Impact of Market Anomalies, Political Shocks, and Covid-19 on Pakistan Stock Exchange: Univariate GARCH Analysis

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ABSTRACT

The purpose of the study is to investigate the impact of market anomalies (days of the week), political shocks, and COVID-19 on Pakistan Stock Exchange (PSX). The analysis employs dummy variables for capturing the effects of the variables i.e., days of the week, political shocks, and COVID-19. Generalized AutoRegressive Conditional Heteroscedasticity (GARCH) model was used for the empirical research of the volatility of stock returns by using a sample period of daily data from 11 January 2016 to 30 April 2021. Result showed that Friday had a negative, and Wednesday had a significant positive impact on stock returns. While Monday, Tuesday and Thursday were found insignificant. Twenty-two notable political shocks were investigated during the study period except the visit of Saudi-Prince King Salman. A decrease in oil prices during March-2020 showed no impact on stock return, while other political shocks significantly affected stock returns. Moreover, COVID -19 waves had a significant positive effect on stock returns.

Keywords: COVID-19, Market Anomalies, Stock Return, Political Shocks

1. INTRODUCTION

Stock market prices are one of the crucial factors that represent the performance of an economy through the efficient market hypothesis (EMH). The stock market works as a bridge between the investors and the markets. It empowers the individuals and causes to increase the wealth of the nation through rapid financial

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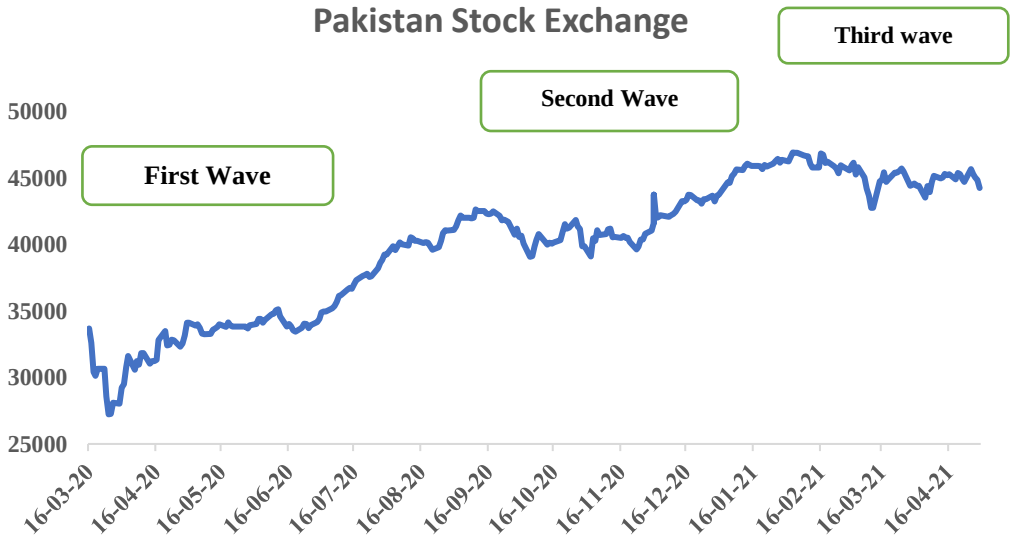
activities. Many factors affect the efficiency of EMH including Market Anomalies (days of the market), political and economic shocks, and most importantly COVID-19. Empirically, the highest return on Monday is analyzed as related to the other days of the week (Anjum, 2019). While Tuesday is found to have some significant positive impacts. Hussain et al. (2011), and Haroon et al. (2013) examined the effect of days on stock returns, and they got some mixed results because of political instability on anomalies.

