Adjusted with depreciation) and conveys how quickly Fixed Assets are converted into sales (cash), is decreased by 2.12%, which is not high decline, indicates reduced earnings from Hindalco-Novalis post merger period and fair utilization of Net Fixed asset by Hindalco.

The Total Asset Turnover Ratio, which is ratio between Sales and Total Asset (Net Fixed Asset and Current Asset) and conveys how quickly Total Assets are turned into Sales (cash), is decreased by 18.5% post merger period, which also indicates reduced earnings from Hindalco-Novalis merger .

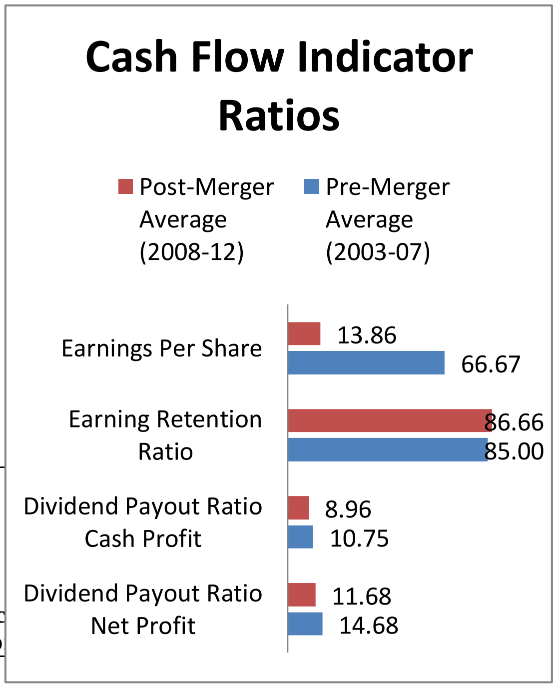
The decline in Management ratios conveys reduced revenue generating capacity of hindalco-Novalis merger due to its inability to reduce cost of Aluminium rolled sheet, decreased Aluminium price and its demand in international market

8.10 Cash Flow Indicator Ratios:



Cash Flow Indicator Ratios

	Pre-Merger Average (2003-07)	**Post-Merger Average (2008-12)**	**Impact Outcome**
Dividend Payout Ratio Net Profit	14.68	11.68	↓ **20.45%**
Dividend Payout Ratio Cash Profit	10.75	8.96	↓ **16.63%**
Earning Retention Ratio	85.00	86.66	↑ **1.95%**
Earnings Per Share	66.67	13.86	↓ **79.21%**



doi: 10.32622/ijrat.76S201950

8.11 Analysis Of Cash Flow Indicator Ratios:

The Dividend Payout Ratio for Net Profit and Cash Profit both decreased by 20.5% and 16.6% respectively in post merger period, which is indicative of financial hardship faced by Hindalco in providing dividends to its shareholders post merger period and it also indicates Hindalco stock price decrease in post merger period. The increase in Earnings Retention Ratio by 2% indicates that Hindalco in post merger period is still providing some capital for capacity building which is indicative of its financial effort for increase its profitability and retain shareholders confidence.

The decline in Earning per Share that is Profit After Tax (PAT) per outstanding shares, by 79.2% indicates expanded equity base of Hindalco-Novalis merger entity and also profitability decline of this entity.

IX. CONCLUSION OF HINDALCO MERGER WITH NOVALIS, ON ITS STOCK DYNAMICS:

The Hindalco merger with Novalis was confirmrd on 17.May.2007 with debt funding of $6 billion. The Hindalco was highly optimistic about this merger as with their own alumina sourcing through bauxite ore, proximity with captive coal mine and smelting and refining capabilities it produces low cost semi-finished Aluminium in India, which when transported to Novalis plant in Canada for final production of rolled out high quality Aluminium sheet, they would be able to reduce the overall Aluminium sheet production cost. And when Hindalco would sold this Aluminium sheet to its extended markets of US, Canada and Europe after the merger at prevailing Aluminium market price, its earnings would become so high that overseas earning would cover 50% of its total earnings, and it may cover the debt funding of $6 billion quite comfortably.

The prevailing world economic scenario particularly of reduced Aluminium price and its demand in international market due to recessionary economic condition caused by international liquidity crisis in September 2008; had scuttled the earning expectation of Hindalco through its Novalis Merger. The Hindalco could not reduce the semi-finished Aluminium production cost in India due to rise in production cost and subsequently its Aluminium sheet production cost in Novalis plant and further due to reduced demand for Aluminium and its price, the Hindalco earning potential dropped down considerably. The International liquidity crisis further exacerbated Hindalco debt paying capacity and its financial profitability.

