MARKET REACTION TO THE RIGHTS ISSUE ANNOUNCEMENTS: EVIDENCE FROM AN EMERGING MARKET

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ABSTRACT

The main objective of this study is to analyze the stock market response to equity rights offering announcements in an emerging market, Pakistan. Using an event study methodology, we aim to examine the immediate information content of rights issue announcements for a sample of firms listed at Karachi Stock Exchange (KSE) during the period 2005-2012.We use Market model to estimate excess returns and also utilize other versions of market models. Our results indicate that the market responds negatively to the rights issue announcements. We find consistently negative trend of cumulative average abnormal returns whether we use excess returns or market model.

Key words: *Right issue, Stock Returns, RGMs, AARs, CAARs, Market efficiency.*

Introduction

We study market reaction to the preemptive equity rights issue announcement for a sample of firms listed at KSE during 2005-20012. Large corporations raise further equity finance either by offering a purchase right to the existing stockholders or offer shares to the general public. There are a number of ways to offer rights issue, such as standby, or underwritten issues in which financial intermediaries guarantee to purchase any unsold stocks. Similarly, a normal cash offer or firm commitment offer is also commonly used. This method may also use the benefits of underwriter services.

There has been extensive literature see e.g., Levis (1995),and Slovin at el. (2000), in U.K, De Jong and Veld (2001),in the Netherlands; Gajewski and Ginglinger (1998)in France; Bøhren (1997)in Norway, among others on use of equity rights in a number of European economies. Kang and Stulz (1996), observe a fairly low volume of rights issue in Japan. Similar observations are also made in the US. Eckbo and Masulis (1992), for instance, note that despite of high cost of direct share issue, more than 80% of US share issues are non-right issues. Kothare (1999) indicates that a possible explanation of this trend could be high indirect costs (e.g., transactions cost, large bid-ask spread and capital gain taxes) associated with rights issue. These costs on the contrary do not hamper the equity rights issues in a number of other countries. In some countries e.g. Netherland, it is mandatory for listed companies to issue right shares using the services of financial intermediaries. The desire of existing shareholders to keep their existing equity proportion intact and the use of syndicate of under-writers can be potential success factors inducing the corporate preference for right issues.

We use an event study methodology to examine the market reaction to rights issue announcements. Event study is a well-established and frequently used method for capturing the immediate information content of various announcements of financial and non-financial events. Experimental application of event study can be traced back to Dolley (1933) for corporate announcement of stock splits. Later on, Ball and Brown (1968), and Fama

et al. (1969) popularized the use of event study methodology. Event study analysis is converted into understandable results by applying the single factor market model with its three main versions. Empirical studies found similar results by using various return generating models including, for instance, mean adjusted, market adjusted, and risk adjusted methods. The choice of any particular method depends on researcher's convenience and availability of suitable data. Brown and Warner (1985) confirm that data suitability is basic condition for application of any particular method. Using all three methods, Brown and Warner (1985), and Dyckman et al. (1984) indicate directional similarity of results for all methods when daily and weekly data is used. As a consequence, no superiority or ranking holds among three main return generating methods.

Our study uses market model for calculating resulting excess returns of right issue announcements. As a check of further robustness of our results, we also apply the other three methods: mean adjusted, market adjusted and risk adjusted models. Although our event of interest is the rights issue announcement date, but the investigation window spans for more than one day around the event of interest due to different motives (i.e., to trace information leakage, herd behavior and market correction) in this study. Therefore we use an estimation window of 150 days (-170th to -21st) and investigation windows of -3 to +3, -5 to +5, -10 to +10,-20 to +20 and 51 (-20 to + 30th)days to find and establish the true market response to right issue announcement. Under the above noted global history of right issue, estimation technique and testing tools this paper intended to analyze stock return response to equity right issue announcement in Pakistani stock market. This research appears to be one of the initial studies to scrutinize stock price response to Pakistani rights issues. Pakistan is an emerging capital market with an English based common law and legal system, which offer a familiar and standardized investment setting for investors especially for common wealth countries. The Pakistani market is fairly capable of assuming noteworthy global economic importance. The 2001 best performing stock market award for Karachi stock exchange, Pakistan and 523 Million US dollar foreign investment in 2006-07, reported by State Bank of Pakistan survey are ample proofs of its global importance. This study found average price response by Pakistani companies to be negative because investor's calculation of theoretical value of right and company's fundamental based right pricing along with certain Pakistan specific factors like concentration of ownership and family owned businesses.

The remaining parts of this paper are in the following categorization. Section2, summaries empirical literature on rights issues announcements. Section 3, discusses about the data and methodological issues. Section 4 inspects the empirical results of price response to the announcement of Pakistani rights issues sample. Section 5 concludes the paper.

Literature Review

Right issues are normally used by listed companies in a number of countries as one way to get fresh capital. This practice is empirically observed as among one of the popular forms of rising funds across different countriessee e.g., Balachandren et al., (2007) in Australia, Wang et al., (2006) in China, Tsangaraki, (1996) in Greece , Ching et al., (2006) in Hong Kong, Dhatt et al., (1996) in Korea, Salamudin et al., (1999) in Malaysia, Marsden, (2000); in New Zealand, Bøhren et al., (1997) in

Norway, Tan et al., (2002) in Singapore, Adaoglu, (2006)in Turkey and Slovinet al.(2000) in UK.

As evident, most of the empirical literature comes from developed countries. In the US, Scholes and William (1977), and Smith, (1977) provide some initial evidence on the price reaction to rights share announcements. None of these studies finds any significant abnormal returns in the investigation window for a sample of NYSE listed companies. Hansen, (1989)on the other hand report short lived significant abnormal returns for right announcements. Eckbo & Masulis, (1992) found short negative reaction to right issue announcements. Kothare, (1999) also found negative impact of right issue announcement after the event datei n NYSE and the AMEX. Majority of Empirical research shows that in US the stock price response to right shares announcement has been negative Mikkelson & Partch, (1986); Barclay & Litzenberger, (1988).

A number of theories have been offered to explain the unfavorable price response to right issue like the stock over valuation signaling hypothesis Myers & Majluf, (1984), the tax benefit of debt De Angelo & Masulis, (1980), agency theory and free cash flowJensen & Meckling, (1986). Kim & Purnanandam, (2006)suggest that in US investors respond negatively if they think that the agents will not be able to use the fresh cash in the best way and invest in negative NPV projects. They find no significant price response if there is any apparent agency issue. A number of other studies such as Loughran & Ritter, (1995), Spiess & Affleck-Graves, (1995), and Jain & Kini, (1994) also address the long term performance of U.S. right issues among others. Most of these researches noted comparatively weak share price and operating performance for coming two to five years after the right issue. Same inferences are echoed from results of U.K. Levis, (1995), Japan Cai & Wei, (1997), Cai & Loughran, (1998), Kang et al., (1999), ChinaWang et al., (2006). In AustraliaBalachandren et al., (2007) found the price reaction is not significant to fully under-written right issue announcement where as there is considerably negative price response to non-underwritten offers.

There is no commonly established justification of these inferences, but there are clues that the long term share performance measurement is very much reflective of econometric tools used. Eckbo et al., (2000) for instance, find that methodological perfections lead to eradication of any long term share price underperformance. Stock market impact of right offering has gained some attention, but there is no empirical proof to date on the operating performance of right offering firms. Loughran & Ritter, (1997) and McLaughlin et al., (1996) examined operating performance of companies making right issues in the United States. They noted that company performance worsens after the right issues.

Empiricists found that the non-U.S. evidences on the right issue announcement is somewhat mixed. Levis, (1995) found two days excess return after event date for U.K. companies. Slovin, Sushka, & Lai, (2000) also confirmed the findings of Levis that excess returns exists after the right issue announcement and noted that insured right issues generate greater excess returns as compared to un-uninsured right issues for U.K. companies. Researches on the samples of Korean Kang, (1990), Kim & Lee, (1990), Dhatt et al., (1996), Swiss Loderer & Zimmermann, (1988), Greek Tsangaraki, (1996), Japanese Kang & Stulz, (1996)and Norwegian firms Bøhren et al., (1997) all evidence addition in mean stockholder's

wealth immediately after rights issue. Wang et al., (2006) found a notable positive abnormal return on right announcement in China. Tan et al., (2002) found large positive abnormal return in Singapore in response to large right issues. They presented that big right issues are favorably conceived by the investors. In the same token, Salamudin et al., (1999) found a favorable return reaction to right announcements for the Malaysian market.

Another stream of literature has a different view on rights issues. In Hong Kong, for instance, Ching et al., (2006) report negative anomalous returns possibly due to overvalued stocks. In New Zealand Marsden (2000) indicates negative returns which is in line with finding in UK by Marsh (1979).Similarly, Gajewski and Ginglinger (1998) find negative excess share prices connected with rights share announcement in France.

Stock reaction studies are comparatively less focused area in the emerging economies. Venkatesh and Chiang (1986), for instance, study the bid ask spread near corporate announcement and observe bigger spread in investigation window. Similarly, Bajaj and Vijh, (1990) report that good dividend yield history has positive impact on stock return near the announcement. Bhattacharya and Mukherjee (2003), on the contrary observed that there is no value relevance of corporate announcements with stock returns. Their study did not indicate any significant abnormality in returns, prices, spread or trading volume in event window.Using a market model and a 40 days event window, Barnes and Ma (2000) observe significant positive excess returns on bonus issue announcement. Similarly, Frank and Kenneth (2004) conclude that Ghana is in weak form of market efficiency using time series and cross sectional correlations. Their results also confirmed that use of alternative return generating models (RGMs) does not make any significant difference. Guneratne and Fernando (2007) report positive excess returns on bonus issue event in Sri Lanka.