Furthermore, it is found that political shocks negatively influenced the performance on Pakistan Stock Exchange (Yen et al., 2008; Rehman et al., 2018). However, it is still an ambiguous state for investors that how COVID-19 waves affected the stock market – either it has a positive or negative impact. The effects of COVID-19 waves, market anomalies, and political shocks are contributing to returns' volatility. Investors, policymakers, and the management of the investment firms continuously struggle to predict the magnitude and direction of the volatility for their investment decisions and portfolio rebalancing. This study will help them to understand the market forces especially shockwaves for the markets for better investment decision making. The main idea behind analyzing stock market returns is to catch the efficient market hypothesis behaviour. If this impact is not investigated, the prediction or forecast about the future will be misspecified. Therefore, investors can benefit from their investment and make efficient decisions after analyzing COVID-19 impact on stock market returns. Furthermore, this study also provides help to policymakers, government, and investors in their future investment decisions in a similar situation. For example, political shocks may guide

policymakers, investors, and the government to take measures to protect the stock market and handle unfavorable political conditions. Similarly, the effects of market anomalies may also guide investors to take-out or put-up the investment and rebalancing decisions of their portfolios according to the impact of days on stock market returns that will be beneficial for the policymaker and authorities of PSX.



Source: Author's own compilation

Figure 1: Impact of COVID-19 outbreak on Pakistan Stock Exchange

As the data visualization technique enhances the level of understanding (Mahmood, 2017), Figure 1 above represents the impacts of COVID-19 on PSX during 15th March 2020 to 24th April 2021. The month of March 2020 was considered the worst situation in the history of PSX, at the start of the first wave of COVID-19 (15-03-2020 to 03-08-2020) PSX 100-Index decreased by 8,752 points because of strict lockdown conditions, imposed by the Government. The investors were in a panic

situation, and most listed companies had closed their operations. While in the mid of the first wave, the Government had relaxed the lockdown conditions and allow limited activities. In such a depressing scenario, the International Monetary Fund (IMF) bailed-out the loans to cater COVID-19 challenges that provided blessings for investors, and PSX regain its earlier position to some extent. Resultantly, a majority of investors got some positive returns. However, as the second wave began, the government announced another round of smart lockdown during 19-10-2020 to 31-01-2021. This time PSX 100 index benchmark recovered by 26.6 %. Initially, investors were in a panic situation due to COVID-19, but at the end of the second wave, PSX 100 index started moving slightly, when the third wave was announced during 09-03-2021 to 24-04-2021, PSX 100 index has touched almost 52,500 points due to strong corporate earnings, growth, and government's-controlled measures. Therefore, there was an ambiguous relationship between COVID-19 shocks and stock returns.

2. LITERATURE REVIEW

Gulal (2020) examined the negative effect of COVID-19 on emerging stock markets and found that the pandemic effects are higher in Asian stock markets and lower in European stock markets. Hussain et al. (2001) found no systematic patterns in United Arab Emirates (UAE)'s stock market and Pakistani Stock Markets. Raj and Kumari (2016) investigated the days of the week effect and other anomalies in the Indian stock market and conclude that Monday's returns are positive and significantly higher than other days of the week, and Tuesday's returns are negative as related to other days of the week. Rehman (2009) empirically analyzed the days

of the week effects in the Dhaka stock exchange and concluded that there is a positive return for Thursday, while negative returns for Sunday and Monday. Stock market anomalies are the irregular patterns of stock returns usually occurs in stock markets. Shahid (2015) found that market anomalies are divided into three major types: fundamental anomalies as value effect, technical anomalies as momentum impact, and calendar anomalies (daily, weekly, monthly, and yearly development). Stock market patterns conflict with EMH because of mispricing, anomalies, and stock return volatility (Anjum, 2019).

Those can oppose EMH like the days' effect, weekend effect, and month of the year effect, particularly in an underdeveloped or emerging market. Anjum (2019) investigated the impact of market anomalies in the Pakistan Stock exchange and found that daily returns on Friday are higher than the other days of the week while stock return on Monday is lower but not harmful. The trading time and calendar time hypothesis do not exist in the Pakistan stock market. The monthly returns indicated that January and July effect does not exist in PSX. Husain et al. (2011) analyzed the days of the week effect on stock returns in the Pakistan stock exchange and found a significant impact on Tuesday compared to other days of the week, so, there are more volatility on Tuesday related to other weekdays.

