

## Reaction of Stock Prices to News Related to Renewable Energy Companies in India

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### ABSTRACT

*India is the world's fourth-largest energy consumer which is expected to be the third-largest by 2030. To meet this energy requirement, India will require an assured supply of 3-4 times more energy than the total energy consumed today. Resultant the wind-solar energy-producing companies may become reactive to the government announcement for the energy sector. This study attempts to examine the relationship between the announcements of any news or event and reaction of the stock prices of publicly listed companies of wind and solar sectors. A total of 237 news of 6 listed companies were collected for the study period from 2015 to 2018. To test the hypotheses cross-tabulation, an event study has been used. The stock price does get impacted by the announcement of news as it led to significant fluctuations in the average change in volume in the case of solar sector companies and wind sector companies.*

**Keywords:** NEWS; Renewable energy; Event study; AAR; CAAR.

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### 1.0 Introduction

Energy is a vital resource that is required for the development of an economy. The International Energy Agency estimates that India is the world's fourth-largest energy consumer after United States, China and Russia and will be the third-largest by 2030, as to meet the energy required for such a fast-growing economy, India will require an assured supply of 3-4 times more energy than the total energy consumed today ("India-International-Analysis-U.S. Energy Information Administration (EIA)," n.d.). Renewable energy sources and technologies have potential to provide solutions to the long-standing energy problems being faced by the developing countries.

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The Government of India recognizes that development of local, renewable resources is critical to ensure that it is able to meet both its economic and environmental objectives, and it has promoted this development through policy action.

For the Indian economy to continue the requirement trajectory, India needs to address its energy challenges, which cross all sectors and impact all citizens. Electricity—both in terms of quality and access—is a key challenge. Renewable energy sources like wind energy, solar energy, geothermal energy, ocean energy, biomass energy and fuel cell technology can be used to overcome energy shortage and requirements in India (Times, 2018). Renewable energy is one of the options to meet this requirement. Today, renewable accounts for about 33% of India's primary energy consumptions. India has great potential to accelerate the use of its endowed renewable resources to power its growing economy with a secure and affordable energy supply. The quality of the current electricity supply is impeding India's economic growth. Issues such as voltage fluctuation, frequency variation, spikes, black-outs, brown-outs, and other disruptions impact industrial, commercial, and residential consumers which can be overcome by renewable energy. This is the reason why government is concerned about the development of the renewable energy sector and introducing so many policies. The stock prices are observed differently reactive to different types of news in a different way. The reaction of the stock prices of six renewable energy companies deals with the issue of the efficient market hypothesis (EMH). If the repetitive pattern is observed in stock prices during the news announcement the investors can form their trading strategy.

## **2.0 Literature Review**

Taghizadeh-Hesary *et al.* (2018) had observed the reduction in the consumption of solar energy by the People's Republic of China (PRC). The solar power consumption was \$5810 per kilowatts (kW) in 2007 which was reduced to \$570 per kW in 2015 and less than \$350 per kW in 2017. The correlation between solar module prices and five economic factors were calculated. The study did not find a significant impact of wages on solar module prices, change in interest and exchange rate, oil prices and capital expenditure had a significant impact on solar module prices (Taghizadeh-Hesary *et al.*, n.d.).

Mazzucato and Semieniuk (2018) had studied the relationship between innovation in renewable energy and different types of finance and their willingness to invest in renewable energy. The 11 investors were classified under the head of private, public and others. The investment patterns of 11 investors were studied and it was observed that risky projects are financed by public investors. Therefore major share on

investment in renewable energy was observed from the public sector companies. (Best and Burke, 2018) had analyzed the roles of policies and preferences in the national adoption of solar and wind energy technologies. They observed that climate change perceptions make a considerable contribution to solar energy adoption but not to wind energy. Policy support is positively associated with solar energy use. The more financial provision leads to more expenses towards renewable energy.

The movement of the share price is always being an interesting topic for the researcher. The growing researches focus on the impact of bonus share announcement, stock split, right share, earning announcement, dividend announcement, and business announcement (Joshi, 2017). Crowley *et al.* (2019) had studied the impact of the announcement by European Union and Chinese government regarding import restriction on the stocks. The abnormal returns were calculated with respect to announcements made. The daily stock prices of selected stocks of Shanghai-Shenzhen, New York stock exchange and Hong Kong stock exchange. The companies with big export bases were observed highly reactive to the announcements compared to other companies. And the firms listed on US markets were observed highly responsive to news compared to the stocks listed in China and Hong Kong. (Joshi, 2018) The event study and sentiment analysis were applied to measure the impact of Business specific News on the stock prices. The business-specific news was collected from the moneycontrol.com for the study purpose. Total of 392 business news of 5 companies were collected and analyzed. The impacts of news were observed and no significant impacts were observed for positive v/s negative news. The impact of different news events limited to S&P 500 stock prices was analyzed by Sprenger and Welp (2011). The live twitter news was classified as positive and negative news with computational linguistic methods. Total 4,39,960 stock-specific news were analyzed with machine learning packages. They found that positive news offered higher abnormal returns compared to negative news.

