

Pre & Post-COVID Analysis of Calendar Anomaly and Behavior of Returns in Emerging Markets of ASIA

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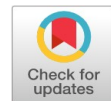
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Abstract: This research investigates the day of the month's effect on stock returns in emerging markets of Pakistan, India, and China in Pre and Post-Covid scenarios. The efficient market hypothesis is a dynamic subject matter that leads to investigating price randomness in the changing economic turmoil and recovery periods. For this purpose, daily data has been taken from yahoo finance for May 2017 to May 2022 for Pakistan, India, and China. The results revealed that in a Pre-COVID period, the highest return was found in November and the lowest returns were found in February for Pakistan, and highest average returns were found in July, and the lowest mean return was found in February; however, the highest mean returns found in January for China and lowest return was found in October. However, the volatility in return was highest in October for Pakistan and India, but for China, the results revealed the highest volatility in February. Post-COVID, the highest returns were found in September for Pakistan & China but for India in November. However, the lowest returns were found in March for Pakistan and India, but for China lowest returns were reported in December. Volatility remained high in December, March, and February for Pakistan, India, and China, respectively. It is concluded that a varying pattern of mean and variance exists in both regimes, and calendar anomaly prevails. The practical implication of this study is to provide an inside for arbitragers, hedgers, and market players on how to benefit from diversification during a crisis.

Keywords: Calendar anomaly, Pre and Post-Covid, Efficient market Hypothesis, Volatility

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INTRODUCTION

Market efficiency is an essential concept in financial economics. Market efficiency can be judged through calendar anomalies, expressly in investment marketplaces. Changes in security prices in the stock market happened due to calendar anomalies at a regular or specific interval in a financial year (Brooks & Persaud, 2001.) The execution of the stock market is mainly affected by numerous indicators of imperfect competition, market transparency, regularity actions, behavioral biases, and calendar anomaly, Demirel and Karan (2002).

The existence of these indicators in stock markets enhances the performance of an efficient stock marketplace. The latest financial reports show COVID-19 severely damaged the world economy and stock markets. Many stock markets have shrunk due to COVID-19 (Patjoshi & Nandini, 2020; Tabasam et al., 2022).

Global markets have been less volatile as the coronavirus outbreak has expanded (COVID-19). The COVID-19 global fear index components that were supposed to move in tandem with stock market volatility (reported case index, reported death index, and corona fear index) ultimately failed to do so (Salisu & Akanni, 2020).

The most recent outbreak of COVID-19 has disrupted financial markets across the globe. Because of this, the World Health Organization (WHO) professed the COVID-19 pandemic. Since the current outbreak started in February 2020, the stock market has seen several shock waves since COVID-19 is still a mystery, and market volatility will keep increasing. The pre-pandemic spread of Covid-19 has significantly affected the economy, leading to a drop in trade, tourism, logistics, and food shortages. It was impossible to disregard Covid-19's effect on the financial sector in light of recent stock market bubbles (Albulescu, 2021).

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Many countries have followed strict measures like imposing social distancing, avoiding unneeded traveling, and prohibiting people from gathering. COVID-19 has mainly caused stock and money markets over the world. It created a record level of risk; investors suffered losses in a few days. According to IMF, the world economy contracted sharply by -3% in 2020; it is assumed that it is much worse than the 2008 global financial crisis. GDP of the Middle East and Asian economies to decline from 1.2% in 2019 to -2.8% in 2020, lower than the growth rate during the financial crisis of 2008 (Bahraini & Filfilan, 2020).

Overall, economies have been seriously affected and have faced severe challenges because of the COVID-19 outbreak. Pandemics generated a disaster surpassing the extreme events in past decades. This COVID-19 pandemic caused human infections and deaths and disrupted the stock market. The explosion of COVID-19 affected the economic environment, which caused changes in investors' sentiments, resulting in stock prices (Yan & Qian, 2020). Anomalies vary over time because of the break-point rising of some major worldwide incidents and technological advancements (Vasileiou & Samitas, 2015).

Several authors found confirmation of the January effect, in which stock returns are high estimated to the returns of the rest month of the year. They suggest that investing in January (at the start of the year) is better due to numerous reasons like yearend tax loss selling and traders selling their positions to celebrate vacations. The event of Christmas and more spending is required at the end of the year. All these reasons make some downwards in the stock during December. At the start of January, stock prices remain typical rather than for the rest months, so people prefer to buy more stock in January (Ritter & Chopra, 1988).