Shamshmir et al. (2016) analyzed monthly anomalies in PSX and concluded that stock return in January is significant with all four indices of PSX. It shows a negative return for June and a positive return for July whereas KSE 30 and KMI 30 indicate less return than other stock indices. A country's stable political conditions

attract investors to invest because investors have a sense of security to put resources in a market with less risk and stable economic conditions (Rehman et al., 2018). Political conditions of a country could be regular when the economy is not facing crises due to internal conflicts. Political instability is high in Pakistan, which is a significant cause of the recession in the economy (Mehta et al., 2020; Hassan, 2018). More political events are happening after one another and inherent volatility in the market.

The uncertain political condition influences the stock market due to political instability. Economic growth is ultimately affected by the stock market. Ullah et al. (2019), and Adam et al. (2016) analyzed that foreign investment is affected due to the political instability of a country. The investor is unwilling to invest in a country with unstable political conditions that affect the returns. Rehman et al. (2018) examined those political activities in a country are significantly associated with the stock market, while many are not mainly related to the stock market, depending on the country's political action. Few activities affect the stock market's performance. Rehman et al. (2016) investigated the impact of terrorism on the Pakistan Stock Markets and found no significant influence of terrorist activities on PSX. The rescue efforts and government activities also play an essential role in minimizing the impact of terrorist attacks on PSX. Most investors are local investors who are well known about the country's situation, and dare to invest in Pakistan because they know the ups and downs of the economy. Mehta et al. (2020) exhibited that uncertain political conditions affect the stock market in Pakistan and found that few political events significantly influence the Islamic stock index

returns, and a few political events significantly influenced the conventional stock market returns. In the light of empirical results, it could be concluded that both markets are inefficient for a shorter time; after some days, they absorb noisy data and begin normalizing. Harjoto et al. (2021) examined that sickness influence of the pandemic on overall worldwide markets has been seen in all over the world. Pakistan stock market is one of the stock exchanges that have been influenced due to the spread of the pandemic, and the performance of the stock market was also affected with the result of COVID-19 positive cases, fatalities, and recoveries.

Ashraf (2020) investigated and found that pandemic is causing a vast effect on the country's economic activity, though, the actual impact is not known yet. More than 100 countries worldwide started partial or complete lockdown, and social activities have been postponed after the spread of COVID-19 pandemic. The government is also taking emergency measures to control these pandemics like scheduled timings for the closure of business units. Ahmed (2020) analyze that COVID-19 recovery cases have significantly influenced, while positive issues, and fatalities do not significantly impact the stock exchanges' performance. Ullah et al. (2019) investigated the impact of COVID-19 on PSX. They found that COVID-19 pandemic had a significant adverse effect on stock return. The overall results show that the stock market reacted rapidly, but response has changed over time with the varying nature of the pandemic.

3. DATA AND METHODOLOGY

3.1 Data

The data used in this research are comprised of daily returns of PSX which are collected from the official website of PSX. The frequency of data is 11 January 2016 to 30 April 2021. The data for COVID-19 has obtained from the published source of the Government of Pakistan. Since the study intends to know the impact of political activities on PSX in order to estimate abnormal returns that show the behaviour of stock market. The study considered twenty-two major political shocks in Pakistan that takes a value of 1 for each political shock and 0 otherwise. Table 1 shows the COVID-19 waves, and Table 2 shows the details of events (shocks):

Table 1: COVID-19 Waves

S. No	Periods	COVID-19 Waves
01	15/03/2020 to 02/08/2020	First wave
02	19/10/2020 to 31/01/2021	Second Wave
03	09/03/2021 to 24/04/2021	Third wave

Source: Author's own compilation

Table 2: Details of Events (Shocks)

S.NO	Date	Event Description
01	4/04/2016	Panama Leaks Allegation on Prime Minister.
02	30/09/2016	PTI Raiwind March.
03	24/10/2016	Activist Attack on police training school in Quetta.
04	29/11/2016	General Qamar Javid Bajwa was appointed as the new Chief of Army Staff (COAS).
05	20/04/2017	JIT formation.
06	28/07/2017	Sharif resigned as a prime minister after the supreme court order on the charge of corruption.
07	06/07/2018	Sharif, his daughter and his son Law, were jailed.
08	25/ 07/2018	PTI Election Victory.
09	19/02/2019	Crown prince visit Pakistan for the sign of a multibillion-dollar economic development project with 800 investors.

