

Examination of Unexpected Events on the Performance of the Stock Market: A Case of the Pakistan Stock Exchange

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Abstract

Stock markets provide a flexible platform for trading financial instruments (shares, bonds, debentures, options, etc.) individually and collectively. The stock market is an essential component of the financial system of any economy, either developed, developing, or emerging country. It could be affected by various factors that affect the economy directly and indirectly. This study examines the effect of natural disasters on the performance of the Pakistan Stock Exchange during 2000-2022 based on 2000 observations of the KSE100 index. Data on all these events was obtained from different websites, newspapers, Magazines, etc. All the events are considered based on major factors and natural disasters that could influence the performance of the stock market of Pakistan. The most important events related to natural disasters from the last couple of decades include the earthquake of October 2005, the flood in 2008, the pandemic, and recent floods, etc. Data analysis is applied to this study including correlation, regression, ANOVA, and t-test analysis. The finding reveals the positive as well as negative impacts on the performance of the Pakistan stock exchange due to natural calamities or catastrophes. Many events show positive effects before the occurrence of the events and show negative performance after the occurrences of the events. This study could enhance knowledge about the factors that affect the market in any situation.

Keywords: Natural Disasters, Pakistan Stock Exchange, KSE100

Introduction

In latest and modern era shows, the stock market plays an essential role in any economy, whether it is an emerging, developing or developed country. A developed stock or financial market supports economic growth in a positive way. A well-established stock market generates local and foreign investment in the country because the investors of the stock market are the key participants or stakeholders, either local or foreign investors. The Stock market is crucial part of financial market, which consists of two types of market the money market and the capital market. These markets are segregated based on the maturity period of financial instruments. If the maturity period is less than one year it falls under the money market and if more than one year it falls under the capital market. Role of stock market is crucial for emerging economy and without financial market survival of emerging economies is impossible by (Wright, Filatotchev, Hoskisson, & Peng, 2005).

A financial market is a structure or mechanism where different financial instruments are traded and dealt with. Financial instruments such as derivatives, options futures contracts, bond etc. are parts of the capital market. Financial market of the Pakistan also called Pakistan stock exchange with abbreviated form PSX after the emergence of the other three stock exchanges of the Pakistan i.e., KSE, LSE and ISE on 11th January 2016. And now the PSX consider the backbone of the economy of the Pakistan because this is financial market and working as essential part of the economy.

Pakistan stock exchange have different stakeholder such as government, different banks, corporate entities, securities and exchange commission of Pakistan, federal board of revenue, and most important stakeholder of the stock market are investors locally and globally. Basically, these stakeholders (Investors) connect to this system for making wealth maximization. According to the modern financial theory based upon the concept of effect market hypothesis, it is believed that investors are rational, and their main aim to maximization of wealth by (Ritter, 2003). In the recent era, the stock market has been affected through various factors that may be economic and non-economic. Economic factors such as inflation, foreign direct investment, return on investment etc., and non-economic factors like terrorism, political, technological, and natural disasters etc. All these factors affect the stock market negatively or positively but most of the time different factors affect the performance of the stock market in negative way. Previous study shows the specific time span show the positive influences on the stock market. But most of the time market effect adversely in any abnormal situation. Many common factors for the selection of the event create uncertainty, shocks and fear caused by occurrence of the events according to (Ahmad, Ali, & Humayoun, 2011). Natural disasters have created an impact on the stock market and economy in the last couple of decades.

Now we talk about, Natural disasters are uncertain and unplanned factors that affect the performance of the Pakistan stock exchange most of the time. Due to this factor the stock market declined and worked in a negative way because of panic selling response from investors. The stock market works based on prediction and forecasting based on news that may be favorable and unfavorable. Literature supports this study because this type of activity could have an adverse effect on the performance of the stock exchanges. As we know, Pakistan is considered an emerging economy and therefore its stock market play pivotal role in overall economy. This study aims to examine the impact of various natural events on the performance of the Karachi stock exchange. Natural disasters can cause significant damage and financial losses in the country, and they may have both positive and negative effects on the market performance. This research study contributes to the literature by observing the impact of most crucial natural events on Pakistan stock exchange. This study focuses on examining the influence of specific events and factors. And this study compares the effect of these events with the help of event window study concept (Ball & Brown, 2019). It is found that there is a significant impact in the return of diverse stock of the market due to the occurrence certain events by (Chen, Bin, & Chen, 2005).