The event study captures the above mentioned realities of Hindalco-Novalis merger. The one year post merger event study states that Cumulative Abnormal Return (CAR), which is accumulation of all previous Abnormal Returns (AR), decreases for most of the one year period on 2, 5, 10, 15, 20, 50, 100, 150, 200 and 260 days and barring 2 and 20 days all decreases are statistically significant. This clearly indicates erosion of Hindalco stock value post merger and states that market information incorporation into Hindalco stock price is indicative of its reduced earning and profitability. The event study starkly conveys that post merger Hindalco stock value decreased. This outcome of Event study is also reinforced by Financial Analysis of Hinalco-Novalis merger. The post merger 5 years period on average witnessed decrease in Investment Valuation, Profitability, Liquidity & Solvency, Debt Coverage, Management Efficiency and Cash Flow Indicator Ratios; a visible sign of reduced sales, revenue and profitability post merger comparable to pre merger same period.

The observation of post merger Abnormal Return (AR) of Hindalco-Novalis merger states that AR decreased on 2, 5, and 10 days and from 15 days onwards to 20, 30, 50, 70, 100, 150, 200 and 260 days it continuously increased though all these initial decrease and subsequent increase are statistically insignificant, this is silver lining of Hindalco-Novalis merger it indicates market has also incorporated information about future earning and profitability potential of this merger into Hindalco stock price, it has acknowledged the latent potential of this merger; though this is not enough to provide Hindalco stock price increase post merger particularly one year period.

The silver lining of latent potential of this merger is also indicated by financial Analysis, the Debt Equity ratio decreased by 25%, it means Hindalco in spite of Financial hardship had managed to pay much of its debt funding of $6 billion and reduced its D/E ratio. The Earning Retention ratio increase of 2% also indicates Hindalco investments in merged entity has increased and thus production capacity building and refining and synergy between Hindalco and Novalis is in progress.

Therefore the Hindalco-Novalis merger case trough Event Study and subsequent Financial Analysis conveys that Hindalco stock value post merger is decreased but the merger still has latent potential of higher earnings and profitability, whether this latent potential will be realised in future is also uncertain.

The success, failure of this merger cannot be judge through Event Study and Financial analysis of this case.

X. CONCLUSION

The findings of Event Analysis and Financial Analysis for Hindalco Novalis merger involving $6 billion are complementary to each other, they both reinforce each

doi: 10.32622/ijrat.76S201950

other. The stock price dynamics of Hindalco-Novalis merger as observed through Cumulative Abnormal Return (CAR) of stock price clearly indicates decrease in stock value post merger one year period and the decrease is also significant but with exception to stock price increase for 30 and 70 day window. This decrease in stock price of Hindalco, for most of the post merger period but with stock price increase also for two windows in mid phase of 30 and 70 days, clearly indicates Hindalco stock value erosion post merger but with latent potential of stock gain also. The Hindalco merger from its shareholders point of view is complete failure, which is also reinforced by decrease in post merger profitability, investment valuation, liquidity and solvency and management efficiency financial ratios, for post merger five year period. Thus the Hindalco-Novalis merger one year post merger stock price dynamics is reflective of this merger five year post merger period financial health.

But this is not the final judgement about Hindalco-Novalis merger failure as it also contain seed of latent potential of stock gain and increase in financial health as there is also significant in CAR increase in two windows and increase in financial ratio like decrease in D/E ratio, which is positive sign and increase in Earnings Retention ratio.

REFERENCES

[1] Andrade, G., Mitchell, M., & Stafford, E. (2001). New evidence and perspectives on mergers. Journal of Economic Perspectives, 15(2), 103–120.

[2] Barai, P., & Mohanty, P. (2010).Short term performance of Indian acquirers – effect of mode of payment, industry relatedness and status of target. Retrieved from SSRN: http://ssrn.com/abstract = 1697564.

[3] Beitel, P., Schiereck, D., & Wahrenburg, M. (2004) Explaining M&A successin European Banks. European Financial Management, 10(1), 109-139.

[4] Berkovitch, E., & Narayanan, M. (1993). Motives for takeovers: An empirical investigation. Journal of Financial and Quantitative Analysis, 28(3), 347–362.

[5] Bradley, M.,Desai,A.,&Kim, E.H. (1983). The rationale behind inter-firm tender offers. Journal of Financial Economics, 11(1–4), 183–206.

[6] Bruner, R. F. (2002). Does M&A pay? A survey of evidence for the decision maker. Journal of Applied Finance, 12 (Spring/Summer), 48–68.