In an emerging economy, such as Pakistan, the use of event study methodology is even more limited. Ahmed and Zaman (1999), for instance, fail to find any linear causality in stock return and corporate expenditures in Bangladesh as well as in Pakistan. Haijra et al. (2007) observe the impact of fiscal and monetary variables on share prices. Sohail and Hussain (2009) found negative impact of CPI on stock prices whereas industrial production index, exchange rate and liquidity had a significant positive effect on the stock returns in the long run. More recently, Mahmood et al. (2011) provide some evidence on cash dividend announcement impact on stock prices. They report significant positive returns during the event window. Their research confirmed the RGM similarity in direction of results.

Data and Methodology

Data

This research focuses on the price reaction of right issue announcements. Data consists of rights issue announcements, stock returns of right issuing companies during estimation and investigation window and KSE all stock index as benchmark. Therefore, a list was compiled, consisting of all subsequent equity stock rights offering made by Pakistani listed firms during January 2005 and December 2012 from the Karachi stock exchange official website and KHE stocks, a commercial local database. The final sample figured up91 financial and non-financial companies' announcements (see Table 1) for which return data was available during the estimation as well as investigation window.

Table 1: Sample of Study

Year	Sector		Announcements	
2005	Banking		3	
	Cement		1	
	Leasing		3	
	Sugar		1	
	Textile		2	
	Total for Year 2005	*5*		*10*
2006	Banking		4	
	Chemical		1	
	Engineering		1	
	Leasing		1	
	Total for Year 2006	*4*		*7*
2007	Automobile		1	
	Banking		6	
	Cement		3	
	Chemical		1	
	Engineering		1	
	Insurance		3	
	Textile		1	
	Total for Year 2007	*7*		*16*
2008	Banking		8	
	Engineering		1	
	Insurance		2	
	Leasing		2	
	Total for Year 2008	*4*		*13*
2009	Banking		2	
	Electricity		1	
	Insurance		2	
	Total for Year 2009	*3*		*5*
2010	Banking		3	
	Cement		3	
	Chemicals		2	
	Electricity		1	
	Insurance		2	
	Textile		2	
	Total for Year 2010	*6*		*13*
2011	Banking		5	
	Cement		5	
	Chemical		1	
	Electricity		1	
	Financial		1	
	General		1	
	Insurance		2	
	Media		1	
	Sugar		2	
	Textile		1	
	Total for Year 2011	*10*		*20*
2012	Cement		2	
	Electricity		1	
	Food		1	
	Investment		1	
	Textile		2	
	Total for Year 2012	*5*		*7*
Total Research Announcements			91	

Difference in the capital structure of financial and non-financial companies, is immaterial for this study, because the focus of study is on stock returns and not on the construct of capital structure. In order to find out the exact announcement date of right issues, Karachi stock exchange and daily business recorder financial news-paper was consulted. Daily share prices of individual company and KSE all stock index values were taken from KSE official website for the sake of return comparison.

Research Methodology

We use event study methodology to capture the immediate information content of rights issue announcements for a sample of firms listed at KSE. A number of different benchmarks see e.g., Ball and Brown, (1968), and Fama et al. (1969)are available for comparison of actual and standard returns including: mean adjusted abnormal returns, market adjusted abnormal returns, and risk adjusted abnormal returns, capital asset pricing model excess returns and firm benchmark excess returns. Brown and Warner (1985 provide a detail analysis of the use of different RGMs and confirm that all methods are bound to produce similar results if data is reliable and free of influence by the extreme observations.

Event study typically comprise of two windows, the estimation window which normally ranges from 100 to 300 days (Peterson (1989) proposed a customary estimation window of 100 to 300 days.) and is used to calculate the model parameters in the form of intercept and slope and these parameters are then applied in the investigation window to determine the abnormal returns. The length of investigation window depends upon the sensitivity span of event and therefore normally ranges from 20 to 60 days on average around the event date. We initially employ the standard market model to calculate abnormal returns and use an estimation window of 150 days ranging from -170 to -21 day to event. This estimation window is sufficient enough for computing the mean returns as well as model slope and intercept. Moreover, in Pakistan most of the equity rights are offered by new companies for which past returns are hardly available for longer period.

Investigation windows are designed from -20 to +30 day of event date (Often the period of investigation is expanded a number of days before and after the event date to fully capture the pre and post announcement price reaction.) with varying lengths. We employ the standard market model to calculate abnormal returns. The -20 days pre-event time is intended to capture any information leakage and insider trading. On the other hand, +20 days window period is intended to capture post event price response, herd behavior and market corrections. It also captures the stock price position when rights period elapses. Further analysis is carried out by narrowing down the investigation window. The null hypothesis in this study is that there are no cumulative average abnormal returns due to rights issue announcements. To test this hypothesis orthodox t-test is used which works equally well for large trimmed sample. Following shows the graphical logic of our event study.

$$\frac{\left(\begin{matrix}Estimation\\ Window\end{matrix}\right)\left(\begin{matrix}Event\\ Window\end{matrix}\right)\left(\begin{matrix}Post-Event\\ Window\end{matrix}\right)}{T_{-2\,(-170thday)}T_{-1(-21stday)} \quad {}^{0}_{T} \quad (eventdate) \quad T_{+1(+1\,day)}T_{+2(+20\,day)}}$$

Model

The single factor market model is used for checking out the response of equity rights issue announcements on stock prices. The market model postulates that the price of a stock depends on the return of the market index and the limit of stock's response is measured by beta. This return is also dependent on conditions that are specific to the firm. The market model can be plotted as a line fitted to a graph of stock returns against the market portfolio. This model indicates the possibility of abnormal returns by comparing the actual stock returns with benchmark or expected returns. Model is as follows:

$$AR_{it} = R_{it} - (\alpha + \beta_i R_{mt}) \qquad (1)$$

Where, *AR* denotes the excess return of any particular stock at a specific day,*i* indicate particular security and *t* stands for event date. $R_{it,}$ stands for actual return for the security *i* at day *t,* and R_{mt} indicates the market or portfolio return at day *t,* whereas α, and $\beta_i$are the intercept and slop of the model which can assume different values depending upon the bench mark assumption. Actual stock returns for each security can be calculated as follows.

$$AR_{it} = (P_{it} - Pit\text{-}1)/P_{it\text{-}1} \qquad (2)$$

Where AR_{it} is the actual security return, P_{it} is the ending price of security i at day *t* and P_{it-1} is the ending price of stock *i* on previous day. In the same way, market returns can be calculated as follows.

$$R_{mt} = (M_t - M_{t-1})/M_{t-1} \qquad (3)$$

Where R_{mt} is the Market return on day *t*, M_t is Market index value today and M_{t-1} is Market index value of last day.

Actual stock returns can be compared with its mean returns, or it can be compared with market/portfolio returns. Alternatively, expected return can be calculated through single factor regression coefficients. These three possibilities give rise to the following three versions of market model which we apply as a check of robustness of our results.

Market Adjusted Return Model

This model is based on the assumption that the expected stock returns of a stock are similar to market/portfolio return. The model considers the expected return as constant across stocks but variable across time. Therefore, the model's intercept *α* and slop *β* are set equal to zero and one respectively. The model only takes into account the market wide movements and all such movements are eliminated from security return see e.g., De Bondt and Thaler, (1985), Sloan (1987), and Barnes and Ma, (2000). In general, this model is considered useful in limited data situations. The core of market adjusted return model is as follows.

$$AR_{it} = R_{it} - [0(\alpha) + 1(R_{mt})] \qquad (4)$$

Mean-Adjusted Return Model

In this model, the expected return of a stock is considered to be equal to its mean return calculated from estimation window. Therefore, in these model settings, coefficients of intercept α and slope β are set equal to one and zero see e.g., Peterson, (1989), MacKinalay, (1997). The model is as follows.

$$AR_{it} = R_{it} - [1(\alpha) + 0(\beta R_{mt})] \qquad (5)$$

Risk-Adjusted Return Model

This model is considered better than the mean and market adjusted return models because it takes into account not only company specific factors but also the market-wide factors. In this model OLS regression with stock return is used as exogenous and marker return as endogenous variable to calculate intercept (α) and slope (β)coefficients, see e.g., Brown and Warner, (1985), Dyckman et al., (1984), Peterson, (1989), and MacKinalay, (1997).The model isas follows:

AR_{it} = R_{it} – (OLS estimated value of α+OLS estimated value of $\beta_i x R_{mt}$) (6)

Excess returns calculated with these three RGMs are aggregated over investigation window with-out clustering MacKinalay, (1997). This assumption is fair as the sample consists of five years and diverse firms. Abnormal returns of individual stocks are aggregated by using ARi,tfor every event and investigation window for a given number of N events. Therefore, average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) are computed as follows for all the above RGMs.

$$AAR_t = \frac{1}{N}\sum_{t=1}^{N} AR_{it} \quad (7)$$

$$\mathrm{CAAR}_{(T_1,T_2)} = \sum_{T_1}^{T_2}\frac{1}{N}\sum_{t=1}^{N}\mathrm{AR}_{it} \quad (8)$$

Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs) in investigation window are tested for significance by applying t-test. Although, a number of parametric and non-parametric tests are available for checking statistical significance, t- test is used for the sake of simplicity. Dyckman et al. (1984), and Jain (1986), for instance recommend t-test as a meaningful test of significance in event study and it can be calculated as follows:

$$t = AR_0 / \sigma\,(AR_0) \quad (9)$$

Where t denotes the t-statistic, AR_0 stands for AARs or CAARs and σ for standard deviation.

