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ALTERNATIVE MEASURE OF SHAREHOLDER'S WEALTH: A REFINED EVENT STUDY APPROACH IN MERGER OF BANKS

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Abstract

This is to unfold another approach to Event Study Methodology(ESM) and even a light on Post–Event Window &concept of Cumulative Average Residuals (CARs). Econometrics of Event Studies has been used.

The Null Hypothesis can not be accepted as the evidence supports the benefits accruing to shareholders, particularly in short and very short Event Windows and even, towards the end, though high returns are subsiding, but, still, holds market sentiments on a positive side.

Though, results lack generalizability as the sample was not comprehensive, still, it is a good attempt as a basis for future studies as has advanced on a sound work and tried to throw light on some new facets.

As per understanding, study can be very eminent for various spheres like Banking companies, Regulators Reserve Bank of India (RBI)&Securities and Exchange Board of India (SEBI), Policy makers and area Experts as it touches the stock phenomena incase of banks mergers, paving way for a sound calculation of actual benefits to stockholders of these banks as well a check on malpractices like insider trading.

Keywords - Event Study Methodology, Cumulative Average Residuals, Bank Mergers etc.

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Introduction

This paper touches the core area of the Financial Sector, i.e. Banking. While Banking system had a strong improvement since nationalization, still, there was a washing away of profits as the efficiency had decreased. One strong reason was attributed to immense regulations in form of Directed Investments, Directed Credit etc. Then, came the reforms of Narasimham Committee (1991), Narasimham Committee (1998), BASEL Norms - I, II, III, Competition from foreign banks (relaxed FDI norms came into force from 2009), all paving way for formation of Mega Banks having a strong capital base, can stand up for adequate risk provisioning measures and have as much competence as of the huge Global banks & thus, inception of the concept of Consolidation among Indian Banks. There are various forms of Consolidation like Acquisitions, Joint Ventures etc. Here, Mergers will be deemed among them. It's momentum dates back to LPG (Liberalisation, Privatisation and Globalisation) era of 1990s in Indian economy & has become so imperative that every now & then, their news keep cropping up. Though the last news came up for merger among Bank of Baroda, Dena and Vijaya Bank in September,2018 but it still has not seen the light of the day as is under process. So, the completed last mergers were of State Bank of India & it's five Associate Banks and Bharatiya Mahila Bank on 1st April,2017. Therefore, the paper goes a little back to cover better cases of Consolidation of Banks from 2007 – 2018. Three such cases have turned up & all are market-driven or Voluntary Mergers. There are various ways of measuring performance of merged Banks like ratio analysis, Efficiency studies etc. Here, gains accruing to shareholders of Acquiring banks have been examined.

Scope of Study

It is confined to mergers classification under Corporate Restructuring and in area, limited to three recent past mergers in ten years among Indian banking companies. But, results can be broadened cautiously, particularly to market motivated mergers as is supported by various past literatures as well which will follow in below sections.

Review of Literature

It covered both National & International studies ranging across different periods, techniques, Indian Scheduled Commercial banks to Foreign banks. Repousis(2016) examined earnings on stocks of Greek banks and concluded that results of elections were as expected and political information did not influence stock market as no proof of

any party's involvement in exploitation of bank's shares in elections was observed. Bergmann, Savoia, Souza and Mariz(2015) analysedreactions of stock market to announcement of merges taking 40 acquisitions in Brazilian banking sector from 1994-2011 and opined that due to lack of prevalence of both positive or negative returns, therefore, transactions can be sensed in different ways like positive can be attributed to operational and financial synergy and negative to inefficient decisionmaker rewarding system, excess payments made and monopolistic market structure. Amit and Bammi(2017) examined impact of leverage in Indian stock market deploying asymmetric Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model and asserted that leverage had influenced all the periods.Kandil and Chowdhury (2015) calculated annual abnormal returns using Buy and Hold Abnormal Returns to see impact of Merger and Acquisition (M and A)

