



Covid-19, Government Initiatives, and Stock Market Liquidity: A Post Pandemic Study from Emerging Economy- Pakistan

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Abstract

This is post COVID-19 study which focuses on two proxies of COVID-19 and its impact on Pakistan and government initiatives' stock market liquidity and the human cost by exploring the rate of spread of COVID-19 infections. Using time-series data of the Pakistan Stock Exchange from January 2, 2020 to December 03, 2021 which covers all the three waves of COVID-19 and finding suggests that an increasing (decreasing) trend in the COVID-19 confirmed cases is connected with improving (deteriorating) liquidity of Pakistan's stock market. This study concludes that policy interventions are related to stock market liquidity. Results reveal that government initiatives' control over the COVID-19 cases reduces the uncertainty among the market and investors and help policy makers for making effective policies if such kinds of uncertain diseases come again.

Keywords: COVID-19, Stock Market liquidity, Stringency Index, Confirmed Cases Death Case, Pakistan

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INTRODUCTION

The Coronavirus, known as COVID-19, is considered a shock for developed, emerging and developing economies (Hevia & Neumeyer, 2020). COVID-19 affected the economies and social life, which the way of living and discourse in media and society. The government policies and initiatives are vital for success by utilizing the health official to tackle this novel disease (Zhang et al., 2021). Media and social media gave the COVID-19 a trend to aware people by explaining causes, remedies and implications (Rhodes et al., 2020). An increase in COVID-19 case and deaths significantly increases the market's volatility and illiquidity (Baig et al., 2020). To control the progressive or exponential growth of COVID-19 contagions, governments have instituted boundaries (bans) on doing business and movement around the globe. In Pakistan, a smart-lockdown policy has been introduced and recognized because of its effectiveness in controlling COVID-19 cases.

Financial analysts reported the outflows of capital, strictness in financing conditions and emerging recession symptoms, especially in emerging or developing economies (Matinna, 2020). These constraints also restrict the policymakers to provide bailout packages to trades that hinder stock markets' liquidity (Almeida, H., 2021). It is pretty tricky for the policymakers to decrease the spread of infectious disease and ensure economic stability of Pakistan's. Major horizon portfolio again balancing which is also ensuring personal liquidity, which is common, arises from this pandemic state (Waris et al., 2020). In contrast, an increase in the number of days of lockdown, government interventions, monetary and fiscal policy decisions and traveling restrictions imposed by government which severely affect economic activities and opening and closing stock indices

prices (Ozili & Arun, 2020). Such kinds of issues have increased significance for emerging economies and markets (Deloitte, 2020). COVID-19 crisis impacted the French economic system's overall efficiency and made the market less efficient than normal times (Guerini et al., 2020). Pandemic induced unexpected uncertainty in the stock and financial markets all over the world (Baker et al., 2020; Narayan, 2020a) and caused significant modifications in fundamental demands and commercial production, resources and supply chain (Barrero et al., 2020). Foreign and traditional ownership have inverse relationships with abnormal returns, i.e., negative and positive returns due to the COVID-19 crisis (Takahashi & Yamada, 2021). Due to this situation, liquidity is draining from the financial and stock markets (Adrian & Natalucci, 2020). Due to such uncertainty and risk, transaction cost and other cost factors lead to increased spreads that significantly damage the liquidity of the financial markets.

At the time of pandemic which is also called economic and financial crises, fading financial and liquidity of markets highlights respectively other's decline (Geanakoplos, 2010). These issues problematize the liquidity aspect and compel the market and economy to shrink that ultimately cause overall economic slow-down (Næs et al., 2011). Stock market liquidity has also been suggested as an alarm for the economies' economic situation. Researchers' prevalent discourses in the context of pandemic, volatility of stock markets, risk signify the topic and way of knowledge accumulation by spotting a proper gap in the literature. This study establishes an approach whether pandemic and government initiatives to avoid people moving can improve the stock market liquidity in the equity market of Pakistan's emerging economy. This study focuses on two perspectives of COVID-19 and impact on the Pakistan Stock Exchange (PSX). The first perspective is about human costs by exploring the COVID-19 spread rate and its contagions effect. The second perspective is government initiatives from the general public, such as social distancing by closing education institutions, limiting the businesses, halting the country's transportation mechanism, smart lockdowns in the infectious areas, and public awareness campaigns. We found that the decrease or increase in the number of confirmed COVID-19 cases is related to improving or waning liquidity in Pakistan's emerging economy's financial markets. This study also found that government restrictions and banned movement and business' initiatives improve the stock market liquidity. The trust in the government's policies and initiative may enhance investors' trust, bringing more confidence in trading on the stock markets (Chiu, 2020).