Empirical results

We use KSE all-share price index for the period 2005-20011. This index is used as a benchmark for assessing the possibility of excess returns by using three RGMs. Figure 1 and 2 below show the all-share price index movement and daily price variation during the study period.

The movement of index over five years indicates an overall increase, with an outstanding performance up to 2007, where KSE also got the best emerging stock market award. Afterwards, the impact of global financial crisis and internal economic and political instability caused a downfall. But by the end of study period there are again signs of recovery in the market. Figure 2 provides an account of index volatility and it can be noted that during the study period on average there was five percent change in index. During financial crisis huge volatility can be observed due to which market was kept frozen for around two months in second half of 2008. Stock returns of companies making rights issue announcements are gauged against this index to find out the presence of abnormal returns.

The abnormal returns resulting from rights issue announcements are calculated as the difference between actual stock return and benchmark return. This difference in return is averaged from all events (announcements) and trend is noted as Average Abnormal Returns (AARs) during the investigation window. Figure 3 to 5 show the AARs generated by application of market-adjusted, risk-adjusted, and means-adjusted return method whereas figure 6 shows a comparison of these three RGMs.
It can be noted from the figures below that market adjusted and risk adjusted returns are almost similar since both methods take into account similar market-wide factors and use market index as comparison benchmark for generation of abnormal returns. On average, the AARs range from -1 to +1 %. Mean-adjusted AARs show much less variation as compared to the other two methods due to comparison with own past mean returns.

Figure 1

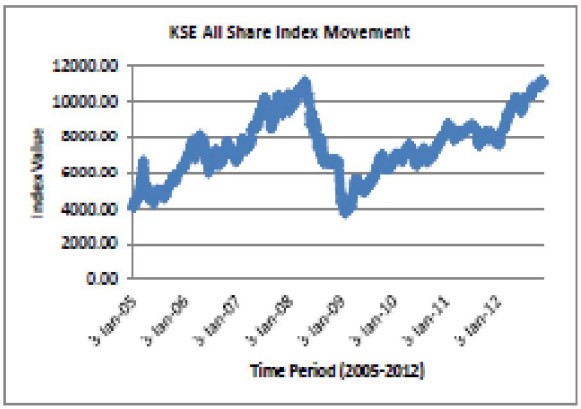
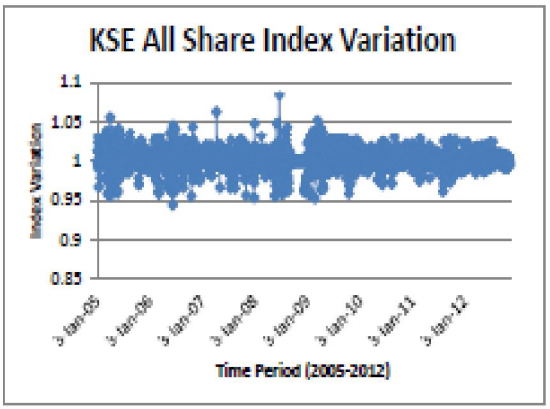


Figure 2



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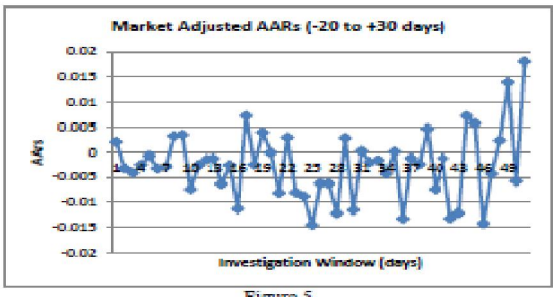

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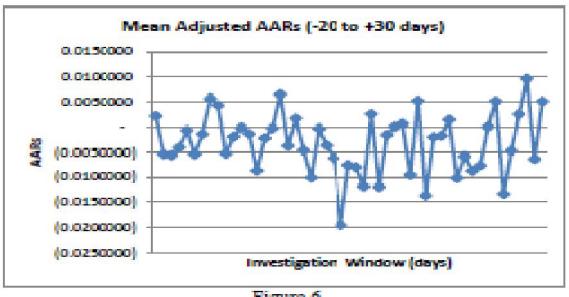

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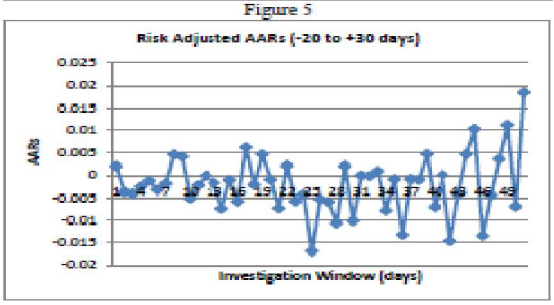

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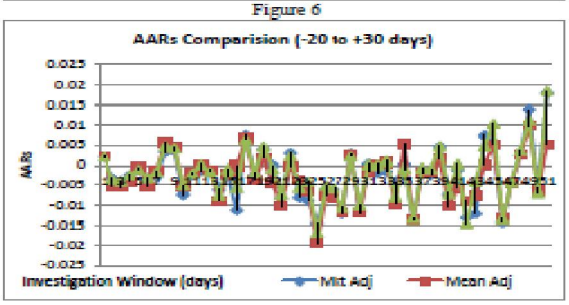

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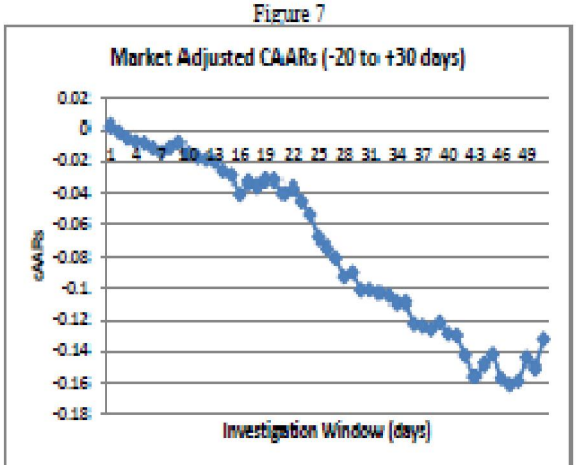

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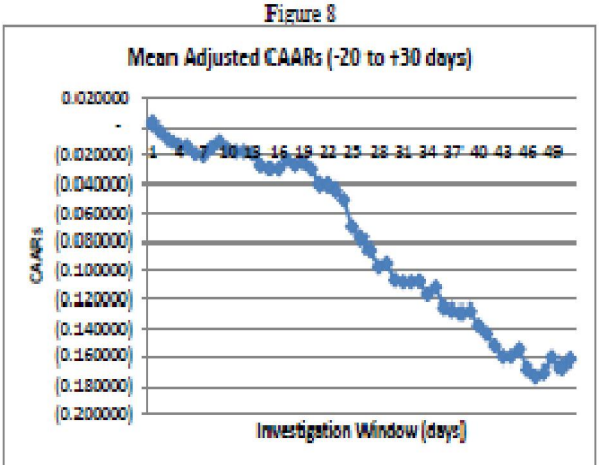

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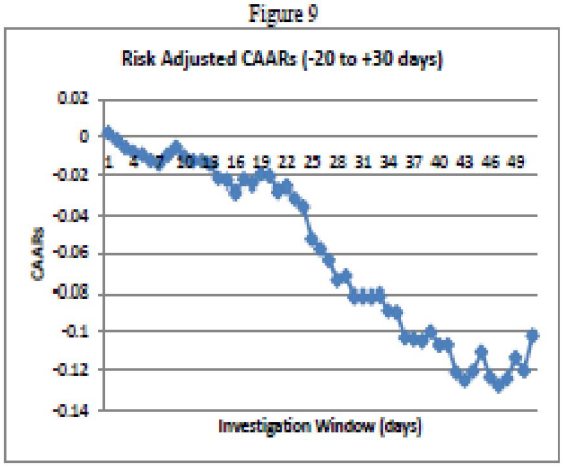

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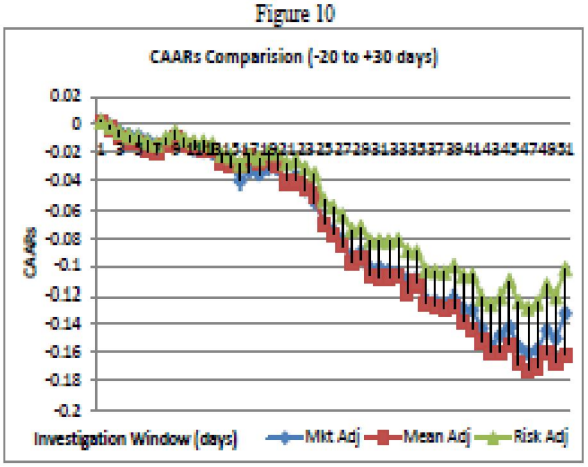

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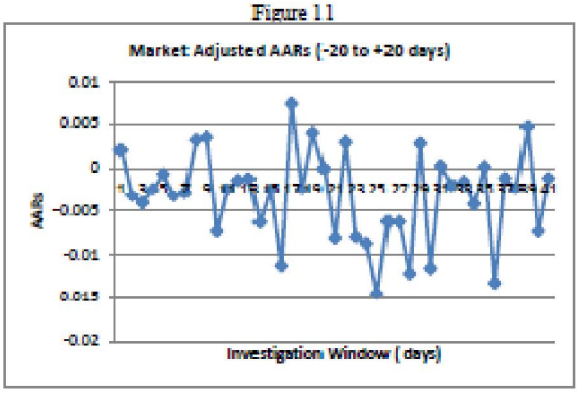