Numerous studies were concerned with the association between COVID-19 shock's effects on the volatility of the stock market in emerging economies (Onali, 2020; Ajmi et al., 2020; Harjoto & Rossi, 2020; Ramelli & Wagner, 2020). Previous studies focused on a single emerging economy rather than comparing more than two economies. The study aims to determine the effects of covid-19 shocks on stock market volatility and leverage impact during Covid-19 in emerging economies. This study fulfills the gap by doing a comprehensive and comparative analysis between said dimensions.

Importance of the study

Therefore this study has examined the Calendar anomaly and returns behavior in the Pre-Covid scenario and Post -the Covid context in emerging markets of Pakistan, India, and China. This study is critical because in the Post-Covid situation. The central importance of this study is that it will provide a day-of-the-month effect on Asian Emerging markets. We use emerging Asian countries (Pakistan, China, and India) because international borders are common and have a considerable population index.

Objectives of the Study

To investigate the day of the month's effect on stock returns in emerging markets of Pakistan, India, and China in Pre and Post- Covid context.

- To identify the anomalous behavior of the colander anomaly in the stock returns pattern.
- To identify the market association in a pre and post-Covid context.
- Knowledge of stock market activity is crucial for investors, governments, corporations, enterprises, and people, and this study contributes much to their ability to do

LITERATURE REVIEW

Bahser and Sadorky (2006) Examined day-of-the-week effect of the world's 21 emerging stock exchanges. Data has been collected for the period from 1992 to 2003. Outcomes of the study have been retrieved through different models and found that day-of-the week-effect was there in most of the emerging stock markets (Raj & Kumari, 2006). Investigated that there were no adverse effects of Monday and positive effects of January found in the Bombay Stock Exchange; studies examined higher returns on Monday and lowest on Tuesday. The researchers also found a positive April effect in the Bombay Stock Exchange, which may be due to explaining the end of the financial year tax loss selling.

Floros (2008) examined seasonality in the stock market of the ASE during the period 1996-2002. As reported by the researcher, maximum financial growth, like lesser inflation rate and interest rate, the effective junction moving Economic and Monetary Unit (EMU). He claimed that Greek traders "wait" six months afterward in December.

After December, the investors invest most of their investments. He resulted in a high return in May but no effect in January.

Parikh (2009) Found regular results of the Nifty index over time from 1999-2008. The study used the GSRCH model & Exponential conditional GARCH model to determine the non-normality of the stock returns series, such as Skewness Clustering.

Depenchuk et al. (2010) investigated the Ukrainian stock and bond market to discover the monthly anomalies. The study revealed no proof of the January and weekend effect but a solid TOM effect in the Ukrainian stock market. January has not changed from other months of the year.

Ruiz Estrada et al. (2020) investigated the financial and economic effects of the COVID-19 pandemic. This research developed an analytical model to comprehend the spatial and temporal incidence patterns of the COVID-19 sickness, along with its consequences and importance to the economic markets. This study introduces a new multidimensional geometric technique and the idea of aggression; both applied to epidemics.

Kaur et al. (2019) investigated the different seasonal anomalies of the Israeli stock market during the pre-and post-financial crises period. Ending prices of six indices of the Tel Aviv Stock Exchange of Israel were observed for Liu et al. (2020) examined the very short-run effect of the COVID-19 outbreak on 21 developed and well-established stock markets in major affected economies, including Korea, Japan, Singapore, USA, Germany, UK, Italy, etc. The event study method was applied, and data was used daily from February 2019 to March 2020. The results showed that all the economies were affected negatively in all the markets, but Asian markets suffered greater declines during the COVID in terms of abnormal Lossstudy. The period of the study was used from 2000 to 2018. The research outcomes showed that anomalies change considerably across the pre and post-period of financial crises and identified three anomalies: the day-of-the-week effect, Holiday effect, and monthly effect.

Schoenfeld (2020) analyzed the risk factor concerning both financial markets and pandemics. The research used the COVID-19 pandemic as a natural experiment to examine the financial markets reactions to major pandemics. This research shows that managers tend to undervalue the threat of a pandemic compared to the risk factors stipulated by the SEC, leading to capital loss. The results also imply that pandemics are consistently significant to the performance of financial markets.

Nguyen et al. (2021) studied the effects of the COVID-19 pandemic impacts of government illness prevention initiatives on the stock prices and trading volumes of Vietnamese financial institutions. From January 30, 2020, to May 15, 2021, the authors ran a panel data regression study on data from fifty financial institutions trading on Vietnam's two leading stock exchanges (HNX and HOSE). The regression findings increase the overall amount by one more every day of confirmed cases induced by COVID-19, significantly reducing stock market returns and liquidity. Nonetheless, the lockdown ordered by the government had a markedly favorable effect on the value of stocks. The research also shows that large-cap and small-cap stock returns vary meaningfully when considering the influence of the COVID-19 epidemic.