The research papers were observed for the energy-specific or event-specific. But, very few research papers were observed which had measured the impact of news related to renewable energy on the stock prices. The aim of this paper is to study the impact of news related to renewable energy on the stock price of wind energy and solar energy stocks.

### **3.0 Method and Data**

For the study purpose data of 3 companies of wind energy, 3 companies of solar energy and BSE Sensex were collected. The daily closing prices from 2014 to 2018 collected for 6 companies (See Table 1) and 1 index.

**Table 1: Details of Companies**

Name of the Company	Sector	Establishment Year	Key Person	Life-Time High
Indo Solar	Solar	2005	Mr. H. R. Gupta -CEO	30.95
Ujaas Energy	Solar	1999	Mr. Anurag Mundra(MD)	51.65
Urja Global	Solar	1992	Mr. Bharat Merchant - CEO	10.4
Indowind Energy Ltd	Wind	1995	Mr. K. V. Bala - MD	211.8
Inox Wind Energy	Wind	2009	KailashTarachandani - CEO	494.4
Orient Green Power	Wind	2006	VenkatachalamAyyar - CEO	47.25

Source: Based on data analysis

**Table 2: Total News Collected and Analyzed**

Name of The company	2015		2016		2017		2018		Total No. of News	
	Collect ed	Analyz ed	Collect ed	Analyz ed	Collect ed	Analyz ed	Collect ed	Analyz ed	Collect ed	Analyz ed
Indo Solar	7	5	7	5	5	4	1	1	20	15
Urja Global	13	6	5	4	8	8	1	0	27	18
Ujaas Energy	13	7	17	10	15	8	2	2	47	27
Inox Wind Energy	29	8	37	13	16	8	7	3	89	32
Indowind Energy Ltd	9	7	3	2	5	3	0	0	17	12
Orient Green Power	17	9	9	7	7	4	4	4	37	24
<b>Total News</b>	<b>88</b>	<b>42</b>	<b>78</b>	<b>41</b>	<b>56</b>	<b>35</b>	<b>15</b>	<b>10</b>	<b>237</b>	<b>128</b>

Source: Based on data analysis

For the data analysis purpose news announced for the company-specific were collected from moenycontrol.com. To avoid the impact of overlapping of news, if there was more than single news announced on the same day and/or announced within 10 days was ignored. Total of 237 numbers of news of six companies was collected and total of 128 numbers of news was considered for the study purpose (See Table 2). It was observed that the period from 2015 to 2018 was a bullish trend and the total number of news announced were declined year by year which was in support of (Mitra and Mitra, 2011). To measure the impact of news announcements the event study was applied. The abnormal returns of the stock were calculated with the market model. The abnormal return is the difference between actual and expected returns. To avoid the influence of extreme values, the logarithm of daily market return was used to calculate the index and stock return. To calculate the expected return, the daily returns of the BSE Sensex 30

index were regressed with the daily stock returns. The intercept, slope-Beta and error were calculated using 252 days before the event for deriving expected return of the stock. The non-zero AR is evidence of the impact of analysts' recommendations. The t-test was applied to test the statistical significance of the AR at a 5% significance level. The abnormal return of each day was divided by the standard error to derive the statistical significance of the abnormal return. The values greater than 1.96 at 0.05 confidence level were considered as a statistically significant abnormal return. The Cumulative Abnormal return was also calculated to measure the general impact of the news.

The impacts of news were also measured on the volume because significant change in volume on the news announcement day is evidence of the impact of the news announcement. The percentage change in volume is calculated for the 5 days (-2, 0, +2).

$H_0$ : There is no significant difference between percentage change in stock prices and the announcement of news in the market.