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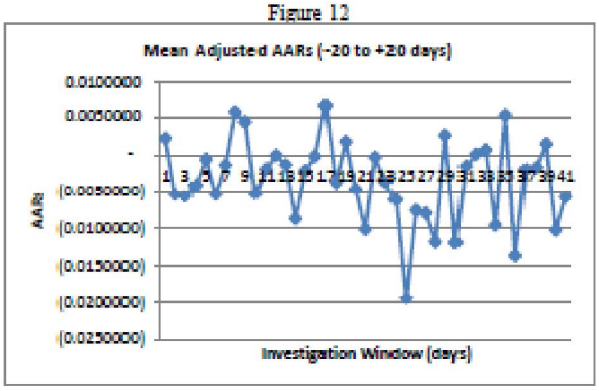

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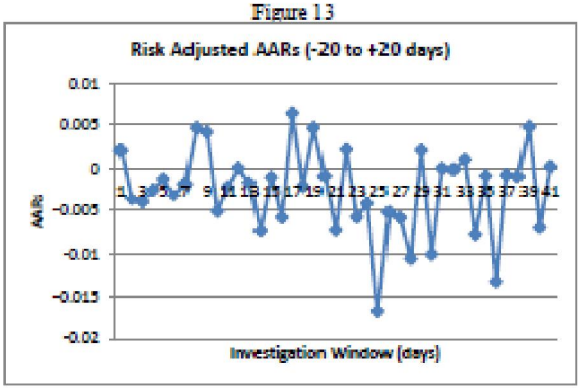

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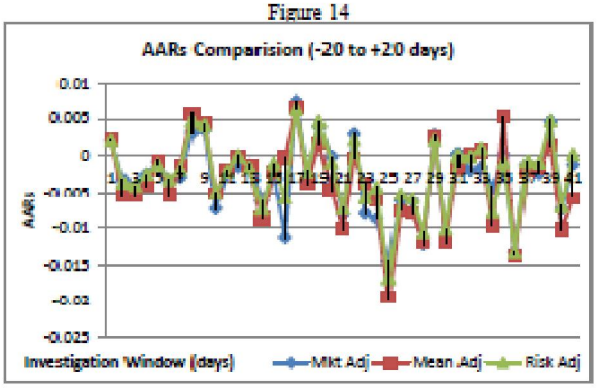

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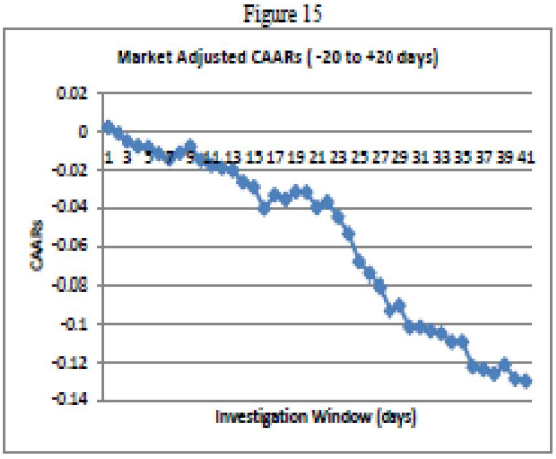

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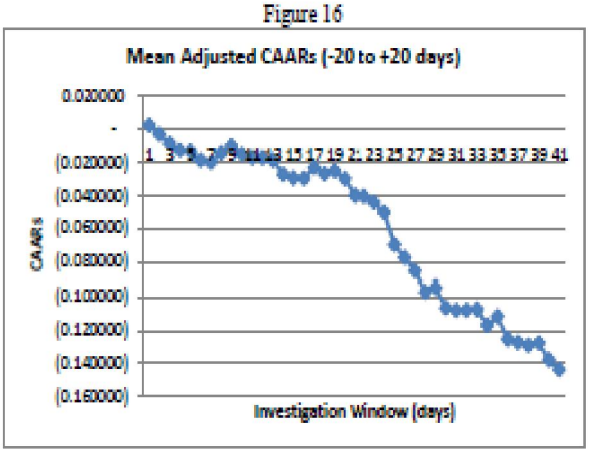