Naeem et al. (2021) wanted to determine how integrated global financial markets are regarding time and frequency. Specifically, it compares the whole sample to the sample gathered during the COVID-19 epidemic. This research makes use of the connectivity paradigm proposed by Diebold and Yilmaz (2012) and extended by Barunik and Krehlik (2018), showing that the effects of spillover extend beyond the temporal domain but also frequency-domain (short- and long-run) specific. We also consider the degree of connectivity between each pair using network analysis. Daily data from the MSCI World Index, the Barclays Bloomberg Global Treasury Index, the Oil future, the Gold end, the Dow Jones World Islamic Index, and Bitcoin prices will be used between May 1, 2013, and July 31, 2020. Cryptocurrencies, bonds, and gold were effective hedges against traditional and Islamic stocks on average, although they were not "safe havens" during the COVID-19 crisis. External shocks like COVID-19 bolster return interdependence among the six financial markets

DATA AND METHODOLOGY

This study used daily Stock Indices data of Pakistan, India, and China for five years, from May 2017 to May 2022. Using the E-views software, this study employed the correlation and ordinary least square (OLS) regression model to examine the month effect anomaly. This study covers two regimes covering the Pre-Covid period and Post-Covid period for Pakistan, India, and China. The methodology is used to determine the market response to the pandemic in the Post-Covid context, and study plans to test the market reaction. January 2017 to May 2022 is the

were reported in December. Volatility remained high in December, March and February for Pakistan, India, and China, respectively.

Interpretation of Data

The descriptive statistics have been shown graphically regarding the mean and historical volatility. Hence, it is identified that volatility remained high and showed clusters in both regimes, as shown in Figure 1. The emerging market of China and India has affected more than the stock market of Pakistan during the Covid pandemic. The mean-reverting behavior of return shows persistency in returns behavior and volatility, as shown in Figure 1.

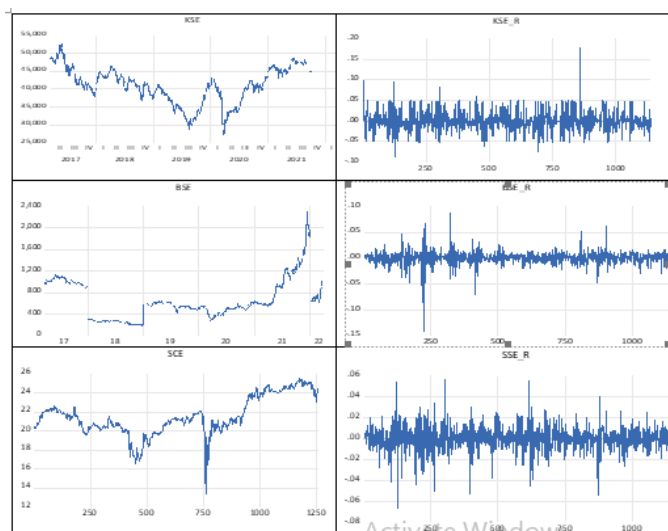


Figure 1: Stock prices and returns trends

Table 1 Results indicated that in a Pre-COVID period, the highest return was found in November and the lowest returns were found in February for Pakistan, and the highest average returns were found in July, and the lowest mean return was found in February; however, the highest mean return found in January for China and the lowest return was found in October. However, the volatility in return was the highest in October for Pakistan and India, but for China, the results revealed the highest volatility in February. Post-COVID, the highest returns were found in September for Pakistan & China but for India in November. However, the lowest returns were found in March for Pakistan and India, but for China lowest returns were reported in December. Volatility remained high in December, March, and February for Pakistan, India, and China, respectively.

Table 1: Summary statistics

INDICES	Maximum Returns	Minimum Returns	Maximum SD	Minimum SD
PRE-COVID				
KSE	November	February	October	August
BSE	July	February	October	June
SSE	January	October	February	September
POST- COVID				
KSE	September	March	February	October
BSE	November	March	March	November
SSE	September	December	September	June
Overall				
KSE	September	February	December	February
BSE	April	March	March	July
SSE	July	March	February	December

Table 2 indicates that BSE and SSE markets behaved alike and remained highly positively correlated in

Pre-Covid and Post-Covid periods; however, both markets have negative correlations to the KSE during both periods and overall.

Table 2: Correlation matrix

Pre-Covid Correlation			
	BSE	KSE_R	SSE_R
BSE	1		
KSE_R	-0.04	1	
SSE_R	0.24*	0.01	1
Post-Covid Correlation			
	BSE	KSE_R	SSE_R
BSE	1		
KSE_R	0.01	1	
SSE_R	0.34*	0.04	1
Over All Period Correlations			
	BSE	KSE_R	SSE_R
BSE	1		
KSE_R	-0.01	1	
SSE_R	0.29*	0.02	1

Table 3 indicates that the January anomaly exists for the Pre-Covid period in KSE; however, the results are not showing anomalous behavior for January, but in the same manner for BSE, Post Covid January anomaly exists. It's amazing that the January anomaly exists for both Pre and Post-Covid behavior for SSE.