Many countries like Pakistan provided bailout packages or incentives in the process of such policies by a reduction in taxes, rebate in electricity and gas bills and loans at low rates to pay salaries to the employees and to provide employment opportunities in the country and to improve stock market liquidity (IMF, 2020). The main risk of uncertainty in the economic and liquidity of any financial market is higher for emerging markets such as Pakistan due to strict restrictions on fiscal and monetary freedom, making investors unable to reinstate the portfolios rapidly and increase the asymmetry of information (Chowdhury et al., 2018). As the Pakistan stock market is considered better and rated as a better market, this study used counties on a justified basis. Pricing based on liquidity risk depends on economics, geography, government policy or political factors (Lee, 2011). The most important one is government policy. Therefore, in this study, the focus will be on government policies to deal with the COVID-19 and its other interventions to smoothing the stock market behaviour in liquidity, volatility and investor behaviors. This study explains the association and interlink between pandemic control and government interventions related initiatives and their impact on stock market liquidity. This study explores whether COVID-19 confirmed cases and deaths using a flattening curve has any financial or economic impact on the Pakistan stock market by liquidity (Haroon et al., 2020b).

This study used changes or moving average of confirmed COVID-19 patients or death; an upward direction reveals that positive change and downward direction show negative change while the flat curve means no change. The finding demonstrates the upward direction of covid19 and stock market liquidity directly related, whereas downward direction is inversely associated with stock market liquidity. Forecasting in such crises like COVID-19 is difficult than expected, and real economic impact depends on investor behaviors rather than fundamentals (Boscaljon &

Clark, 2013). It demonstrates that governmental interventions and initiatives did help to ease the insecurity of investors. We reached a point that government initiatives are essential for health systems to resourcefully tackle the COVID-19 and enhance investors' truces and mitigate the insecurity in the stock market during such a volatile time in Pakistan.

DATA AND METHODOLOGY

First confirmed COVID-19 case was reported in December 2019 and in March 2020 in Pakistan. This is post COVID-19 study and we have utilized pandemic data from January 2, 2020 till December 03, 2021 which include all the data of three waves which has observed the rise and fall of the COVID-19 pandemic in this period according to the National Command and Operation Centre (NCOC) and World Health Organization (WHO). We focused on the effect of COVID-19 and its impact on Stock Market liquidity in Pakistan and Government actions to control the COVID-19. We picked the data from the official website of the Pakistan Stock Exchange known as PSX (KSE-100) for a specified period to analyze the consequences of the COVID-19 pandemic. Overall, world's economies are detracted and still not recovered due to it, identical to Pakistan but recovered speedily because of government action taken timely. We used the KSE-100 Index to ensure standardization for calculation and analysis of data from the start of COVID-19 until its second wave. This study used daily return by this equation

$$KSE_{rt} = \ln(LPt) - \ln(LPt-1) \quad (i)$$

Here KSE_{rt} represents the daily return of a stock. LPt represents the lower price of the stock at the current period as it is time-series data, and $LPt-1$ represents the lower price of the previous period. Daily data of the KSE-100 is obtained for liquidity measurement which is summarized in Table 1. EGARCH (Generalized autoregressive conditional heteroscedasticity) model is used to measure the volatility that is a favourite methodology of volatility researchers in the existing literature. Rizvi et al. (2018) and Yu & Hassan (2008) and applied the GARCH model, which is developed by Nelson (1991). The author suggested a robust EGARCH that is more appealing because of parameters constraints and a stable optimization approach.

Table 1.
Variable Description

Liquidity	is quantified by the difference between low and high relative to the index's opening price. A high value means liquidity
Volatility	EGARCH used to calculate volatility parameter used in the study
Stringency	index is an index used by the Oxford on COVID-19 pandemic Government Action tracker
COVID-19_Cases	The Government of Pakistan reports the COVID-19 daily case. The results will become flattens if its reaches to zero.
COVID-19_Death	The daily COVID-19 Deaths are reported by the Government of Pakistan. A value nears zero means the curve becomes flat

To better understand the impact of COVID-19 and death cases, daily change is calculated by the 7-day moving average (MA) of new COVID-19 cases or deaths, respectively, which Pakistan officially announces. To properly understand the relationship between the cases and deaths with the market's liquidity, we use time-series data. In this model the Liq denotes the liquidity, $Krvolt$ is the Volatility of GARCH model, $Case$ for the Cases reported by the Government and $Death$ for the Deaths due to COVID-19 reported by the government and SI is the Stringency Index

$$Liq_t = \alpha + \beta_1 Krvolt + \beta_2 SI + \beta_3 Case + \varepsilon \quad (ii)$$

$$Liq_t = \alpha + \beta_1 Krvolt + \beta_2 SI + \beta_3 Death + \varepsilon \quad (iii)$$

EMPIRICAL ANALYSIS

Descriptive statistics for liquidity, stringency, confirmed COVID-19 cases, and death cases of COVID-19 are review as total observations, which means the number of days taken for the analysis about the impact of COVID-19 pandemic on stock market liquidity is 455 (from the first case of COVID-19 till the end of third wave). In this period, Stock market liquidity varies from a minimum value of 0.41 to a maximum value of 7.03, which shows a significant difference in its values. This significant difference is the impact of confirmed cases and the deaths of people in the country. The government took initiatives to control the COVID-19 cases by taking different measures to improve the country's financial conditions and move the stock market towards improvement, stability, and confidence-building of investors towards investment. The summary of different descriptive measures is given below in Table 2, which depicts stock market liquidity.