Figure 17

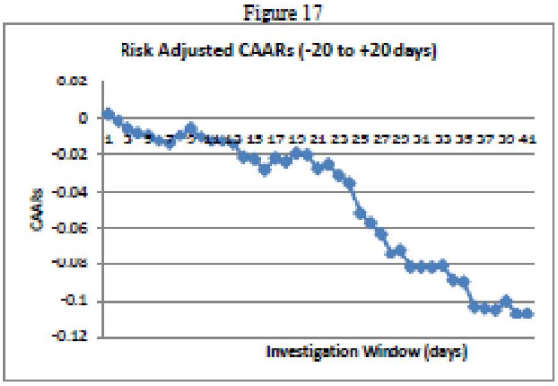

Figure 18

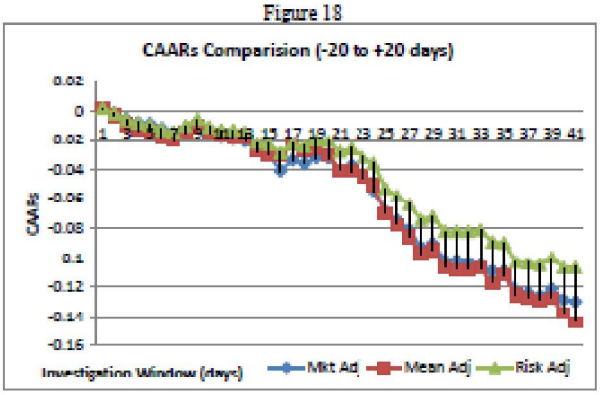

Figure 19

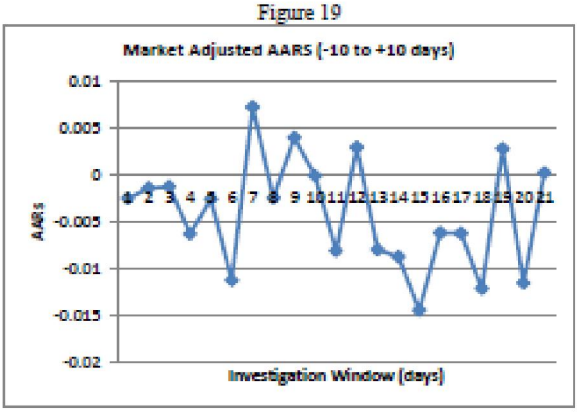

Figure 20

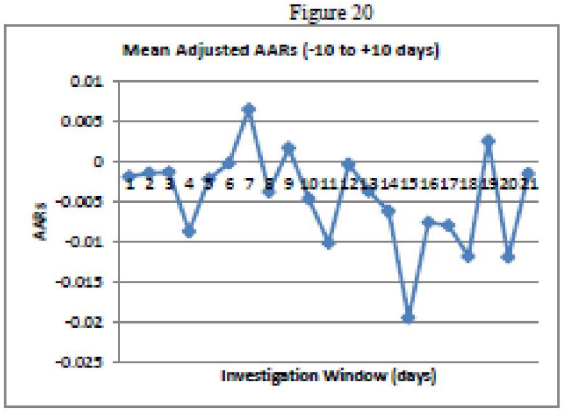

Figure 21

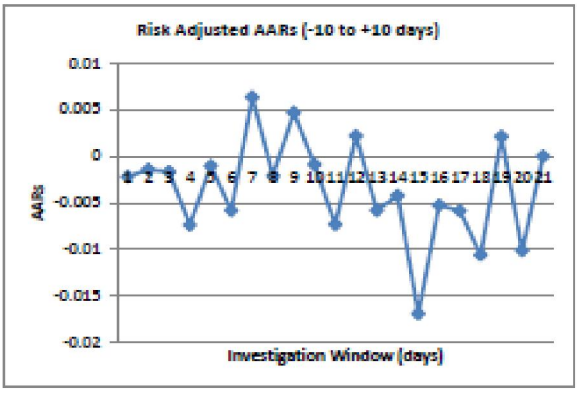

Figure 22

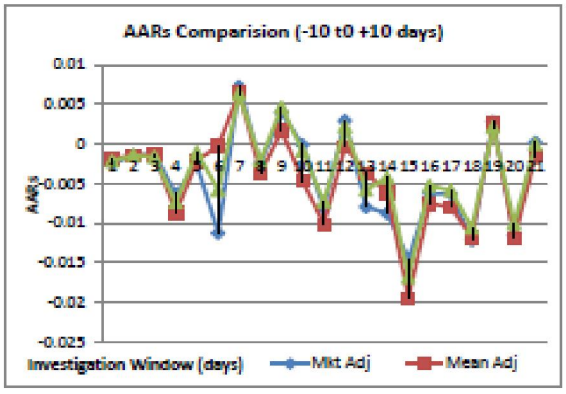

Figure 23

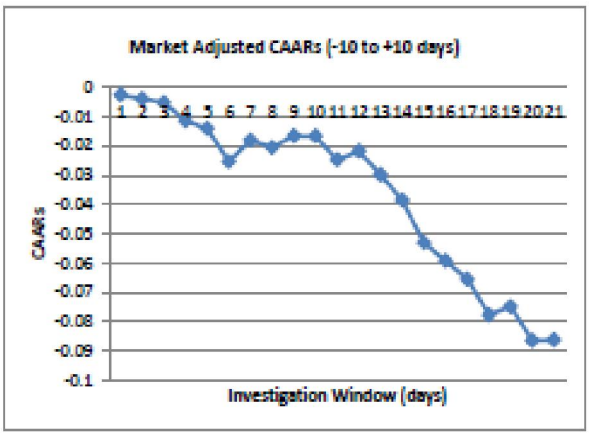

Figure 24

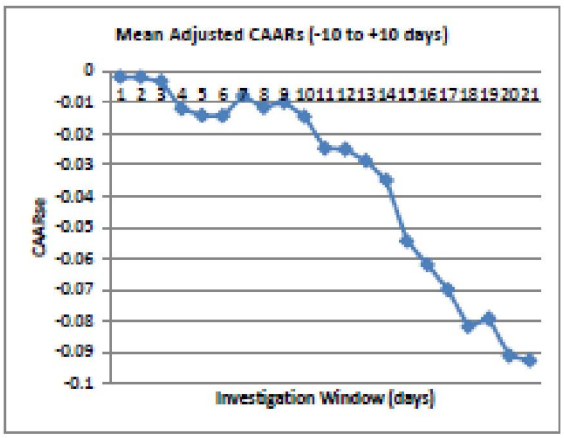

Figure 25

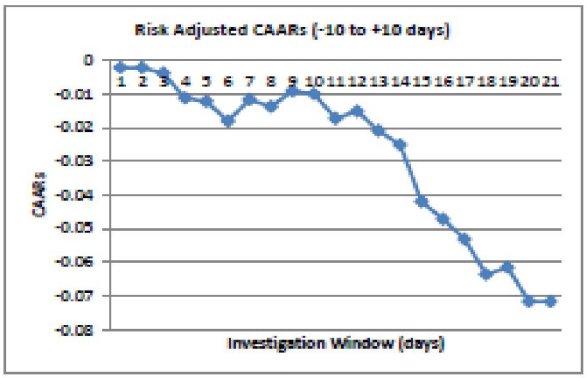

Figure 26

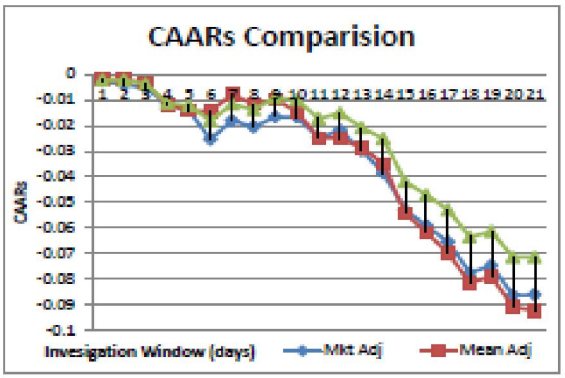

Figure 27

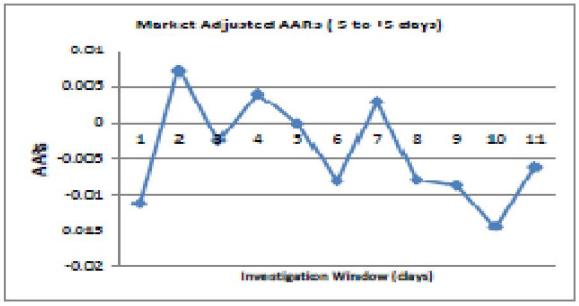

Figure 28

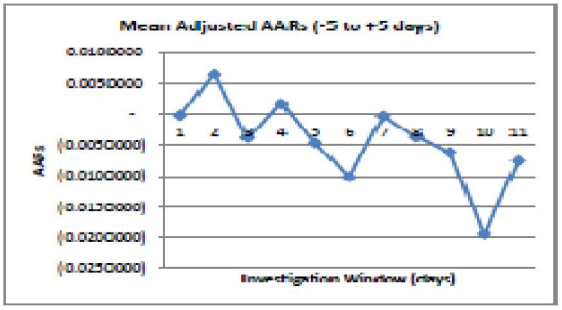

Figure 29

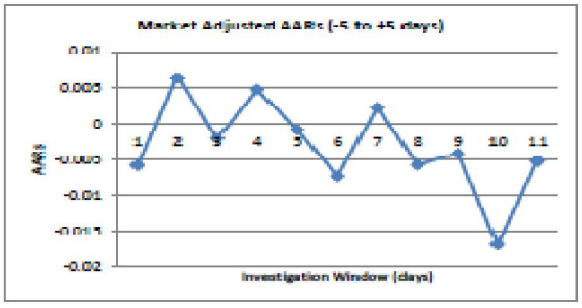

Figure 30

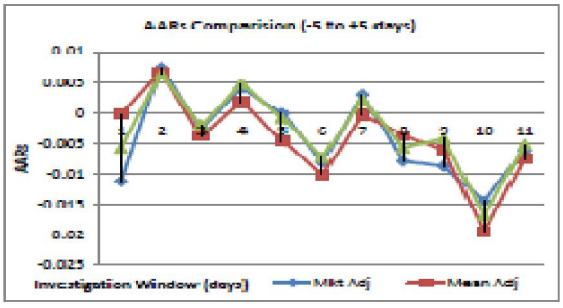

Figure 31

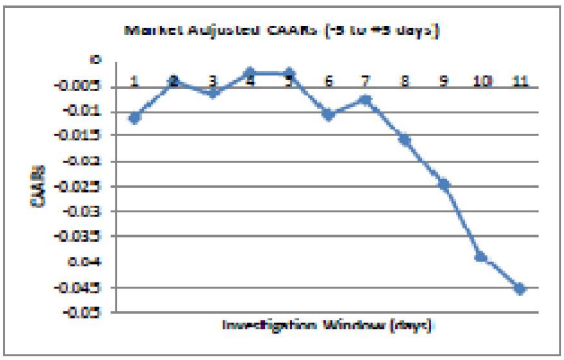

Figure 32

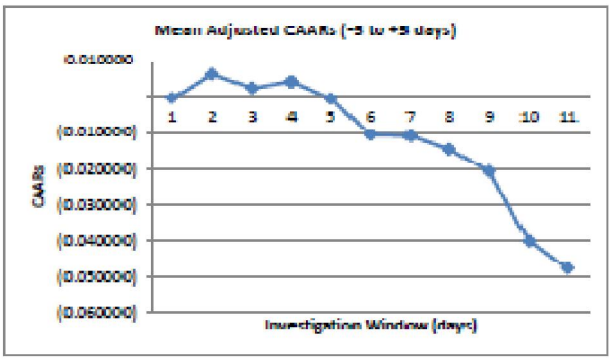

Figure 33

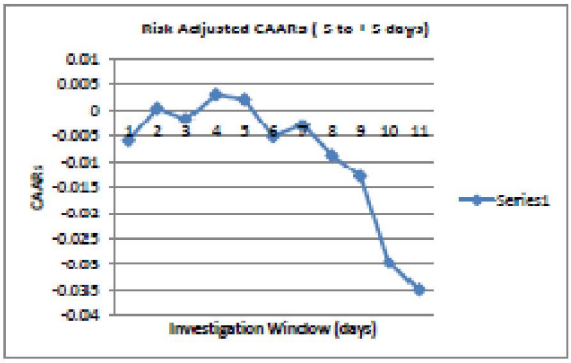

Figure 34

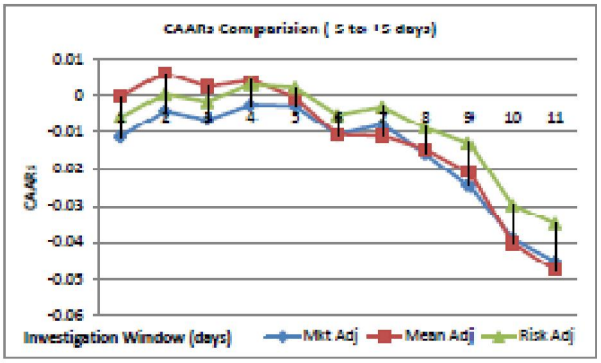

Figure 35

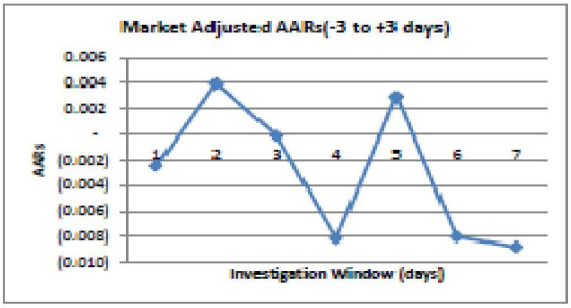

Figure 36

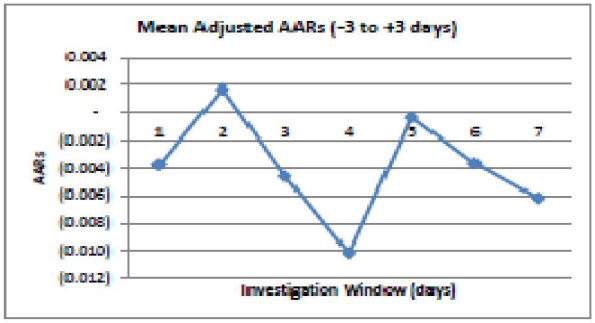

Figure 37

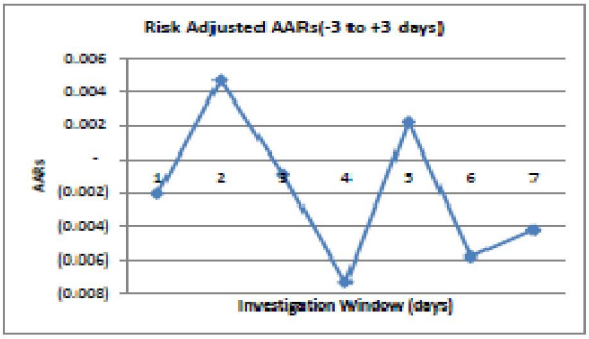

Figure 38

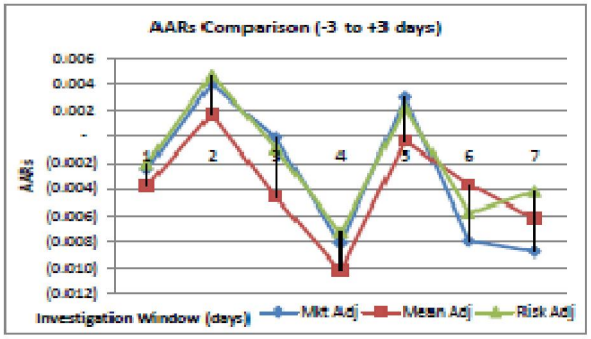

Figure 39

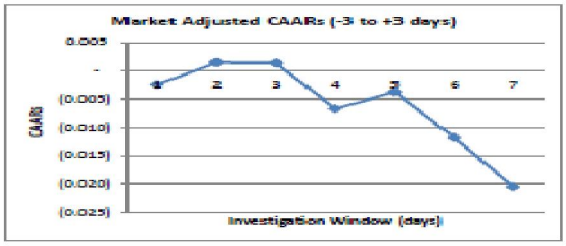

Figure 40

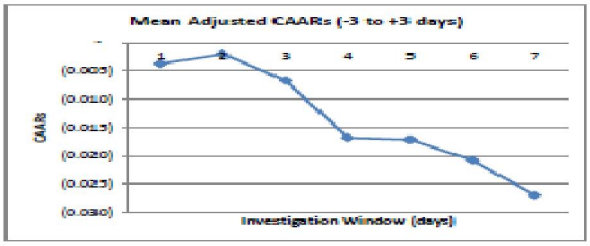

Figure 41

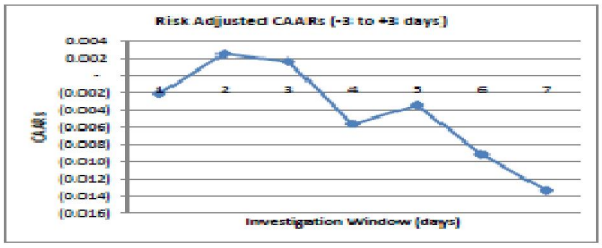

Figure 42

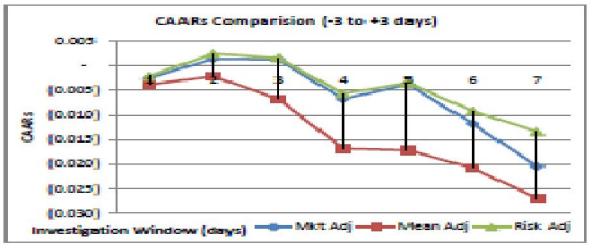

Table 2: AARs and CAARs under three RGMs (-20 to +30 days)

	Market Adjusted Returns				Mean Adjusted Returns				Risk Adjusted Returns			
Days	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val
-20	0.00	0.30	0.00	0.04	0.00	0.37	0.00	0.04	0.00	0.32	0.00	0.05
-19	0.00	-0.48	0.00	-0.02	-0.01	-0.91	0.00	-0.05	0.00	-0.56	0.00	-0.03
-18	0.00	-0.60	-0.01	-0.10	-0.01	-0.94	-0.01	-0.15	0.00	-0.62	-0.01	-0.13
-17	0.00	-0.37	-0.01	-0.14	0.00	-0.69	-0.01	-0.22	0.00	-0.38	-0.01	-0.18
-16	0.00	-0.11	-0.01	-0.16	0.00	-0.11	-0.01	-0.23	0.00	-0.18	-0.01	-0.21
-15	0.00	-0.48	-0.01	-0.22	-0.01	-0.91	-0.02	-0.32	0.00	-0.49	-0.01	-0.28
-14	0.00	-0.43	-0.01	-0.27	0.00	-0.23	-0.02	-0.34	0.00	-0.28	-0.01	-0.32
-13	0.00	0.47	-0.01	-0.21	0.01	0.95	-0.01	-0.25	0.00	0.71	-0.01	-0.22
-12	0.00	0.51	-0.01	-0.15	0.00	0.73	-0.01	-0.17	0.00	0.64	-0.01	-0.12
-11	-0.01	-1.08	-0.02	-0.28	-0.01	-0.88	-0.02	-0.26	-0.01	-0.78	-0.01	-0.24
-10	0.00	-0.37	-0.02	-0.33	0.00	-0.32	-0.02	-0.29	0.00	-0.33	-0.01	-0.29
-9	0.00	-0.21	-0.02	-0.35	0.00	-0.02	-0.02	-0.30	0.00	0.00	-0.01	-0.29
-8	0.00	-0.18	-0.02	-0.38	0.00	-0.22	-0.02	-0.32	0.00	-0.25	-0.01	-0.32
-7	-0.01	-0.93	-0.03	-0.49	-0.01	-1.47	-0.03	-0.47	-0.01	-1.13	-0.02	-0.49
-6	0.00	-0.38	-0.03	-0.54	0.00	-0.36	-0.03	-0.50	0.00	-0.16	-0.02	-0.51
-5	-0.01	-1.66	-0.04	-0.75	0.00	-0.03	-0.03	-0.51	-0.01	-0.89	-0.03	-0.64