Table 3: Impact of calendar anomaly on pre & post-covid returns

	KSE				BSE				SSE			
	Pre-Covid		Post Covid		Pre-Covid		Post Covid		Pre-Covid		Post Covid	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Intercept	0.0056	0.2009	0.0021	0.5957	0.0010	0.4610	0.0014	0.6482	-0.0001	0.0021*	-0.0597	0.9524
Jan	-0.0063	0.2924	0.0031	0.5207	0.0004	0.8165	-0.0023	0.5546	-0.0018	0.0026*	-0.6825	0.4952
Feb	-0.0117	0.0801**	-0.0044	0.3702	-0.0032	0.1137	-0.0021	0.5869	0.0002	0.0027*	0.0786	0.9374
Mar	0.0000	0.9010	-0.0052	0.2796	-0.0023	0.1275	-0.0053	0.1545	-0.0021	0.0026*	-0.8148	0.4156
Apr	-0.0037	0.5196	-0.0003	0.9614	0.0006	0.7074	0.0019	0.6375	0.0013	0.0028*	0.4418	0.6588
May	-0.0022	0.6970	0.0013	0.8114	0.0001	0.9317	-0.0006	0.8844	0.0016	0.0029*	0.5373	0.5913
Jun	-0.0070	0.2140	0.0020	0.6994	-0.0012	0.4816	0.0008	0.8407	0.0011	0.0028*	0.3938	0.6939
Jul	-0.0060	0.2769	0.0002	0.9627	-0.0001	0.9733	0.0004	0.9160	0.0012	0.0027*	0.4480	0.6543
Aug	-0.0098	0.0769**	-0.0033	0.5154	-0.0010	0.5521	0.0014	0.7253	0.0017	0.0027*	0.6351	0.5257
Sep	0.0006	0.9133	0.0053	0.3041	-0.0017	0.3018	-0.0011	0.7903	-0.0010	0.0028*	-0.3792	0.7047
Oct	-0.0050	0.3958	0.0000	0.0000*	0.0000	0.9996	0.0000	0.0000*	0.0000	0.0000*	65535	0.0000*
Nov	-0.0054	0.3295	-0.0018	0.7318	0.0001	0.9681	0.0005	0.9111	0.0017	0.0028*	0.6095	0.5424
Dec	-0.0046	0.4116	-0.0055	0.2772	-0.0004	0.8175	0.0009	0.8263	0.0010	0.0027*	0.3803	0.7039
F-stat	0.8098		1.1490		0.7263		0.7180		0.4615		0.6586	
R-square	0.0142		0.0249		0.0127		0.0158		0.0145		0.0145	

*Significant at $p < 0.05$

**Significant at $p < 0.10$

In a Pre-Covid context, February and August have a significant negative impact at $p < 0.10$ for KSE and no significant Post Covid month effect except the October market phenomenon that prevailed throughout BSE and SSE in all regimes. Each calendar month significantly impacts SSE in a Pre-Covid context; however, in Post Covid context, no month significantly impacts except the October phenomenon.

CONCLUSION

Results concluded that the January anomaly exists for the Pre-Covid period in KSE. Hence no January Effect exists for the Indian market during this study period, but there exists a significant calendar anomaly for China during Pre-Covid and Post-Covid periods. This study examined the day-of-the-month effect of three emerging

markets in Asia, Pakistan, China, and India. Hence, investors' responses to this pandemic were shocking, and the investment pattern in equity markets was deeply affected. It will take time to normalize the situation with more technological advancements. It is concluded despite of the covid, an investor in the stock market behaved rationally, but the equity market of India is under depression due to the mismanagement of covid and its impact on financial markets

FUTURE SCOPE

- It would have been interesting if the study had considered different sectoral indices of several developed and developing countries during different periods.
- It would be very interesting to conduct another study within the same area of research, with the help of different country indices, which will give more integrated results to the topic and better utility to the investors and corporate sector.
- Similar studies in the field of market anomalies and political regimes can be suggested to improve the estimation of the Stock Markets
- It is suggested that upcoming researchers use the stock market data to test the other seasonal anomalies like the Ramdhan effect and, Christmas effect, etc

PRACTICAL IMPLICATIONS

This study is important for investors who desire abnormal returns by diversifying portfolios. People have more awareness about the involvement of technological advancement in the investment process, and people are engaged more in online investments than ever before in history.

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