The study analyzes and explore the impact of selected natural events on the performance of Pakistan stock exchange during specific time periods. Additionally, the study utilizes the KSE 100 to explore the impact of other factors on the stock market of Pakistan at limited level.

Literature Review

This study basically explore how certain events of the specific factors are influences on the performance of the stock market in Pakistan. Previous studies used various techniques to examine how different events affect the Karachi stock market. However, this study based on the concept of event analysis window, which compares various events in relation to the pre and post event by (Ball & Brown, 2014). The Pakistan stock market is directly or indirectly connected to the economic system within and outside the country, and this can have both positive or negative effect according to (Ahmad et al., 2011). Investors are the key participant of the stock market and considered the backbone of this market. They play important role in the economic growth and development of an economy (Campus, 2011). Previous studies have shown the economic and non-economic factors affect the performance of the stock market, but this study focuses on non-economic factor i.e., natural disaster how this factor influences on the performance of the Pakistan stock exchange. The Stock market works based upon the news forecasting and predictions.

News has a significant impact on the stock market return, whether positive or negative news. This type of study basically show the investor sentiment how can

changes due to various reasons (Ahmad, Sohail, Riaz, Hussain, & Ihsan, 2021). In any economy, especially in emerging ones, different factors affect the performance of the market. More stability in the different factors is more satisfactory and favorable for different investors (Manzoor, 2013). Stock market stability depends upon the stability of the other factors, that may be economic and non-economic factors can affect it, directly and indirectly. Natural factors can affect the return of the stock market adversely for medium and long term (Manzoor, 2013). The Financial literature shows a number of the events can have focus on the performance of the stock market negatively such as terrorist events, natural and many other catastrophic events according to (Robinson & Bangwayo-Skeete, 2016). Existing studies shown the results of the different natural disasters, such hurricanes, tornadoes, floods, wild fires and other catastrophes disasters by (Ewing, Kruse, & Sutter, 2007). Natural disasters create impact on the economy directly and indirectly. They have an impact on economic losses in the economies, and especially in emerging or developing economies (Strobl, 2012). According to various evidence shown the natural events indicate the high losses that are related to the development and progress of any economy, whether emerging, developing or developed (Noy, 2009).

The previous researchers indicate natural disaster can create impact shortly or mediumly (1 to five year time period) and also long term (more than five year) according to (Hochrainer, 2009). Event studies basically, are used to find the relationship and effect of the different factors or events on the performance of the financial and non-financial sector of the stock market (Shah, Niazi, & Akram, 2019). Floods are part of natural disaster and can heavily attack on the cash crops of the any economy. Flooding is a significant cause of damages and losses in the worldwide (Keating et al., 2017). We know that the numbers of people is continuously increasing, and the assets are located in areas that are particularly vulnerable to the hazards of the flood (Center, 2015). The pandemic has had a significant impact on the economy in the last couple of years. It not only affected the health of the peoples but also created problem for the stock market, as it showed how the stock market was effected due to this disaster in overall the world (Bash & Alsaifi, 2019). Many US and China stocks were drop to historical prices at the time of COVID-19 (He, Sun, Zhang, & Li, 2020). This study focuses on finding the impact of natural events with the help of event window studies. Several past studies have shown that many factors have had a negative impact on the stock market with reference to natural events. Investors are not rational all the time their decision making can be impacted by different psychologically and behaviorally, which in turn can have an impact on the stock market (Kengatharan & Kengatharan, 2014).

Hypothesis of the study

H1: There is no difference in the stock market performance event, pre-event and post-event due to occurrence of unexpected events.

H2: There is a significant positive impact of events causing natural disasters on the stock market performance.

Methodology

This study aims to investigate the influence of various certain events on the performance of Stock market of Pakistan. This study examines the effect and compare them using the concept of comparative event studies on the KSE 100 index in Pakistan. The selected major events of 21st century in Pakistan include the earthquake of 2005, Flood of 2010, Tsunami 2013, earthquake 2015, Snowstorm and rain of 2017, Covid-19 pandemic, Murree accident and flood of 2022 in Pakistan. All these events are considered as independent variables and their impact on the performance of the Stock market analyzed as dependent variables during specific time periods. The selection of these events based on fear, losses, damages, uncertainty, and death etc. The concept of event study is applied to analyzed the effect of these events on the stock market performance by (Ball & Brown, 2014).