#### **4.0 Data Analysis and Interpretation**

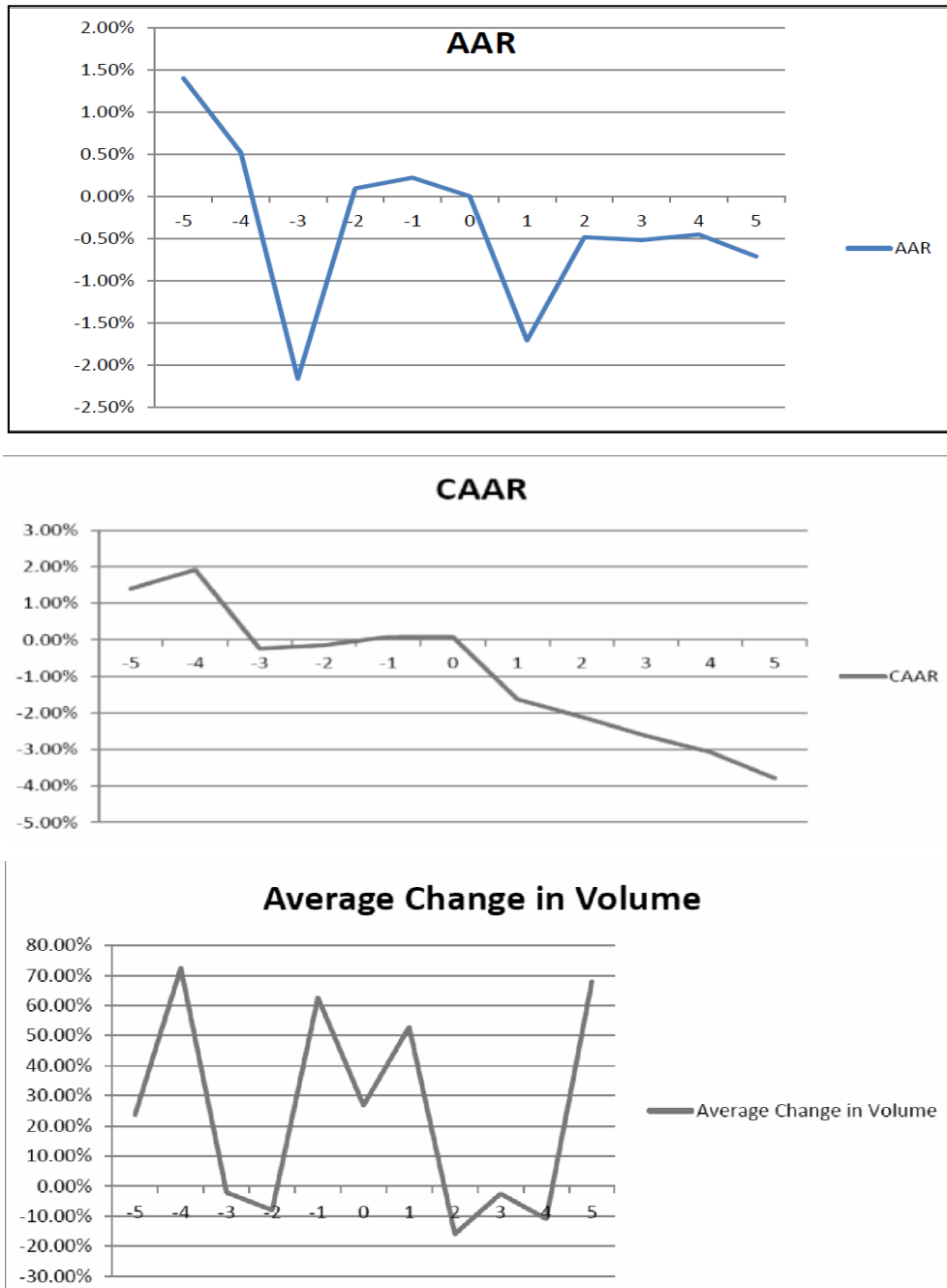
Out of total 237 news collected, 54% of news was analyzed. Year-wise maximum number of percentage of news analyzed was from the year 2018 (67%). Company-wise maximum number of the percentage of news analyzed was from Indo Solar. Considering the average of percentage news analyzed of both the sectors, average 66.33% news was analyzed from Solar Sector and 57.33% news was analyzed from Wind Sector.

##### **4.1 Analysis of solar energy companies**

**Indo solar Ltd:** (See Figure 1) AAR of Indo solar Ltd was observed negative during post and pre-event. It was observed positive on the event day. The CAAR was observing positive on event day and then observed negative. The volume had shown the zigzag movement before and after the event. There is no significant impact on the news was observed on the volume.