on a sample of 587 UK Banks dealing in Islamic financial services within 14 industries over a period of 5 years deeming 1999 to 2009 period for sample selection and found that both variables – Merger- Non-Merger and Sector of Industry impacted both RoE (Return on Equity) and RoI (Return on Investment). Arik and Kutan(2015) did a vast study and came out with positive relationship between no. of deals in a country and it's CAR. Also, CAR has turned up significantly positive, except for the Utilities sector, but, did recommend an objective analysis across countries and sectors. Tan and Hooy(2003) brought out volatility pattern in Malaysian banking industry for a period of appx. 4 years, stressed on significance of consolidation as a long – term development strategy as stability itself indicated the positive feedback of market on the mergers.

Gap in Literature

It is that till date, nothing can be concluded with concreteness about the anticipated gains to the shareholders of acquiring banks.

Research Objectives

They are both **Conceptual** and **Empirical** in nature.At first, to suggest an alternative measure for calculation of Abnormal Returns through Estimation and Event Window after a thorough study of the Background & Concept of ESM.Next, to throw light on Post-Event Window, which is hardly mentioned in Empirical researches & Justification

for it's use. Then, to provide Robust test for validation of results. And, empirically ifthere is an evidence of significant benefits accruing to shareholders of Acquiring firms.

Hypothesis

Based on above Empirical objectives and since the focus is mostly on the mean of abnormal returns,it is as follows :

H_0 :Shareholders of Acquiring banks do not gain on announcement of Mergers, i.e. Mean Abnormal Returns/ Average Residuals (AR) at time t=0, i.e. A =0& CAR=0

H_1 : Above Average effect has a sign, i.e. either Positive or Negative i.e. AR $\neq$ 0 & CAR $\neq$ 0

Research Design/ Methodology

Data Analysis Technique

ESM as mentioned in the Working Paper on " Econometrics of Event Studies " by Kothari and Warner (2006) has been used. The Technique intends to study the reception of the stock market of a number of companies, which are vulnerable to a same **event**, here, mergers of banks in form of returns accruing to them on and around the announcement of that event. Thereby, after the clarity of the Event, next, we look for it's exact announcement in the public domain as this day or even moment holds immense relevance for calculation of above returns. This day is deemed as Day 0. The aforementioned returns can then be segregated as follows :

the return on the security for time period t relative to the event, R_{it}, is:

$R_{it} = K_{it} + e_{it,}$ where,

R_{it} - Actual/ Observed Return of i^{th} stock at t^{th} time

K_{it}-Normal/Expected/Predictedreturn given any specific Model to calculate Normal returns

e_{it} -Abnormal or Unexpected or Excess returns or Residuals (Unsystematic component of bank's stock return)

Equivalently, e_{it} = Returns subject to occurrence of the event

-Expected return had the event not been there. & Therefore, $R_{it} = E[R_{it} | X_t] + \xi_{it,}$ where X_t is the conditioning information at time t.

$E[\xi_{it}] = 0$ and $Var[\xi_{it}] = \sigma_{\xi i}^2$

$E[R_{it} | X_t] = \alpha_i + \beta_i R_{mt,}$ where,

α_i - Intercept term which is return accruing in a time frame, but, not related to market β_i -Explains relation between returns on a particular bank's stock and that of market. R_{mt}- Return on Market Index on day t But, for above, a clean period, technically known as ESTIMATION period is chosen to estimate the parameters α_i and $\beta_i$of the Market model.There are various other models also available to measure Expected Returns like Fama& French – Three Factor Model, Constant Mean Return Model, Index model (Market-Adjusted Return model).