-4	0.01	1.07	-0.03	-0.61	0.01	1.10	-0.02	-0.40	0.01	0.97	-0.02	-0.50
-3	0.00	-0.36	-0.04	-0.66	0.00	-0.63	-0.03	-0.46	0.00	-0.32	-0.02	-0.55
-2	0.00	0.59	-0.03	-0.59	0.00	0.29	-0.03	-0.43	0.00	0.71	-0.02	-0.44
-1	0.00	-0.02	-0.03	-0.59	0.00	-0.78	-0.03	-0.51	0.00	-0.14	-0.02	-0.46
0	-0.01	-1.20	-0.04	-0.74	-0.01	-1.71 *	-0.04	-0.68	-0.01	-1.11	-0.03	-0.63
1	0.00	0.44	-0.04	-0.68	0.00	-0.06	-0.04	-0.69	0.00	0.34	-0.03	-0.58
2	-0.01	-1.18	-0.05	-0.83	0.00	-0.62	-0.04	-0.75	-0.01	-0.88	-0.03	-0.71
3	-0.01	-1.29	-0.05	-0.99	-0.01	-1.04	-0.05	-0.85	0.00	-0.64	-0.04	-0.80
4	-0.01	-2.13 **	-0.07	-1.26	-0.02	-3.27	-0.07	-1.18	-0.02	-2.57	-0.05	-1.18
5	-0.01	-0.92	-0.07	-1.37	-0.01	-1.27	-0.08	-1.31	-0.01	-0.80	-0.06	-1.30
6	-0.01	-0.92	-0.08	-1.49	-0.01	-1.34	-0.09	-1.44	-0.01	-0.89	-0.06	-1.43
7	-0.01	-1.79	-0.09	-1.71 *	-0.01	-1.98 **	-0.10	-1.64 *	-0.01	-1.61	-0.07	-1.66 *
8	0.00	0.41	-0.09	-1.66 *	0.00	0.43	-0.09	-1.60	0.00	0.32	-0.07	-1.62
9	-0.01	-1.70 *	-0.10	-1.87 *	-0.01	-2.00 **	-0.11	-1.80	-0.01	-1.54	-0.08	-1.84 *
10	0.00	0.03	-0.10	-1.87 *	0.00	-0.26	-0.11	-1.83	0.00	0.00	-0.08	-1.84 *
11	0.00	-0.29	-0.10	-1.90 *	0.00	0.01	-0.11	-1.83 *	0.00	-0.02	-0.08	-1.85 *
12	0.00	-0.23	-0.11	-1.93 *	0.00	0.10	-0.11	-1.82 *	0.00	0.16	-0.08	-1.82 *
13	0.00	-0.63	-0.11	-2.01 **	-0.01	-1.61	-0.12	-1.98 **	-0.01	-1.19	-0.09	-2.00 **
14	0.00	0.01	-0.11	-2.01 **	0.01	0.88	-0.11	-1.89 *	0.00	-0.13	-0.09	-2.02 **
15	-0.01	-1.95 *	-0.12	-2.25 **	-0.01	-2.29 **	-0.13	-2.12 **	-0.01	-2.02 **	-0.10	-2.31 **
16	0.00	-0.17	-0.12	-2.27 **	0.00	-0.33	-0.13	-2.15 **	0.00	-0.12	-0.10	-2.33 **
17	0.00	-0.35	-0.13	-2.32 **	0.00	-0.29	-0.13	-2.18 **	0.00	-0.15	-0.10	-2.35 **
18	0.00	0.68	-0.12	-2.23 **	0.00	0.24	-0.13	-2.16 **	0.00	0.73	-0.10	-2.25 **
19	-0.01	-1.08	-0.13	-2.37 **	-0.01	-1.72 *	-0.14	-2.33 **	-0.01	-1.07	-0.11	-2.40 **
20	0.00	-0.18	-0.13	-2.39 **	-0.01	-0.97	-0.14	-2.43 **	0.00	0.03	-0.11	-2.40 **
21	-0.01	-1.94 *	-0.14	-2.63 ***	-0.01	-1.47	-0.15	-2.58 **	-0.01	-2.23 **	-0.12	-2.73 ***
22	-0.01	-1.79 *	-0.16	-2.85 ***	-0.01	-1.29	-0.16	-2.71 ***	0.00	-0.64	-0.13	-2.82 ***
23	0.01	1.07	-0.15	-2.72 ***	0.00	0.01	-0.16	-2.71 ***	0.00	0.72	-0.12	-2.71 ***
24	0.01	0.84	-0.14	-2.62 ***	0.01	0.87	-0.15	-2.62 ***	0.01	1.56	-0.11	-2.48 **
25	-0.01	-2.09 **	-0.16	-2.88 ***	-0.01	-2.24 **	-0.17	-2.84 ***	-0.01	-2.04 **	-0.12	-2.78 ***
26	0.00	-0.63	-0.16	-2.96 ***	0.00	-0.79	-0.17	-2.92 ***	0.00	-0.67	-0.13	-2.88 ***
27	0.00	0.34	-0.16	-2.91 ***	0.00	0.42	-0.17	-2.88 ***	0.00	0.55	-0.12	-2.80 ***
28	0.01	2.05 **	-0.14	-2.66 ***	0.01	1.63	-0.16	-2.72 ***	0.01	1.70 *	-0.11	-2.55 **
29	-0.01	-0.85	-0.15	-2.76 ***	-0.01	-1.07	-0.17	-2.83 ***	-0.01	-1.06	-0.12	-2.71 ***
30	0.02	2.65 ***	-0.13	-2.43 **	0.01	0.87	-0.16	-2.74 ***	0.02	2.82 ***	-0.10	-2.29 **