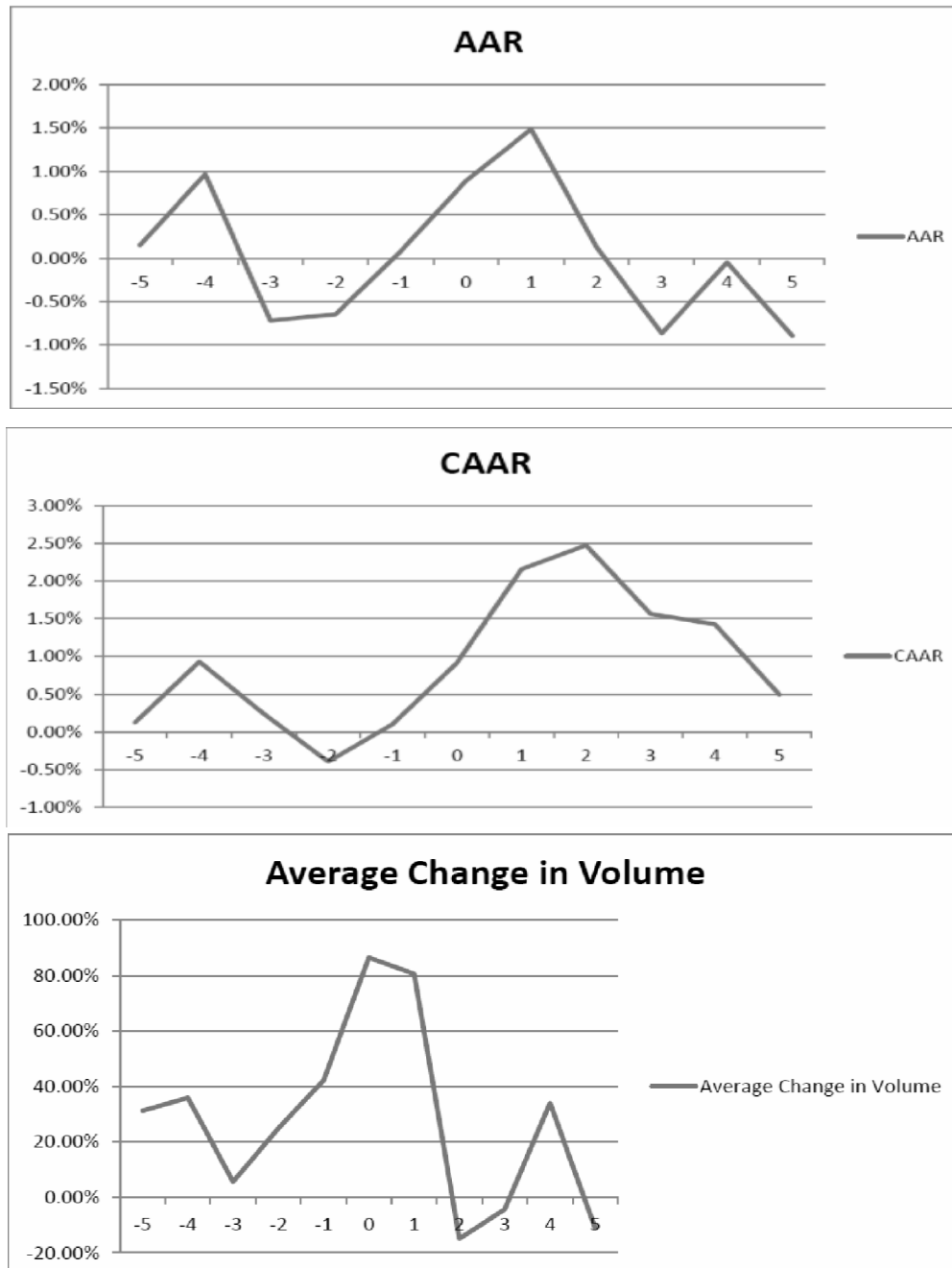
**Ujaas energy Ltd:** (See Figure 2) The AAR of Ujaas Ltd observed rising from -1 day and continued rising upto +1 day. While the CAAR was observed rising from -1 day and continued upto +2 day of the event. There was significant movement was observed in the volume during -1 to +2 days.

**Figure 1: Analysis of Indo Solar Ltd**



Source: Based on data analysis

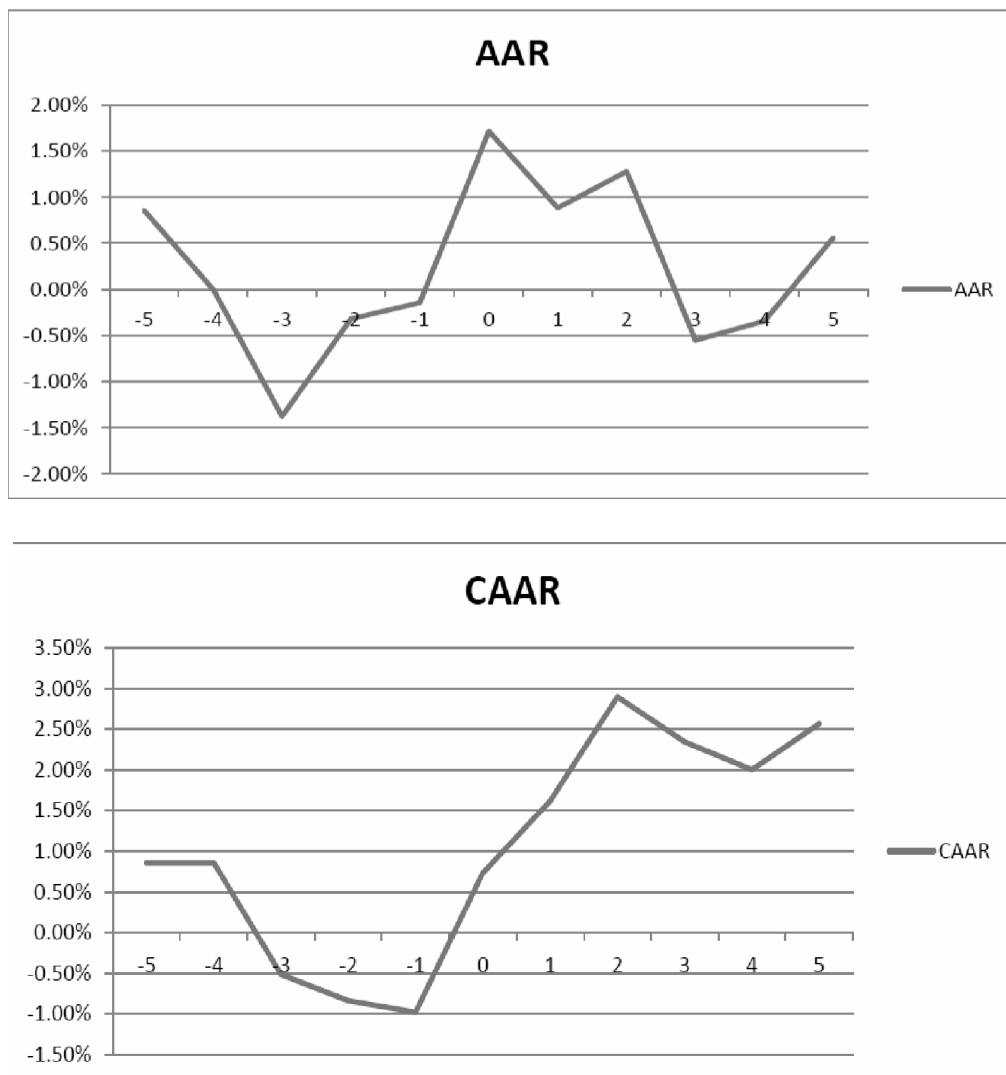
**Figure 2: Analysis of Ujaas Energy Ltd**