Using the concept of event window, researcher compare the effect of selected events based on the upon and pre event effect, event effect and post event effect (Ahmad et al., 2021). Literature supports and suggests adopting the longitudinal data approach for this type of research or study. This study is basically based on secondary data and has a quantitative nature. All the data were collected through secondary resources such as print media, electronic media, books, magazines, and websites. The data of KSE 100 are collected www.khaistock.com from last 22 year from January 2000 to December 2022. The Karachi stock market in considered the backbone of the financial market of Pakistan. So, the population of this study is Pakistan stock exchange and target population of this study KSE100 index. Purposive sampling techniques are used in this study with around about 5600 observation that obtained from www.khistock.com of 22 years. Criteria of this study is natural events and non-contrive study are applied in this research.

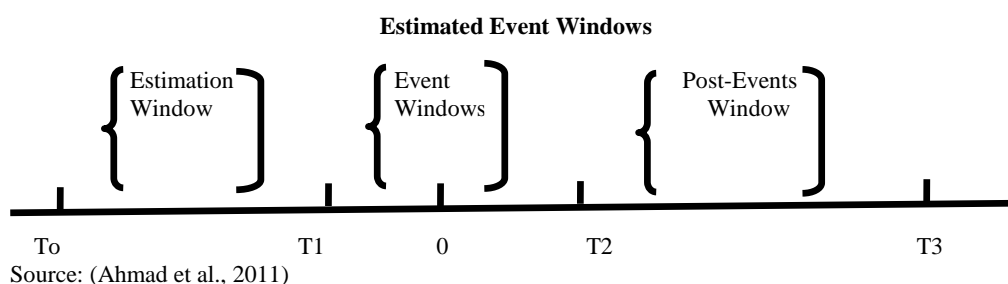


Table 3.1:

Sr No.	Disasters & Year	Source	Event	Pre-Event	Post-Event
1	Earthquake in 2005	Nawa I Waqt	Oct 8, 2005 To Oct 22, 2005	Sep 24, 2005 To Oct 7, 2005	Oct 23, 2005 To Nov 06, 2005
2	Flood in 2010	Nawa I Waqt	July 22, 2010 To Aug 05, 2010	July 07, 2010 To July 21, 2010	06-08-2010 To Aug 20, 2010
3	Tsunami 2013	Jung	Sep 24, 2013 To Oct 08, 2013	Sept 09, 2013 To 23-09-2013	Oct 09, 2013 To Oct 23, 2013
4	Earthquake 2015	Daily Express	Oct 26, 2015 To Nov 10, 2015	Oct 11, 2015 To Oct 25, 2015	Nov 11, 2015 To Nov 25, 2015
5	Snowstorm and Rain 2017	Nawa-e-Waqt	Jan 17, 2017 To Feb 01, 2017	Jan 02, 2017 To Jan 16, 2017	Feb 02, 2017 To Feb 16, 2017
6	Covid in 2020	Dawn	Feb 26, 2020 To Mar 12, 2020	Feb 11, 2020 To Feb 25, 2020	Mar 13, 2020 To Mar 27, 2020
7	Muree Accident in 2022	Tribute	Jan 07, 2022 To Jan 21, 2022	Dec 23, 2022 To Jan 06, 2022	Jan 22, 2022 To Feb 05, 2022
8	Flood in 2022	Nawa I Waqt	Jun 14, 2022 To Jun 28, 2022	May 29, 2022 To Jun 13, 2022	Jun 29, 2022 To Jul 13, 2022

Source: Generated

Results and Discussion

This study shows the impact of various events on the performance of the stock market with the happening of various natural disasters either these events have positive or negative impact empirically. This study examines the influence of selected local and global events on the stock market of Pakistan. There are several or multiple approaches available for investigating the impact on the performance of the market. But most of the time and flexible method to the check the influence through post hock, Tukey, Correlation, ANOVA, and regression analysis etc.