Priority of Short over Long Horizon Methods

While methods considering long periods have bettered, but, some intense problems are still there as substantiated by the literature also. Kothari and Warner (1997, 2006) have already warned about outcomes following from long period studies. Next, Lyon, Barber and Tsai (1999) went one step further and reported that even if the best available approaches are utilized, the results could lead todeception. All aforementioned underline and considerably empower prior indications given by Brown and Warner(1980)But, the above is quite distinctive incase if short period approaches are taken into account as they come out with true and genuine results, which very naturally augment their credibilityin comparison to the former.To add, Fama(1991) goes on to deem them as the neatest proofs for the stated measure. Moreover, the former also has other problems of less power and joint-test as stated assumptions also need to hold good.
Windows employed -

Estimation Window : It has been taken of 6 months (appx. 9 months prior the announcement of merger).NOTE :One– One and a half month gap has been left between above& the following Window to avoid traces of Insider Trading in a better way & have more reliable results. (Source : Author's Own as per understanding) Next,

Event Window: This is for 6 Short (sub-periods) Windows of trading days (0,0); (-1,+1); (-3,+3); (-7, +7); (-15,+15); (-30, +30) covering a near period of three and a half months (one and a half month pre and post the event) And, Post - Event Window : It mostly caters to Information about Efficiency of market & also, studies focusing on long-horizons following an event can provide key evidence on market efficiency (Brown and Warner, 1980, and Fama, 1991) As above is a Short-horizon work , therefore, has not been studied.

Sample Size& Period

As mentioned before, all the mergers announced in the period from 2007-2018, have been taken as follows :

S.No.	Name of Acquiring Bank	Name of Acquired Bank	Date of Announcement
1.	Kotak Mahindra Bank Ltd	ING Vysya Bank Ltd.	20th November, 2014
2.	ICICI Bank Ltd.	Bank of Rajasthan Ltd.	23rd May, 2010
3.	HDFC Bank Ltd.	Centurion Bank of Punjab Ltd.	25th Feb., 2008

Market Index :

S&P BSE Bankex has been used.

Data Collection : It has been drawn from BSE Website.

Model employed for Expected Returns and it'sSuperiority

As per understanding, found Market Model better than some other methods as takes into account both Market trends & Firm's risk into account.

Assumptions of Market Model

Stock returns of firms are determined by market risk

Market is efficient i.e. the market is able to reflect the effect of any event, say Mergers on the prices of related securities.

Model employed for TIME – SERIES AGGREGATION

Out of various methods available for the above like BHAR (Buy-and-Hold Abnormal Return method), CAR (Cumulative Average Residual) method has been used as for short horizons, both are very similar.

Cross-sectional mean abnormal return (also known as Average Residuals - AR) for N number of Banks at any time t is as follows :

$N t_2$

$AR_t = \frac{1}{} \quad \Sigma e_{it,}$ Next, moving to Time-series Aggregation, thereby, $\mathbf{CAR}(t_1, t_2) = \Sigma$

AR_t

Ni= 1 $t= t_1$

where, t_1 - $t_2$covers the whole of Event Window. In the above, any standard test statistic is CAR divided by an estimate of its standard deviation. Mathematically, $=\underline{CAR\ (t_1, t_2)}\ [\ \sigma^2(\underline{t_1, t_2})]^{1/2}$

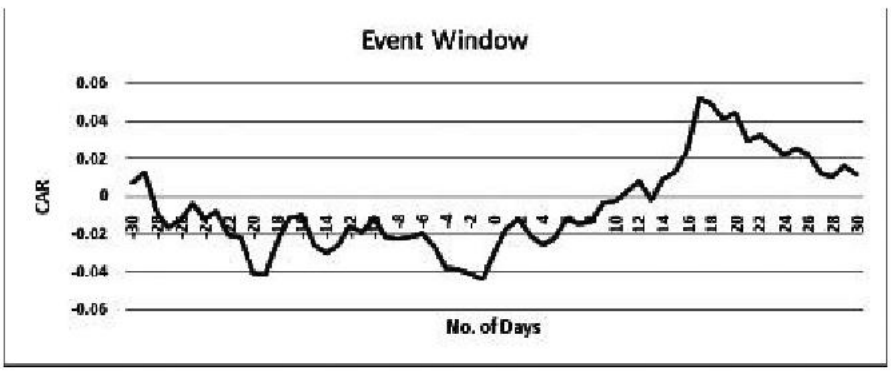
$\sigma^2(AR_t)$ is the variance of a period of Average residuals. Here, Estimation Window has been taken as this period. The above test is based on the assumption that abnormal returns in cross-section aggregation are independent. Null Hypothesis is rejected if value of test – statistic is higher than Critical Value at the specified level of significance.