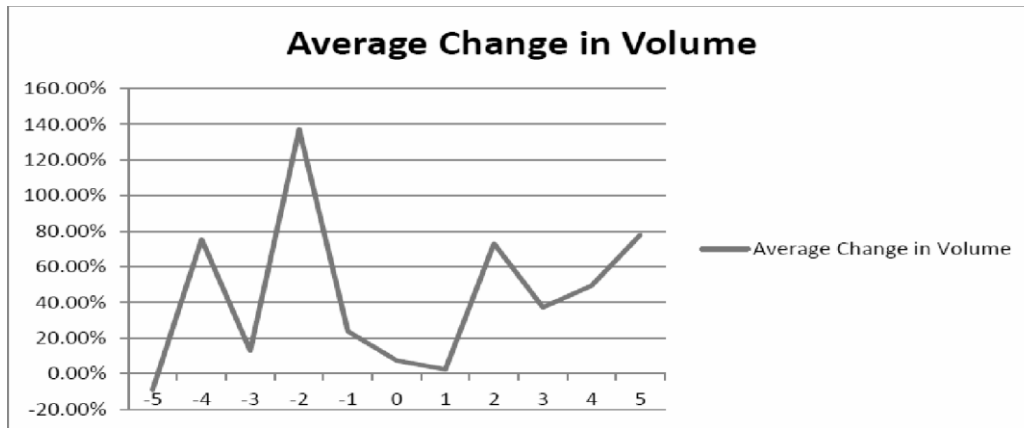


Source: Based on data analysis

**Urja Global Ltd:** (See Figure 3) The stock was found slow in reacting towards the event announcement. The AAR was positive on the event day and continues upto 2 days post event. The CAAR was observed positive from the event day to +5 days. It means, the investors were observed under reactive towards news of a company. The volume was also observed going up after the event.