Continued

10	27/02/ 2019	India fighter jets crossed the line of control and were drowned by PAF.
11	26/03/2019	Release of Prime Minister from prison for treatment after a court order.
12	27/02/2020	PSX saw its intraday fall a year after Pakistan confirmed its first case of Corona Virus.
13	03/02/2020	Decrease of 1000 points in KSE 100 index called red zone in PSX due to COVID-19.
14	02/03/2020	An increase of 1000 points in the KSE 100 index shows a positive signal for investors considered dream day in PSX.
15	05/03/2020	A decrease of 30.8% in the KSE 100 index due to the pandemic index was 27000 points.
16	06/03/2020	After the lockdown announcement, reduced demand for travel and factory activities caused low oil prices.
17	06/04/2020	Decrease of KSE 100 index due to listed companies of PSX closed their operation after the announcement of lockdown.
18	09/04/2020	After the announcement of a 1.4 million loan by IMF to face COVID-19 challenges performance of PSX goes up.
19	29 / 06/2020	Defence of PSX building by security forces against Attack of BLA militant.
20	13/12/2020	PDM Political Gathering.
21	12/04/2021	Tahreek Labaik protest at Minera e Pakistan.
22	21/04/2021	Bomb Blast at Serena hotel in Quetta Baluchistan.

Source: Author's own compilation

3.2 Methodology

This study evaluates the impact of COVID-19, political shocks, and market anomalies (days of the week) with dummy variables using GARCH analysis in the mean model. The model can be written in the following way:

$$\text{Returns}_t = \alpha_0 + \sum_{i=1}^{j=5} \alpha_1 \text{ Days of week anomalies } \sum_{i=1}^{j=22} \alpha_2 \text{ Political Shocks} + \sum_{i=1}^{j=3} \alpha_3 \text{ Covid} - 19 + \varepsilon_t \quad (1)$$

Where, Returns is the average daily return of Pakistan stock exchange and Days of the week (M_t, T_t, W_t, Th_t and Ft), Political shocks, and COVID-19 are dummy variables of the study.

3.3 GARCH Model

AutoRegressive Conditional Heteroscedasticity (ARCH) is considered the best model for estimating variability in variance. Another important characteristic of financial data is volatility clustering, in which returns fluctuate for some period. The variance of returns increases for some months and decrease for other. This type of financial time series return is referred to as volatility clustering that has led to use of ARCH-type models. These models describe greater accuracy in volatility clustering and other effects such as kurtosis, but the core concept behind this model, depends on the volatility of returns and past prices of assets. Engle (1982) allows the forecasted variances of returns that vary with the squared lagged values of the error term from past periods, to be referred as the Autoregressive Conditional Heteroscedastic Model. The generalized version of ARCH (q) is recommended by Bollerslev (1986) and makes a conditional variance, *ht* is a component of the lagged value of both ht and €t. This specification is termed GARCH (p, q) modelling. For forecasting variables in regression, the GARCH model will be used when error is not constant because the ARCH model does not allow a wide range of behaviour. Therefore, the GARCH model's conditional variance depends on its past values or lags but also past values of squared errors. Ding et al. (1993) investigate absolute returns with power near 1 that depicts long memory related to

the squared return (Squared return series imitates 2nd moment). They boosted the NAGRCH model and agreed on asymmetric shocks. The model is as follows:

$\varepsilon_t = z_t\sigma_t, z_t \sim$N (0,1)

$$\sigma^{\delta} = \alpha_0 + \sum_{i=1}^{q} \alpha_1(|\varepsilon_{t-1}| - \gamma_i \varepsilon_{t-1})^{\delta} + \sum_{j=1}^{p} \beta_j \sigma_{t-j}^{\delta} \dots \quad (2)$$