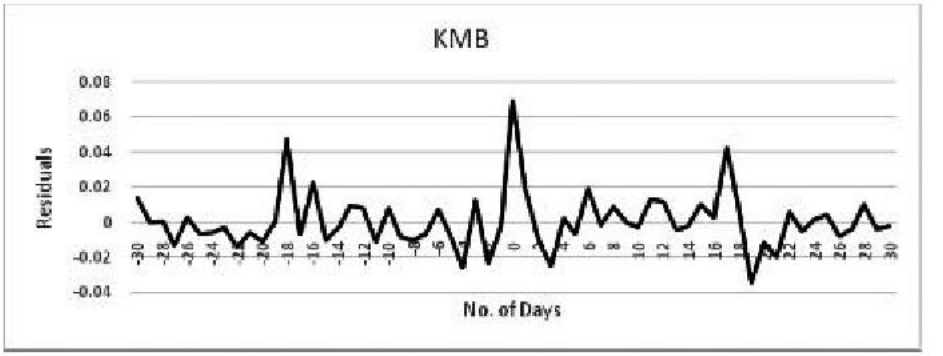
Analysis of Data : It starts from Figure 1

Figure 1: Cumulative Average Residuals (CAR) for Event Window

As is evident in the following figure, the cross-section aggregation, mostly has led to a fall in returns in pre – event window from -30 till the event day, i.e 0 signifying that here, mergers have been taken by the market in a bad prospects, but, thereafter, it soars as there is an upward trend till 18 th day. Even though there is a decline in proportion of positive returns after that, but, good thing is that still, the market has a positivity as the returns are in a plus mood.

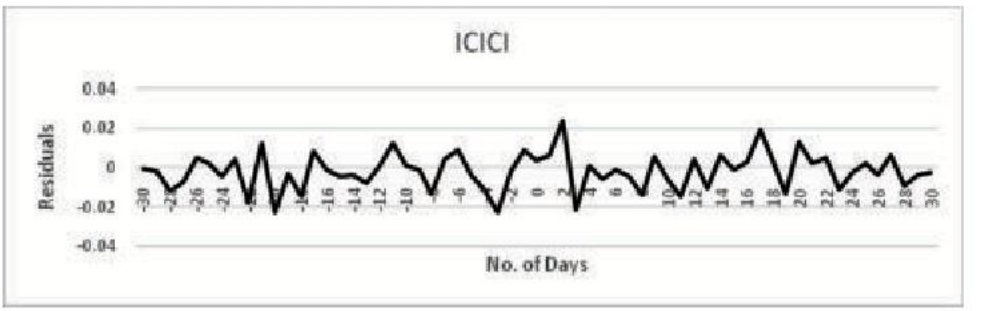
To understand the above aggregation in a better way, it is advisable to go to the flow of the Abnormal Returns (Residuals) of the following individual securities.





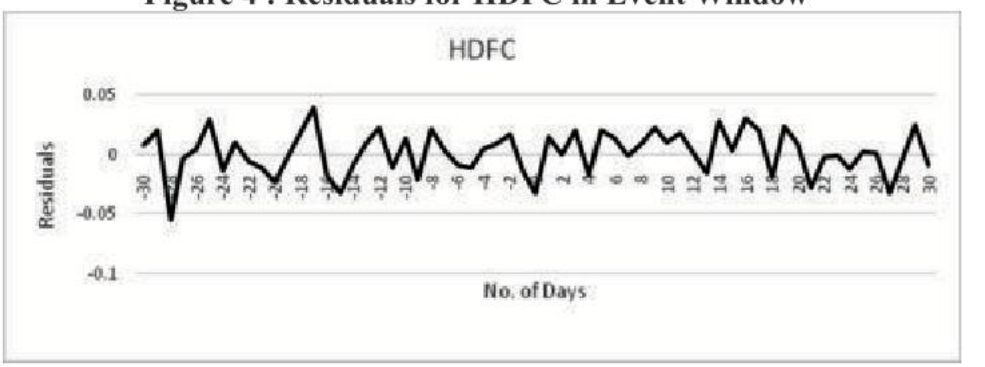
A glimpse of the graph depicts that the reaction has been quite positive as not only there is an upward swing, highest around the day 0 , but, most of the times positive also, as hardly it is less than 0.