**Figure 3: Analysis of Urja Global Ltd**



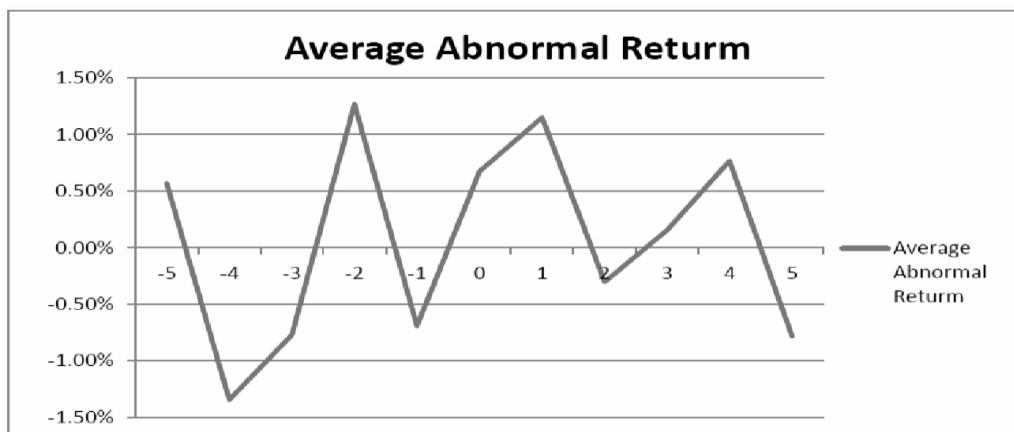


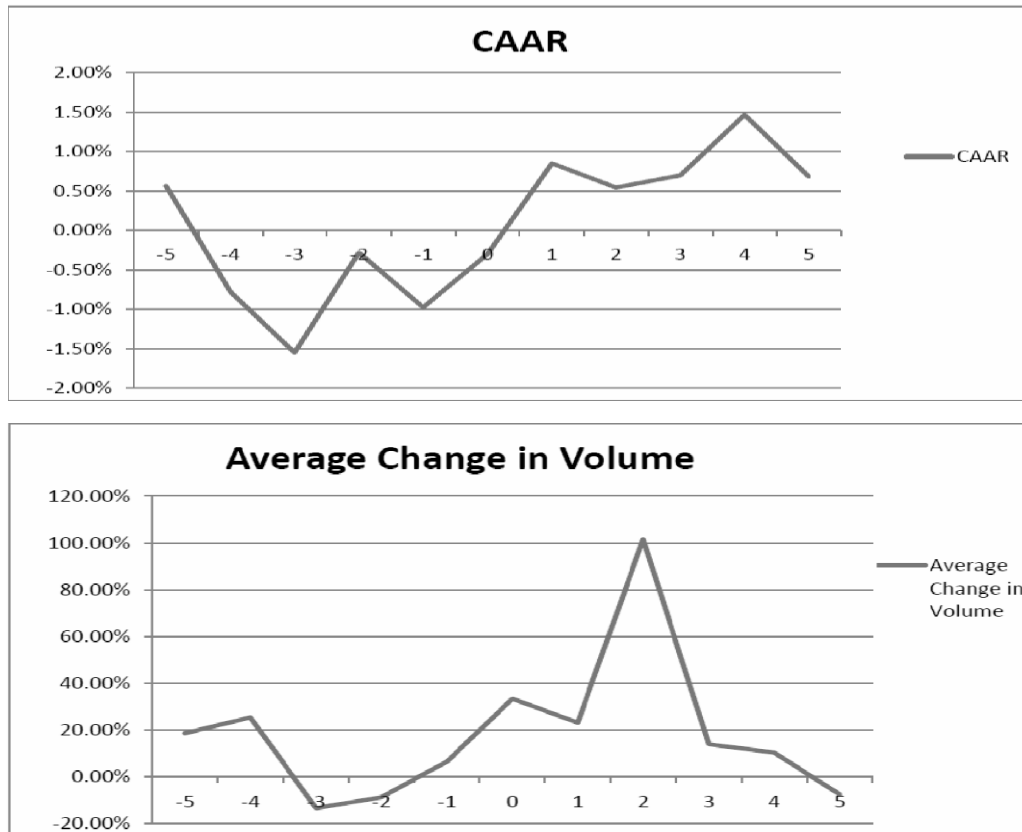
Source: Based on data analysis

**Indo wind:** (see Figure 4) The AAR was obtained from the calculated AR. The calculated AAR is fitted in a time plot to establish the trends. It is observed from the above figure that AAR started increasing from 3 days before the announcement of news in the market. So it shows that information is absorbed in the market and there is a change in AAR due to the event and it decreases in the long run for the company. CAAR was increased till the 4th day following the event date. But on day +5 it decreased. So it shows that stock offered positive reports before the event and after the event stock prices decreased. Volume started increasing before 2 days of the announcement of the news in the market. On the following day of the announcement, volume decreased which shows that news was absorbed in the market.

#### 4.2 Analysis of wind energy companies

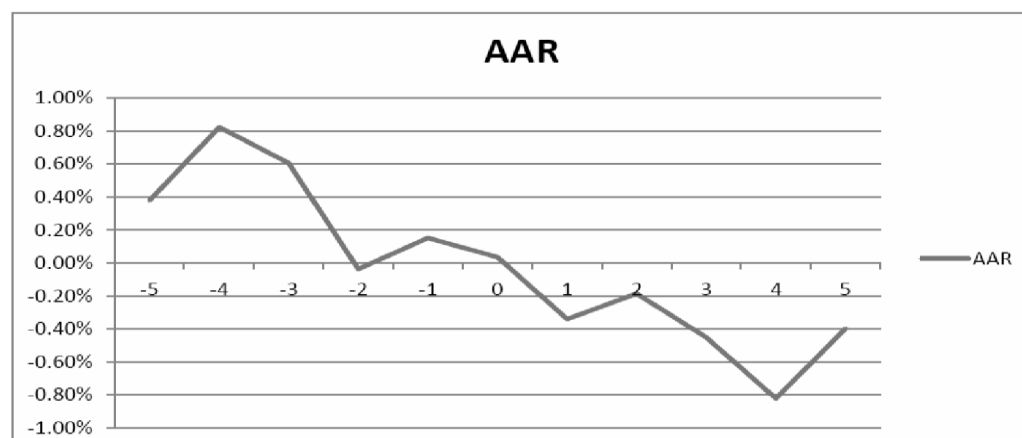
Figure 4: Analysis of Indowind Energy Ltd