$where, \propto_0 > 0, \quad \delta \geq 0$

$$\propto_i \geq 0, i = 1,2, \dots \dots q, \quad (3)$$

$$\beta_j \geq 0, j = 1,2 \dots \dots . . p \quad (4)$$

$-1 \leq \gamma_i \leq 1$

Where $\delta \geq 0$ depicts the Box-Cox change of conditional standard deviation σt. The constraint γ_i shows leverage impact: If the standard leverage impact exists then γ_i become positive and previous negative shocks has reason for greater impact on present volatility as compared to previous shock of same magnitude.

4. EMPIRICAL RESULTS

4.1 Descriptive Statistics

Table 3 Exhibits the descriptive statistics related to the stock market; it shows a total number of daily observations of 1384 from 11 January 2016 to 30 April 2021 of the average return of PSX. The series means are 0.00023, the minimum value is

-0.9066, and the maximum value is 0.9122. The mean of the series lies between the minimum and maximum desired values. The Skewness value of the series is 0.0117, which is greater than 0, and the median of the series is also significant, therefore, it observed that data is right skewered. The P-value of Jarque-Berra test values is 0.000, which rejects the null hypothesis that the data are normal distributed.

Table 3: Descriptive Statistics

Returns							
Mean	**Median**	**Max**	**Min**	**Std. Dev**	**Skewness**	**Kurtosis**	**Jarque-Bera**
0.00023	7.52E-06	0.912	-0.906	0.175	0.0117	16.152	0.000

Source: Author's own compilation

A number of methods are available to test the unit roots but for time-series data, Augmented-Dickey Fuller (ADF) is more reliable among all, so, after applying the unit root, it has been found that stock returns are stationary at level because their probability values are lesser than 5 percent. The Augmented Dickey Fuller and Philip -Perron values are higher than critical values, meaning the null hypothesis is rejected which confirms that the data is stationary at level (Table 4).

Table 4: ADF and PP Unit Root Tests

Variable	**ADF Test at Level**	**Philip-Perron Test at Level**	
PSX -100	-19.19335	-394.2686	
Probabilities	At 1 %	At 5 %	At 10 %
ADF Values	-3.434900	-2.863437	-2.567829
PP Values	-3.434869	-2.863423	-2.567821

Source: Author's own compilation

Table 5 below shows the effects of days of the weak, political shocks, and COVID-19 effects on PSX.

Table 5: Days of week effect, Political shocks, and COVID-19 effects GARCH (1, 1) Model

Variable	Coefficient	Coefficient	Coefficient
C	0.011**	0.000***	-1.60E-22
MONDAY	0.001*		
TUESDAY	0.005**		
THURSDAY	-0.023*		
FRIDAY	-0.033***		
Panama leaks allegation on PM		0.010***	
PTI Raiwind march		0.005***	
Attack on a police school in Quetta		-0.011***	
Qamar Jawed Bajwa appointed as the new Chief of Army Staff		-0.006***	
JIT formation		0.023***	
Sharif resigns as a PM		-0.001***	
Sharif, his daughter and son Law jailed		0.001***	
PTI win Election		-0.001***	
Crown prince visit Pakistan		-0.695	
India fighter jet crossed the line of control and was drowned by PAF		-0.003***	
Supreme court order release of PM from treatment		0.004***	
PSX saw its intraday fall in a year after Pakistan confirmed its first case of Corona Virus		-0.030***	
The red zone in KSE 100		-0.007***	
KSE 100 showed an upward lift of 1000 points, thereby leaving a positive signal for the investor.		0.034***	
KSE 100 dropdown 30.8% due to COVID-19		0.011***	
Decrease in oil price due to COVID-19		-0.01	
Performance of PSX goes up after the announcement of 1.4 billion loans by IMF		0.026***	
(BLA) militants attacked the PSX building in Karachi.		0.005***	
PDM political gathering		0.015***	
Tahreek Labaik protest at Minare Pakistan		-0.004***	
Bomb Blast on Serena hotel Quetta Baluchistan		-0.002***	
First Wave			0.001***
Second Wave			0.001***
Third Wave			0.001***
Variance Equation			
C	0.015***	0.008***	0.004***
RESID(-1)^2	0.570***	0.262***	0.983***