[7] Cakici, N., Hessel,C., & Tandon, K. (1996) Foreign acquisition in the United States: Effect of shareholder wealth of foreign acquiring firms. Journal of Banking and Finance, 20(2),307-329.

[8] Corhay, A., & Rad, A.T. (2000). International acquisition and shareholder wealth: Evidence from the Netherland. International Review of Financial Analysis. 9(2), 163-174.

[9] Datta, D.K., & Puia, G. (1995).Cross-border acquisition: An examination of the influence of relatedness and cultural fit on shareholder value creation in US acquiring firms. Management International Review, 35(4), 337-359.

[10] DeLong, G. (2001).Stockholder gains from focussing versus diversifying bank mergers. Journal of Financial Economics, 59(2), 221-252.

[11] Dennis, D. K., & McConnel, J. J. (1986). Corporate mergers and security returns. Journal of Financial Economics, 16(2), 143–188.

[12] Doukas, J., & Travlos, N. G. (1988). The effect of corporate multinationalism on shareholders wealth: Evidence from international acquisitions. Journal of Finance, 43(5), 1161–1175.

[13] Eckbo, B. E., Giammarino, R. M., & Heinkel, R. L. (1990). Asymmetric information and the medium of exchange in takeovers. Review of Financial Studies, 3(4), 651–676.

[14] Goergen, M., & Renneboog, L. (2004). Shareholder wealth effects of European domestic and cross-border takeover bids. Euopean Financial Management, 10(1), 9–45.

[15] Gubbi,S., Aulakh,P., Ray, S., Sarkar, M.B., & Chittoor, R.(2010), Do international acquisition by emerging economy firms create shareholder value? The case of Indian Firms. Journal of International Business Studies, 41(3),397-418.

[16] Houston, J., James, C., & Ryngaert, M. (2001).Where do merger gain come from? Bank merger from the perspective of insiders and outsider. Journal of Financial Economics, 60(2-3), 285-331.

[17] Jensen, M. (1986). Agency costs of free cash flow, corporate finance, and takeovers. American Economic Review, 76(2), 323–329

[18] Kale, P., & Singh,H.(2005). Acquisitions and alliances: Indian Companies and value creation, TMTC Journal of Management, 3(January), 13-18.

[19] Kiymaz, H. (2003). Wealth effect for US acquirers from foreign direct investments. Journal of Business Strategies, 20(1), 7–21.

[20] Kohers, N., & Kohers, T. (2000). The value creation potential of high-tech mergers, Financial Analysts Journal, 56(3), 40-50.

[21] Markides, C. C., & Ittner, C. D. (1994). Shareholder benefits from corporate international diversification: evidence from U.S. international acquisitions. Journal of International Business Studies, 25(2), 343–366.

[22] Mitchell, M., & Stafford, E. (2000). Management decisions and long-term stock price performance.Journal of Business, 73(3), 287-329.

[23] Mulherin, J. H., & Boone, A. L. (2000). Comparing acquisitions and divestitures. Journal of Corporate Finance, 6(2), 117–139.

[24] Rani, N., Yadav, S. S., & Jain P. K.(2010). Corporate merger practices in India: An empirical study. In Proceedings of tenth global conference on flexible systems management GLOGIFT10, graduate school of system design and management collaboration complex. Japan: Hiyoshi Campus, Keio University.

[25] Roll, R. (1986). The hubris hypothesis of corporate takeovers. Journal of Business, 59, 197–216.

[26] Seth, A., Song, K. P., & Pettit, R. (2000). Synergy, managerialism or hubris? An empirical examination of motives for foreign acquisitions of US firms. Journal of International Business Studies, 31(3), 387–405.

[27] Shleifer, A., & Vishney, R. W. (1989). Management entrenchment: the case of manager specific investments. Journal of Financial Economics, 25(1), 123–139.

[28] Trautwein, F. (1990). Merger motives and prescriptions. Strategic Management Journal, 11(4), 283–295.

[29] Vishwanath,S.R., Hindalco: The Novalis acquisition, Asian Case Research Journal (ACRJ), Volume 17, Issue 1, 97-121(2013).

[30] Yook, K. C. (2003). Larger return to cash acquisitions: signalling effect or leverage effect? Journal of Business, 76(3), 477–498.

[31] Zhu, P., & Malhotra, S. (2008). Announcement effect and price pressure: An empirical study of cross-border acquisition by Indian firms. International Research Journal of Finance and Economics, 13(February), 24-41.

doi: 10.32622/ijrat.76S201950