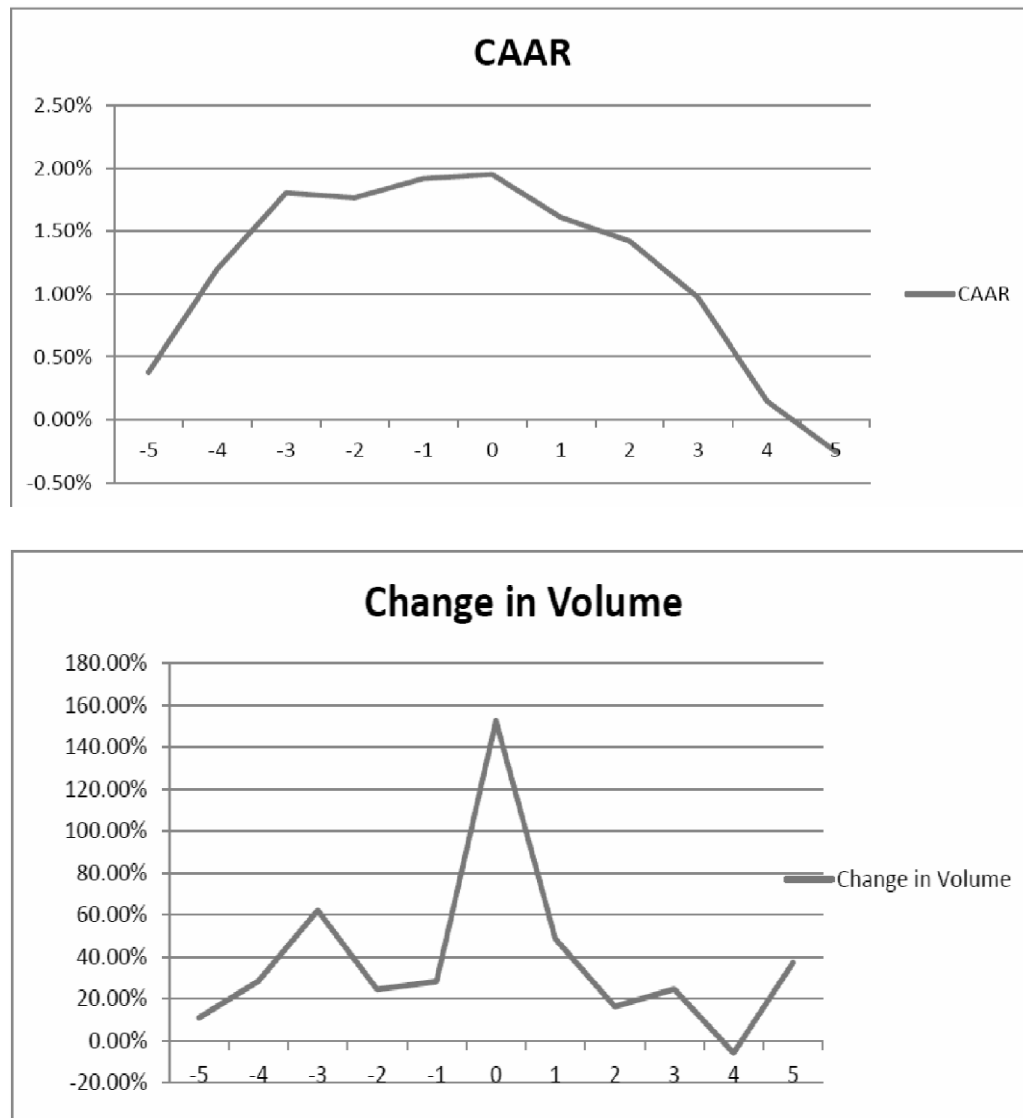




Source: Based on data analysis

**Figure 5: Analysis of Inox Wind Energy**



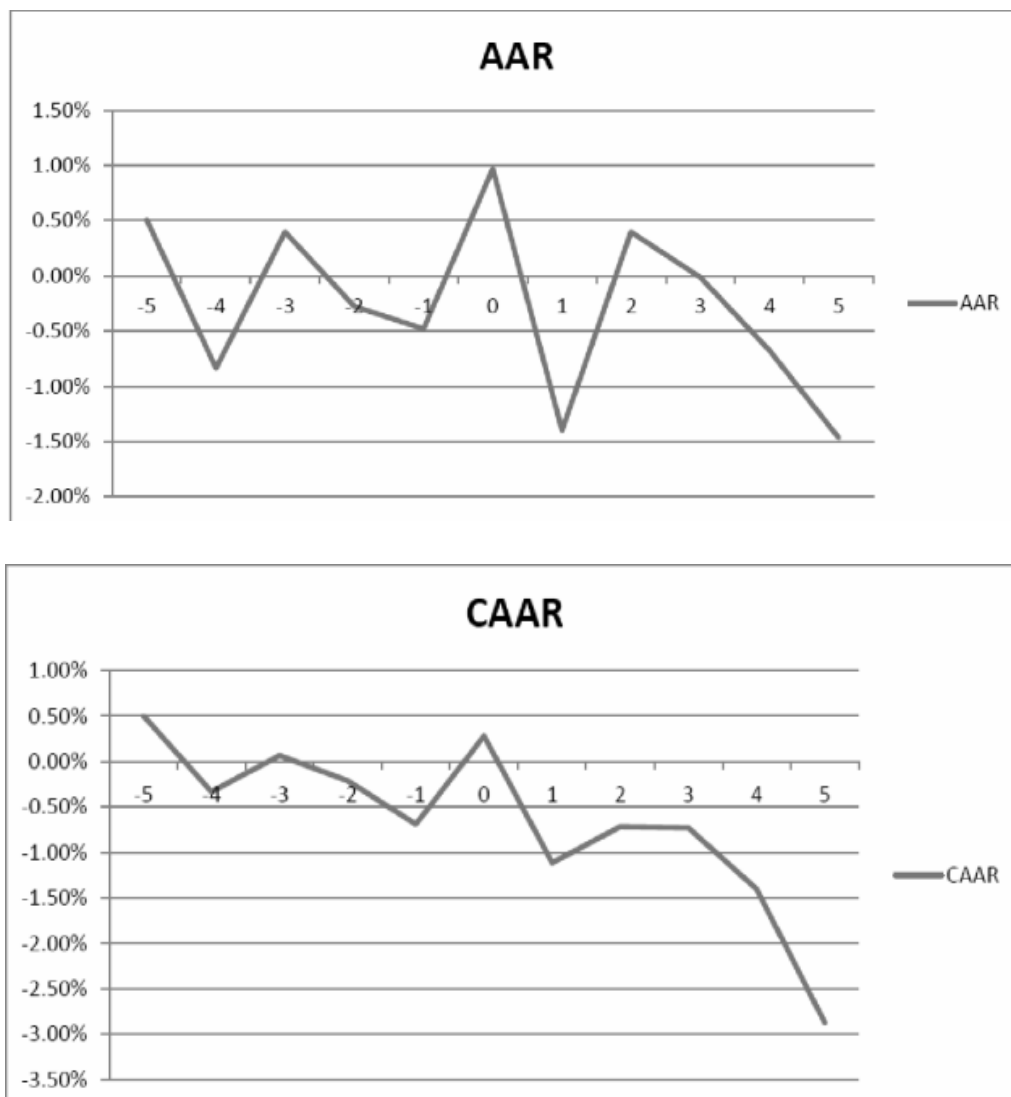


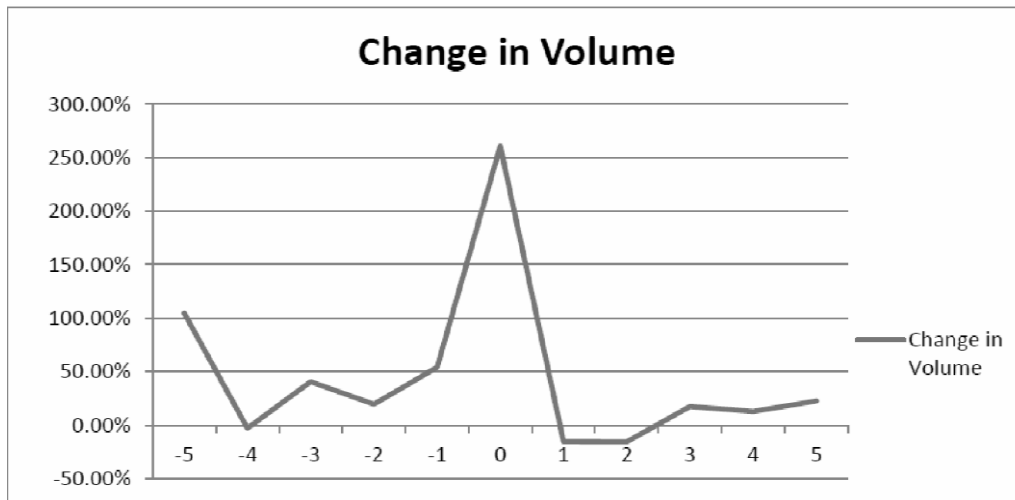
Source: Based on data analysis

**Inox wind energy:** (See Figure 5) AAR of Inox wind-energy observed high on two days before the event then it is observed falling. CAAR was also observed moving up up to event day and then it was observed as falling. The highest volume was observed on the event day. The stock price had negatively reacted to the event.

**Orient green power:** (See Figure 6) AAR and CAAR was observed positive on the event day. It means the stock was found more reactive to the news and had offered positive returns on the event day. The spike in volume was observed on the event day. It was observed the increase in the volume by 200% on the event day. It supports the hypothesis that there is a significant impact of news on the volume of the stock.

**Figure 6: Analysis of Orient Green Power**





Source: Based on data analysis

## 5.0 Conclusion

The aim of the study was to study the impact of news announcement on energy stocks. The event study was applied to measure the impact of news with a special focus on the price reactions and volume reactions. The volumes of four stocks out of six stocks were found reactive on the event day. In the case of Urja Global Ltd volume had started to increase before the event day and in the case of Indowind Energy Ltd the volume had increased after the event. So, in case of 4 stocks, the market absorbed the information and supported the semi-strong form of EMH. The under-reaction was observed in case of Urja Global Ltd and Indowind Energy Ltd. But, AAR and CAAR of the other four companies observed reactive before the event and reverse direction was observed after the event. So, it would be profitable to short shares on the event day and buy back shares after 2-3 days for better speculative profit.

## 6.0 Further Scope of the Study

This study is limited to six companies, three from wind energy and three from solar energy. As the major announcement from the government was started in the last 5 years, the data were collected for four years. So, further study can be carried out considering more companies with more years of data. The event study was limited to 5 days and gave the impact of the event in a short duration only. The big event window can help in the understanding better impact of events in the long term.

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