Table 3: AARs and CAARs under three RGMs (-20 to +20 days Investigation Window)

	Market Adjusted Returns				Mean Adjusted Returns				Risk Adjusted Returns			
Days	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val
-20	0.00	0.40	0.00	0.05	0.00	0.39	0.00	0.05	0.00	0.42	0.00	0.06
-19	0.00	-0.63	0.00	-0.03	-0.01	-0.96	0.00	-0.07	0.00	-0.73	0.00	-0.04
-18	0.00	-0.80	-0.01	-0.12	-0.01	-1.00	-0.01	-0.19	0.00	-0.81	-0.01	-0.15
-17	0.00	-0.48	-0.01	-0.17	0.00	-0.73	-0.01	-0.28	0.00	-0.50	-0.01	-0.22
-16	0.00	-0.14	-0.01	-0.19	0.00	-0.11	-0.01	-0.29	0.00	-0.24	-0.01	-0.25
-15	0.00	-0.63	-0.01	-0.26	-0.01	-0.96	-0.02	-0.40	0.00	-0.65	-0.01	-0.34
-14	0.00	-0.56	-0.01	-0.33	0.00	-0.24	-0.02	-0.43	0.00	-0.36	-0.01	-0.39
-13	0.00	0.62	-0.01	-0.26	0.01	1.01	-0.01	-0.31	0.00	0.94	-0.01	-0.26
-12	0.00	0.68	-0.01	-0.18	0.00	0.78	-0.01	-0.22	0.00	0.84	-0.01	-0.15
-11	-0.01	-1.43	-0.02	-0.34	-0.01	-0.94	-0.02	-0.33	-0.01	-1.02	-0.01	-0.29
-10	0.00	-0.49	-0.02	-0.40	0.00	-0.34	-0.02	-0.37	0.00	-0.43	-0.01	-0.34
-9	0.00	-0.28	-0.02	-0.43	0.00	-0.02	-0.02	-0.37	0.00	0.00	-0.01	-0.34
-8	0.00	-0.24	-0.02	-0.46	0.00	-0.24	-0.02	-0.40	0.00	-0.33	-0.01	-0.39
-7	-0.01	-1.23	-0.03	-0.60	-0.01	-1.56	-0.03	-0.59	-0.01	-1.48	-0.02	-0.59
-6	0.00	-0.50	-0.03	-0.66	0.00	-0.39	-0.03	-0.64	0.00	-0.21	-0.02	-0.62
-5	-0.01	-2.19	-0.04	-0.92	0.00	-0.04	-0.03	-0.64	-0.01	-1.17	-0.03	-0.77
-4	0.01	1.42	-0.03	-0.75	0.01	1.17	-0.02	-0.50	0.01	1.27	-0.02	-0.60
-3	0.00	-0.48	-0.04	-0.81	0.00	-0.67	-0.03	-0.58	0.00	-0.42	-0.02	-0.66
-2	0.00	0.77	-0.03	-0.72	0.00	0.30	-0.03	-0.54	0.00	0.94	-0.02	-0.53
-1	0.00	-0.02	-0.03	-0.72	0.00	-0.83	-0.03	-0.64	0.00	-0.18	-0.02	-0.56
0	-0.01	-1.38	-0.04	-0.90	-0.01	-1.81 *	-0.04	-0.86	-0.01	-1.47	-0.03	-0.76
1	0.00	0.58	-0.04	-0.84	0.00	-0.06	-0.04	-0.87	0.00	0.44	-0.03	-0.70
2	-0.01	-1.55	-0.05	-1.02	0.00	-0.66	-0.04	-0.95	-0.01	-1.16	-0.03	-0.85
3	-0.01	-1.71 *	-0.05	-1.21	-0.01	-1.10	-0.05	-1.08	0.00	-0.85	-0.04	-0.97
4	-0.01	-2.82 ***	-0.07	-1.54	-0.02	-3.48	-0.07	-1.49	-0.02	-3.39 ***	-0.05	-1.42
5	-0.01	-1.21	-0.07	-1.68 *	-0.01	-1.35	-0.08	-1.66	-0.01	-1.05	-0.06	-1.57
6	-0.01	-1.22	-0.08	-1.82 *	-0.01	-1.42	-0.09	-1.83 *	-0.01	-1.18	-0.06	-1.72 *
7	-0.01	-2.37	-0.09	-2.09 **	-0.01	-2.11 **	-0.10	-2.08 **	-0.01	-2.12 **	-0.07	-2.01 **
8	0.00	0.55	-0.09	-2.03 **	0.00	0.46	-0.09	-2.02 **	0.00	0.42	-0.07	-1.95 *
9	-0.01	-2.25 **	-0.10	-2.29 **	-0.01	-2.13 **	-0.11	-2.28 **	-0.01	-2.03	-0.08	-2.23 **
10	0.00	0.04	-0.10	-2.29 **	0.00	-0.27	-0.11	-2.31 **	0.00	0.00	-0.08	-2.23 **
11	0.00	-0.39	-0.10	-2.33 **	0.00	0.01	-0.11	-2.31 **	0.00	-0.02	-0.08	-2.23 **
12	0.00	-0.31	-0.11	-2.37 **	0.00	0.11	-0.11	-2.30 **	0.00	0.21	-0.08	-2.20 **
13	0.00	-0.83	-0.11	-2.46 **	-0.01	-1.71 *	-0.12	-2.50 **	-0.01	-1.57	-0.09	-2.41 **
14	0.00	0.02	-0.11	-2.46 **	0.01	0.94	-0.11	-2.39 **	0.00	-0.17	-0.09	-2.44 **
15	-0.01	-2.57 **	-0.12	-2.76 ***	-0.01	-2.44 **	-0.13	-2.68 ***	-0.01	-2.66 ***	-0.10	-2.79 ***
16	0.00	-0.23	-0.12	-2.78 ***	0.00	-0.35	-0.13	-2.72 ***	0.00	-0.15	-0.10	-2.82 ***
17	0.00	-0.47	-0.13	-2.84 ***	0.00	-0.31	-0.13	-2.76 ***	0.00	-0.19	-0.10	-2.84 ***
18	0.00	0.91	-0.12	-2.73 ***	0.00	0.26	-0.13	-2.73 ***	0.00	0.96	-0.10	-2.71 ***
19	-0.01	-1.43	-0.13	-2.90 ***	-0.01	-1.83 *	-0.14	-2.95 ***	-0.01	-1.41	-0.11	-2.90 ***
20	0.00	-0.23	-0.13	-2.93 ***	-0.01	-1.03	-0.14	-3.07 ***	0.00	0.04	-0.11	-2.90 ***

Table 4: AARs and CAARs under three RGMs (-10 to +10 days Investigation Window)