Figure 3: Residuals for ICICI Bank in Event Window



Even, in case of ICICI Bank, market sentiments have also been soaring, but, somewhat lesser than Kotak Bank as Abnormal Returns were falling at intervals to become negative.

Figure 4 : Residuals for HDFC in Event Window



To the surprise, unlike above two cases, here the market feel got negative, specially around the main Day & even, the hikes were not as high as incase of others.

Results and Discussion

The above has been summarized and also gets substantiated from the following Table 2

Table 2 :Significance of CAR for different Event Windows

Event Window	CAR	Test-Statistic	Significance
(0,0)	0.013494569	1.80*	Significant
(-1, +1)	0.024312565	3.25***	----do----
(-3, +3)	0.017372237	2.32**	----do----
(-7,+7)	0.008171856	1.09	Not Significant
(-15, +15)	0.022592519	3.02***	Significant
(-30, + 30)	0.011717529	1.57	Not Significant

*, **, *** indicates significance at 10%, 5%, 1% respectively, NS – Not Significant

From the above, it has been found that in very short and short Event Windows - (0,0), (-1, +1)

(-3, +3), (-15, +15) , there has been significant positive CAR either at 10%, 5 % or 1 % level of test, thereby, reaching to the conclusion that the emotions of the market are in line with the expectations of Acquiring banks, may be, because all were voluntary or market driven mergers and were not imposed on the acquiring banks whereas as the window widens beyond this, a stabilization is coming to the surface as gets revealed by the trend of Individual securities as well as their aggregation, but, still, a good aspect is they are found to be positive only.

Limitation-cum-scope for Future Research

As study pertains to various aspects of Acquirer Banks, thereby, targets can be studied as well. Then, use of other models to calculate Expected Returns like Fama& French-Three Factor model, CAPM etc. can be considered. And last but, not the least, use of other models for Time Aggregation in Event Study like Buy and Hold Abnormal Returns (BHAR) can be undertaken.

Conclusion

As mentioned earlier, results of study can be interpreted in favour of Voluntary Mergers, specially in a very short and short Event Windows and after that, leads to smoothening, and that too on a positive note, but should not be generalized.This is because of various facts like small sample but, as mentioned in following section, even several old researches have come to the same conclusion.Thereby, here, Null Hypothesis can not be accepted as market has witnessesed significant positive Abnormal returns in most of the short windows. Nevertheless, it is a very useful study as it has covered the very recent mergers and taking pure mergers into accountamong Indian Banks & is based on a very prominent & reliable work in the area by Kothari and Warner (2006) and has tried to add some new facets to the problem .

Practical/ Managerial/ Social Implications

After undertaking the study, have found it very useful for almost all the stakeholders. To start with, actual owners, i.e. shareholders hold an opportunity to earn via trading as they will have a better clarity on when can higher returns be availed. Importantly, for apex bodies and regulators in Banking and Trading world like RBI and SEBI respectively, both can improve ' watchdog ' activity against serious professional misconduct of ' Insider Trading ' as extreme turbulence is an indication towards the same. Further, RBI as well as Banks can look into and learn to promote a specific category of mergers, say, market oriented than the others as majorly have yielded far better results as has been substantiated by previous studies as well (Jayadev and Sensarma, 2007, Kolaric and Schiereck, 2013, Kalra, Gupta and Bagga, 2013, Mann and Kohli, 2008).

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