There are several major events examined in this study. All the events are mentioned above in the table form such as earthquake in 2005 and flood of 2010 etc. The results from the events study concept through regression analysis, post hoc and Tukey etc. are applied for the empirical investigation. So, this study shows the positive or negative impact such as mostly before occurring of events market work positively and after occurrence of the event market show the impact adversely.

Table 4.1: Multiple Regression Coefficients, Standard errors in parenthesis, Significant values in italic form, R -square and F values in this study

Sr No.	Event	Constant	Pre-event	Post-Event	R-Square	F-Statistics
1	Earthquake in 2005	8685.148 (51.811) 0.000	-359.064 (71.587) 0.000	-358.103 (84.6060) 0.000	0.557	15.092
2	Flood in 2010	10373.400 (49.324) 0.000	-296.776 (68.151) 0.000	-523.075 (68.151) 0.000	0.671	29.531
3	Tsunami 2013	22268.428 (112.617) 0.000	1058.705 (163.629) 0.000	948.377 (155.603) 0.000	0.662	26.416
4	Earthquake 2015	34213.390 (65.316) 0.000	-231.901 (99.772) 0.000	-342.961 (94.447) 0.000	0.322	6.884
5	Snowstorm and Rain 2017	49386.940 (118.093) 0.000	-439.891 (170.761) 0.000	336.279 (170.761) 0.000	0.391	9.962
6	Covid in 2020	38149.839 (501.915) 0.000	1914.174 (725.767) 0.000	-7675.198 (744.460) 0.000	0.925	88.552
7	Muree Accident in 2022	45486.782 (133.582) 0.000	-1219.872 (462.740) 0.000	-99.923 (193.578) 0.000	0.268	3.475
8	Flood in 2022	38890.871 (1073.742) 0.000	-411.590 (1631.131) 0.000	-1762.738 (1561.457) 0.000	0.008	0.679

Source: Generated

The above-mentioned table represents the results of this study it indicates the effects of the various events on the performance of the stock exchange. It analyzes such events like the earthquake 2005 and their impact both on pre and post occurrence of events. The factual basis indicates that the first event earthquake had significantly negative impact on the performance of the stock market before and after its occurrence. Additionally, the R- Square value in this event shows more than 50 percent (0.557) effect on the performance of stock exchange. The second natural disaster is flood show more the 60 percent variation on the impact of stock market. Similarly, the tsunami and

other events also indicate the same variation in influence of the stock markets in different levels.

Conclusion

The Stock market, not just in Pakistan but worldwide is considered the backbone of the any economy. It serves as an indicator of the financial health of an economy and generates employment opportunities within countries whether they are emerging, developing or developed economies. Stock markets raise the capital from various local and global investors, and it creates positivity in the economy. Karachi stock market is considered the commercial hub of the economy. Various stakeholders connected with the stock exchange directly and indirectly like locally and globally various stakeholders connect in this market that may be investors, govt, foreign govt, tax departments, financial institutions, non-financial institutions etc. Stock markets overall the world influence through various factors that may be economic and non-economic factors but, in this study, observed and analyzed to the non-economic factors and checked the impact of these certain events on the performance of the Stock market of Pakistan. Basically, the purpose of this study is to identify the outcome of stock market in the pre and post situation of the occurrence of any natural disasters/ events.

Implications

This study indicates the impact of certain events on the performance of the stock markets. Practically and theoretically this study play an important role for various stakeholders such as different local and global investors, policies makers and governments can take initiative and create policies according to the situation and environment of the market that may be considered the fruitful for the economy and create positive impact on the performance of the stock market. As well as theoretically it is also helpful for policy makers and students etc., they can learn from various aspects.

Limitations and Future Directions of this study

This research was conducted in Pakistan and this research conducted on some certain factor and specific major events of the certain factor. Certain other economic and non-economic factors can be used. Another limitation of this study is time constraint due to limited period of this study only major events are used in the research other events are ignored.

Further research could be conducted on various aspects or other factor could be cover as future research work. Other factors such as political, non-political, economic, and non-economic factors can be used for further study. And other minor

events are also can be used as a research and cover all the aspects. Other factors and events are most important as future research in this field of study.

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