Continued

GARCH(-1)	0.031***	0.241***	0.240***

Model Statistics			
R-squared	-0.004	0.011	0.003
Adjusted R-squared	-0.006	-0.005	-0.002
Durbin-Watson stat	2.29	2.29	2.29

Source: Author's own compilation

4.2 GARCH Model

4.2.1 Days of Week and Stock Returns

All the coefficients, conditional variance coefficient of β, lie between the 0. α1 = 0.011398, which is also less than 1. The result of these coefficients is statistically significant because it is desired that $0 < \beta 1 < 1\ \alpha 1 < 1$. Furthermore, the sum of all coefficients is -0.050, which also meet the stability condition of $\beta 1 + \beta 2 + \beta 3 + \beta 4 + \alpha 1 < 1$.

4.2.2 Variance Equation for Days of the week

The coefficients of Friday are significant because their p values are less than 0.05. Significant positive means that the past values of the variable have a significant positive impact on PSX returns. The past value will predict the current values of returns significantly. ht = 0.0155+ 0.0318+ 0.57022 coefficient of variance term, the ARCH and GARCH model parameters are positive. The GARCH term and the coefficient are significant at the 1% level. This gives the result of the GARCH model. The time-varying volatility includes α constant (0.015571) plus its value (0.031888 $\boldsymbol{h_{t-1}}$) and component which depend on past error terms (0.570229 $\hat{u}_{t-1}^2$).

4.2.3 Political Shocks and Stock Returns

The coefficients are statistically significant of all the variables, and out of twenty-two political shocks only two are insignificant. The Panama-Paper leaks allegation on prime minister, PTI Raiwind march, Formation of joint investigation team, Sharif his daughter and son in Law jailed, supreme court order to release Nawaz Sharif from prison for treatment, increase of 100 point in KSE 100 index, Performance of PSX goes up after the announcement of 1.4 billion loan by IMF, BLA militant attack on stock exchange building are positive significant but Attack on training police school in Quetta, Qamar Jawed Bajwa appointed as new Chief of Army Staff, PTI win election, Indian fighter jet crossed line of control and drowned by PAF, KSE 100 index PSX saw its intraday fall in a year after Pakistan confirmed the first case of COVID-19, red zone in KSE shown decrease of 1000 point, KSE 100 index dropdown by 30.8% due to COVID-19 outbreak, Tehreek Labaik protest on Minar-e-Pakistan Lahore and blast at serena hotel Quetta negative significant impact. Visit of crown price in Pakistan and decrease in oil prices showed statistically insignificant results. The average stock returns are 0.00064, and political shock's past values significantly predict the current series of values.

4.2.4 Variance Equation for Political Shocks

The coefficient of constant variance term the GARCH and ARCH parameters are positive, and statistically, GARCH is significant on 1% level while ARCH term is significant on 10%. This gives the result of the GARCH Model the time-varying volatility due to political shocks, including a constant (0.0084) plus its past value (0.242 $\boldsymbol{h_{t-1}}$) and components that depend on past errors (0.262 $\hat{u}_{t-1}^2$). All

coefficients of the conditional variance's specification meet the stability condition of ***0 < 1 < 1, 0 < α1 < 1***. Therefore, the coefficients' values lie between 0 and 1, so it is statistically significant. The ***α1 =*** 0.0006 is also < 1, so it is also statistically significant. The Sum of all the Coefficients is -0.666, which is < 1 and meets stability conditions.