	Market Adjusted Returns				Mean Adjusted Returns				Risk Adjusted Returns			
Days	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val
-10	0.00	-0.43	0.00	-0.09	0.00	-0.32	0.00	-0.06	0.00	-0.40	0.00	-0.09
-9	0.00	-0.24	0.00	-0.14	0.00	-0.02	0.00	-0.06	0.00	0.00	0.00	-0.09
-8	0.00	-0.21	-0.01	-0.18	0.00	-0.23	0.00	-0.10	0.00	-0.31	0.00	-0.16
-7	-0.01	-1.07	-0.01	-0.41	-0.01	-1.47	-0.01	-0.38	-0.01	-1.35	-0.01	-0.47
-6	0.00	-0.44	-0.01	-0.50	0.00	-0.37	-0.01	-0.45	0.00	-0.19	-0.01	-0.51
-5	-0.01	-1.91 *	-0.03	-0.90	0.00	-0.03	-0.01	-0.46	-0.01	-1.07	-0.02	-0.75
-4	0.01	1.23	-0.02	-0.64	0.01	1.10	-0.01	-0.25	0.01	1.16	-0.01	-0.49
-3	0.00	-0.42	-0.02	-0.73	0.00	-0.63	-0.01	-0.37	0.00	-0.38	-0.01	-0.58
-2	0.00	0.67	-0.02	-0.59	0.00	0.29	-0.01	-0.31	0.00	0.86	-0.01	-0.38
-1	0.00	-0.02	-0.02	-0.59	0.00	-0.78	-0.01	-0.46	0.00	-0.17	-0.01	-0.42
0	-0.01	-1.38	-0.02	-0.88	-0.01	-1.71 *	-0.02	-0.78	-0.01	-1.34	-0.02	-0.72
1	0.00	0.50	-0.02	-0.77	0.00	-0.06	-0.03	-0.79	0.00	0.41	-0.02	-0.63
2	-0.01	-1.35	-0.03	-1.05	0.00	-0.62	-0.03	-0.91	-0.01	-1.06	-0.02	-0.87
3	-0.01	-1.49	-0.04	-1.36	-0.01	-1.04	-0.03	-1.10	0.00	-0.77	-0.03	-1.05
4	-0.01	-2.45	-0.05	-1.88 *	-0.02	-3.28 ***	-0.05	-1.72 *	-0.02	-3.10 ***	-0.04	-1.76 *
5	-0.01	-1.05	-0.06	-2.10	-0.01	-1.28	-0.06	-1.96 *	-0.01	-0.96	-0.05	-1.98 **
6	-0.01	-1.06	-0.07	-2.32 **	-0.01	-1.34	-0.07	-2.21 **	-0.01	-1.07	-0.05	-2.22 **
7	-0.01	-2.06	-0.08	-2.75 ***	-0.01	-1.99 **	-0.08	-2.58 ***	-0.01	-1.94 *	-0.06	-2.66 ***
8	0.00	0.48	-0.07	-2.65 ***	0.00	0.43	-0.08	-2.50 **	0.00	0.39	-0.06	-2.57 **
9	-0.01	-1.96 *	-0.09	-3.06 ***	-0.01	-2.01 **	-0.09	-2.88 ***	-0.01	-1.85 *	-0.07	-3.00 ***
10	0.00	0.04	-0.09	-3.05 ***	0.00	-0.26	-0.09	-2.92 ***	0.00	0.00	-0.07	-3.00 ***

Table 5: AARs and CAARs under three RGMs (-5 to +5 days Investigation Window)

	Market Adjusted Returns				Mean Adjusted Returns				Risk Adjusted Returns			
Days	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val
-5	-0.01	-1.63	-0.01	-0.77	0.00	-0.03	0.00	-0.01	0.01	0.99	0.00	0.04
-4	0.01	1.05	0.00	-0.27	0.01	0.96	0.01	0.35	0.00	-0.32	0.00	-0.12
-3	0.00	-0.36	-0.01	-0.44	0.00	-0.55	0.00	0.14	0.00	0.73	0.00	0.25
-2	0.00	0.37	0.00	-0.17	0.00	0.23	0.00	0.24	0.00	-0.14	0.00	0.17
-1	0.00	-0.02	0.00	-0.17	0.00	-0.68	0.00	-0.02	-0.01	-1.14	-0.01	-0.40
0	-0.01	-1.17	-0.01	-0.73	-0.01	-1.49	-0.01	-0.38	0.00	0.34	0.00	-0.23
1	0.00	0.43	-0.01	-0.53	0.00	-0.03	-0.01	-0.60	-0.01	-0.90	-0.01	-0.68
2	-0.01	-1.15	-0.02	-1.07	0.00	-0.54	-0.01	-0.81	0.00	-0.66	-0.01	-1.02
3	-0.01	-1.27	-0.02	-1.66 *	-0.01	-0.91	-0.02	-1.15	-0.02	-2.63 ***	-0.03	-2.35 **
4	-0.01	-2.09 **	-0.04	-2.65 ***	-0.02	-2.83 ***	-0.04	-2.33 **	-0.01	-0.82	-0.03	-2.77 ***
5	-0.01	-0.90	-0.05	-3.07 ***	-0.01	-1.11	-0.05	-2.65 ***	-0.01	-0.96	-0.05	-1.98 **

Table 6: AARs and CAARs under three RGMs (-3 to +3 days Investigation Window)

	Market Adjusted Returns				Mean Adjusted Returns				Risk Adjusted Returns			
Days	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val	AAR	t val	CAAR	t val
-3	0.00	-0.45	0.00	-0.31	0.00	-0.98	0.00	-0.40	0.00	-0.48	0.00	-0.36
-2	0.00	0.73	0.00	0.19	0.00	0.44	0.00	-0.22	0.00	1.09	0.00	0.45
-1	0.00	-0.02	0.00	0.18	0.00	-1.20	-0.01	-0.71	0.00	-0.21	0.00	0.30
0	-0.01	-1.49	-0.01	-0.85	-0.01	-2.64 ***	-0.02	-1.79	-0.01	-1.70 *	-0.01	-0.98
1	0.00	0.54	0.00	-0.48	0.00	-0.09	-0.02	-1.82 *	0.00	0.51	0.00	-0.59
2	-0.01	-1.47	-0.01	-1.49	0.00	-0.95	-0.02	-2.21 **	-0.01	-1.35	-0.01	-1.60
3	-0.01	-1.61	-0.02	-2.60 ***	-0.01	-1.60	-0.03	-2.86 ***	0.00	-0.98	-0.01	-2.34 **

Price reaction to rights issue announcements can also be assessed in a better way by analyzing Cumulative Average Abnormal Returns (CAARs) generated through market-adjusted, risk- adjusted and mean-adjusted return generating models.

Figure 7 to 9 show the price reaction for these three RGMs in the form of CAARs, while figure 10 presents a comparative analysis. As evident, all three methods show negative CAARs throughout the investigation window; however the intensity of CAARs is different in each method. Market-adjusted CAARs are highest negative up to -20% followed by risk-adjusted CAARs which are negative up to 16% and self-compared mean-adjusted CAARs are negative but only by -0.25%. Comparison of three method confirms that rights issue announcements generate negative CAARs.

Table 2 below indicates behavior of Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARS) during investigation window.

Table 2 shows AARs and CAARs computed under three return generating models namely, Market-adjusted, Mean-adjusted, and Risk-adjusted. Along with AARs and CAARs values t-statistic is also computed for these returns to ascertain their statistical significance. Statistical significance is ascertained at 90%, 95% and 99% confidence interval, at which the t-values are 1.645, 1.96 and 2.58 represented by *,** and ***.

Table 2 shows that AARs are mostly negative under all RGMs, which indicates that impact of rights issue announcement is negative and few positive AARs are visible when too much price drift attracts the investors. Price reaction is more visible in CAARs under all RGMs where CAARs are negative through-out the investigation window. Negative CAARs during pre-event window shows signs of asymmetric information resulting in insider trading. CAARs are significantly negative after day seven which shows the weak form of market efficiency and also the impact of herd behavior. It is also witnessed that results of all RGMs are similar, except slight variation due to shorter estimation window comprising of 150 days due to non-availability of data in the case of certain announcements see, Fama et al.,(1969).

In order to trace out significant abnormal returns more precisely apart form the 51 days investigation window, results were also analyzed in investigation windows of shorter spans i.e. -20 to +20 days, -10 to +10 days, -5 to +5 days and -3 to +3 days. It was established that investigation window length do not effect the resutls in a significantly and almost similar patterns of results indicating signifcant negative returns were observed.

The results of the shorter investigation windows are shown graphically indicating the behavior of AARs, CAARs and Comparison of 3 return generating methods.

Results of this event study under all RGMs confirms that stock market reaction to rights issue announcement is negative as it has been reported for U.S. Mikkelson and Partch, (1986), Barclay and Litzenberger, (1988), Hansen, (1989), U.K. Levis, (1995), and Japan Cai and Wei, (1997).

Conclusion

Equity rights issue is one of the popular methods of raising further capital in which purchasing privilege is given to existing shareholders. The popularity of Right issue lies in the facts such as: Right issue provides more control to existing shareholders without any loss as it is more logical and scientific method of equity rising. Good will of the company can be increased by issuance of right issue and the cost is quite low as compared to IPOs. Rights issue act as a signaling device in the market. If the signal is perceived positively by the market then rights issue is successful and stock prices are also expected to rise. On the contrary, rights issue can be a failure and stock price may swing downwards in

response to rights issue announcements. There are number of factors which can result in negative response to right issue announcement. Firstly, if the corporate track record of company is not impressive and the firm is unable to meet its expansion requirements out of retained earnings and cheaper debt is not available to it, then the company is bound to switch to fresh equity according to pecking order theory, Donaldson, (1961), and Myers and Majluf, (1984). Rights issue also gives the impression of concentration of ownership in few hands which could result in expropriation of minority shareholders' wealth. Investors also calculate the theoretical value of the right and are willing to buy only if there is any benefit to them. Firms issue rights shares at the intrinsic value based on fundamentals, which are sometime higher than the market price of share, such pricing issues can also lead to negative price reaction to rights issues and rights issue announcements. Moreover, certain companies simply announce the right issue to cause volatility in the share price at the time of announcement and with drawl of right issue. Such announcements not only create artificial abnormal returns but also render it harder to calculate the proportion of equity capital raised via use of preemptive right issues. This fact was noted by Securities and Exchange Commission of Pakistan and in a press release dated November 11, 2009 companies making right issue announcements are restricted to withdraw their decision late on. Due to more prevalence of negative use of right issues in Pakistan, results of this study confirm that there is a negative price reaction to rights issue announcements in Pakistan which is in line with existing studies in other markets e.g., Eckbo and Masulis, (1992), Kothare, (1999), Cai and Loughran, (1998).Availability of refined stock and index history archives, information of about actual right issues/subsequent withdrawal and bench marking of right issues in small and large issues lead the way to avenues of future research.

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