4.2.5 COVID-19 and the Stock Returns

For all coefficients, conditional variances coefficients of β are lying between the value of 0 and 1, and α1 is equal to 0.016 which is also a less than 1. The result of these coefficients is statistically significant because the desired values must lie in the range of $0 < \beta 1 < 1$ and $\alpha 1 < 1$. Furthermore, the sum of all coefficients is 0.0037, which also meets the stability condition of $\beta 1 + \beta 2 + \beta 3 + \alpha 1 < 1$.

4.2.6 Variance Equation for COVID-19

The coefficients for the first, second, and third waves are significant because their p values are less than 0.05. Significant positive impact means that the past values of variable have a significant positive impact on stock return on PSX. The past value will predict the current values of returns significantly. ht= 0.004641+0.240455+0.983668. The coefficient of variance term, the ARCH, and the GARCH model parameter are positive. The GARCH term and the coefficient are significant at the 1 % level. The time-varying volatility includes α constant (0.004641) plus its value (0.983668 h_{t-1}) and its component which depends on past error terms (0.9836 $\hat{u}_{t-1}^2$).

4.3 Diagnostic Statistics for GARCH Model

4.3.1 PSX Returns and Days of the week

The Table 6 below shows the PSX Returns and the Days of the Week:

Table 6: PSX Returns and the Days of the week

Parameter GARCH MODEL	Normal Dist	Student t	GED
Significant Coefficients	Only Friday is sig	Insignificant	Significant
ARCH Significant?	Significant	Insignificant	Significant
GARCH Significant?	Significant	Insignificant	Insignificant
Log Likelihood	813.4039	3485.364	3404.842
Adj. R^2	-0.006949	-0.001886	-0.001784
Schwartz IC	-1.133631	-4.989620	-4.873259
Heteroscedasticity	No	No	No
Autocorrelation	No	No	No

Source: Author's own compilation

From the above table, the Normal model was better for the data, based on the results shown in the table. In the student t model, coefficients are insignificant, and the Coefficient of GARCH are also insignificant for Student t and Generalized Autoregressive Score (GED) models. If we compare these three models i.e., Normal, ARCH, and GARCH models, in normal models both coefficients are significant, and there has no problem of Heteroscedasticity, and Autocorrelation, therefore, the Normal Gaussian model is the optimal model for estimating the impacts of days of the week on PSX returns.

Table 7: PSX returns and the Political Shocks

Parameter GARCH MODEL	Normal Dist	Student t	GED
Significant Coefficients	Insignificant	Insignificant	Significant
ARCH Significant?	No	No	Yes
GARCH Significant?	No	No	Yes
Log Likelihood	800.5927	3314.482	3429.063
Adj. R^2	-0.022446	-0.005284	-0.005189
Schwartz IC	-1.021051	-4.937630	-4.814192
Heteroscedasticity	No	No	No
Autocorrelation	No	No	No

Source: Author's own compilation

In the table above, the results of three models of GARCH have been compared to select an optimal model to estimate the impact of political shocks on PSX returns. The results of Normal Gaussian and the Student t both showed insignificant coefficients of variables, and the Coefficients of ARCH and GARCH also were negligible. The GED model has the highest likelihood log value from the other information, and no problem of Autocorrelation and Heteroscedasticity has been found. Therefore, the GED model is the optimal GARCH model to estimate the impact of Political shocks on the volatility of PSX returns.

4.4 Economic Significance

This study is based on the theory of Efficient Market Hypothesis which measures the efficiency of a market and how information about the economy reflects in the prices of securities in the stock market. The weak efficient market level where stock prices are reflected in current prices only to publicly available financial and technical information. The 2nd level is the Semi-strong-EMH level in which there is no importance of the fundamental and technical information available. Finally,

the 3rd form of EMH assumes that both the public and private data are either published or not, because personal data is open to the insiders. Based on the above levels of the EMH theory, the Pakistan Stock market still operates in the weak level of EMH that is consistent with the result of Khan (2016). Twenty political shocks out of twenty-two political shocks have significantly impacted the Pakistan stock market. Most of them showed results contradictory to the general presumptions like terrorist activities in the country or unfavourable events to the economy, and stability to the political system. For example, the Panama Leaks allegation was unfortunate for the sitting government, PTI Raiwind march was also one of the events which created anarchy in the country, PSX100 index dropped down 30.8% due to COVID-19, PDM political gathering against the government, BLA militants attack on PSX building, and the impact of COVID-19 on Pakistan Stock market. It is explored that all three waves of COVID-19 should show a negative effect on Pakistan Stock market but, surprisingly all these events had a significant positive impact on stock markets. Also, a few political shocks presumed that they should have a positive effect but given a negative impact, just like Bajwa was appointed as a defence minister. These results established that the Pakistan Stock market is a Weak Efficient market that has not taken the impact of unfavourable political shocks as adverse and favourable shocks as a positive impact. The market was only operating on the current stock prices without considering the information of political shocks (according to their favourableness to the economy). Due to COVID-19, Pakistan's economy shrank, and there was a severe decline in Gross Domestic Product (GDP). This effect should be reflected to the stock market, but COVID-19 impacted positively to the stock market, which provides and evidence

that PSX operates on weak EMH assumption that current prices reflect all the information. The market anomalies (days of the week) showed no impact on stock returns except Friday which shows an adverse effect as it is a closing day of the week, and the stock trading remains off for Saturday and Sunday. Therefore, investors feel reluctant to invest on the last working day, and wait for the clarification of the situation, therefore, it also supports that Pakistan Stock market operates on weak level EMH assumption.

5. CONCLUSION

The study results conclude that Friday had a negative significant impact on stock returns, consistent with the results of Haroon (2013). Returns on other days of the week do not significantly impact stock returns which are consistent with the results of Kamath et al. (1998). The negative impact on Friday indicates that investors are reluctant to take their investment decision on closing days of the week (Saturday and Sunday). Also, they wait for the conditions, decide on Monday, and follow the buying and selling trend. The stable political conditions play a vital role in every country's stock market that develop investor confidence. The empirical study demonstrates that Panama leaks allegation on Prime Minister, PTI Raiwind March, Formation of joint investigation team, Sharif his daughter and son in Law jailed, supreme court order to release Nawaz Sharif from prison for treatment, Increase of 100 point in PSX 100 index, Performance of PSX goes up after announcement of 1.4 billion loan by IMF, BLA militant attack on stock exchange building has shown positive significant impact on stock return but Attack on training police school in Quetta, Qamar Jawed Bajwa appointed as new Chief of Army Staff, PTI win

election, Indian fighter jet crossed line of control and drowned by PAF, PSX 100 index saw its intraday fall in a year after Pakistan confirmed first case of COVID-19, Sharif resign as a prime minister, Red zone in PSX 100 index shown decrease of 1000 point, PSX 100 index dropdown by 30.8% due to COVID-19 outbreak, Tahreek Labaik protest on Minar-e-Pakistan Lahore and blast at serene hotel Quetta shown negative significant impact on stock return. While the decrease in oil price due to low demand of travel and lack of factory activities, Visit of King Salman has insignificant impact on stock returns. The overall results depict that a few political movements have a significant positive impact while the others have a significantly negative impact on stock returns, and some political shocks have no impact on stock returns which is consistent with the study of Rehman et al. (2018), and Mehta et al. (2020). The positive political impact shows favourable signs, while the negative political impact indicates unfavourable signs for the economy and business communities. The COVID-19 pandemic had hit various sectors of the economy in 2020 which than impacted badly with every passing day around the globe. The stock market in Pakistan collapsed in March 2020. The lockdown imposed by the government to control pandemics did not remain fruitful for the stock market. The result of the pandemic suggests that the stock market has a significant impact on first, second, and third wave of COVID-19 on stock returns in Pakistan. So, the overall results of pandemic depict positive impact due to lockdown. The investors then find various ways to do business transaction with less interaction of people i.e., investment in saving banks and trading in stock markets.

Acknowledgment

I am highly thankful to Dr. Farrukh Mahmood for his valuable comments and suggestions on this paper.

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