Table 1.

Variable Description

Variables	Observations	Mean	S.D	Min	Max
Liquidity	455	1.779	1.26	0.41	7.03
Stringency	455	53.26	28.272	0	96.3
Confirmed	455	160097.6	144804.5	0	400482
Deaths	455	3321.95	3004.13	0	8091

After analyzing the descriptive statistics, inferential statistics analysis is elaborated to understand time-series data properly. We have used two different models to explore the impact of pandemic and government initiatives on Pakistan's stock market liquidity. Table 3 explains the results from which exciting conclusions can be drawn. The COVID-19 cases depicted below are calculated as seven days' percentage change moving average of Confirmed COVID-19 cases reported by NCOC. As the COVID-19 cases increases, it significantly affects the stock market's liquidity, which shows uncertain macroeconomic circumstances, situations and uncertainty in Pakistan. Figure 1 of Liquidity, Confirmed Cases and Deaths show that as and when time passed, the deaths from corona increase with the increase in corona cases significantly affect the liquidity.

Table 3. Regression results

Item	Model 1	Model 2
Volatility	0.00** (4.20)	0.00** (4.19)
Stringency Index	0.04* (2.10)	0.04* (2.10)
COVID-19_Cases	0.00** (-3.60)	

COVID-10_Death Cases		0.00**
		(-3.63)
Constant	0.00**	0.00**
	(5.00)	(5.10)

"The results for time series effect robust estimations for the two models with the stock market's liquidity as the dependent variable. t statistics are given in parenthesis. The superscripts * and ** shows significance at 5% & 10% respectively"

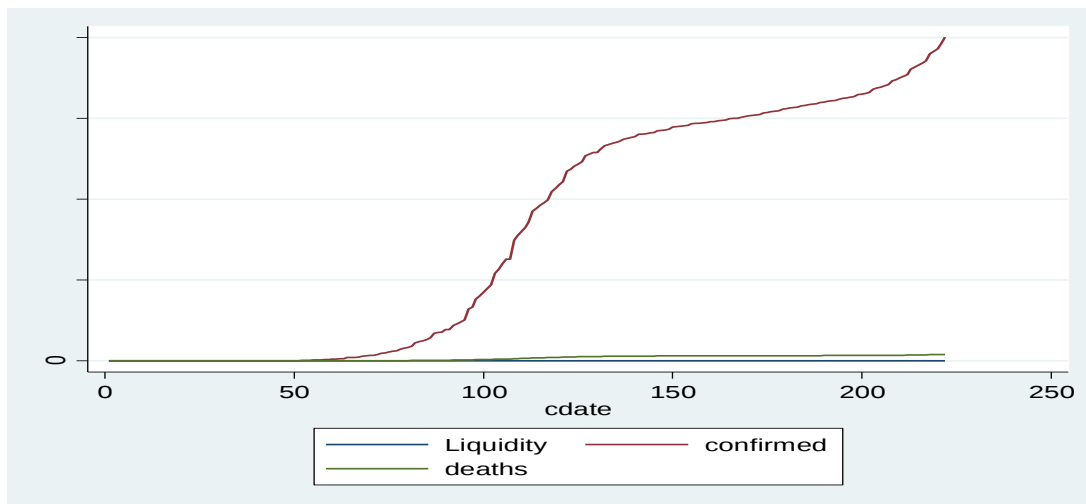


Figure 1. COVID-19 Cases, death cases and liquidity

Meanwhile, an increase in stringency tends to balance or stabilize the liquidity situation in Pakistan's stock market, as per in Table 3. The table 1 explained the stringency index which shows the government action and responses across the country in dealing with the COVID-19 pandemic. Battalio and Schultz (2011) explain the regulatory certainty that improves the stock market's liquidity, but its spreads tend to reduce. This situation damages the investors' confidence in the financial and stock market. As per Carruthers and Stinchcombe (1999), society's social structure, the legal structure and large investments by institutions increase the stock market liquidity in bullish or bearish markets. Finally, the two models' results show significance at 1% and 5% level of significance about stock market liquidity as the dependent variable associated with stringency index and COVID-19 confirmed cases and death cases. For the Breusch-Godfrey LM test, autocorrelation results in both models of confirmed cases and death cases, which shows the significant results ($p=0.00$) at the degree of freedom 1.

CONCLUSION

Unfortunately, the world is facing unprecedented social and economic problems which is caused by COVID-19 pandemic. Financial and stock markets from all over the world, especially in Pakistan, which is rigorously affected. However, due to the general public's COVID-19 pandemic awareness about its various measures to control and curb infectious diseases. Government

initiatives to curb and slow down its spread play an essential role in Pakistan and gain international fame by introducing smart lockdown. We examine whether the government interventions and understating related to COVID-19 can lead to ease of volatility in Pakistan Stock Exchange (PSX) during the whole COVID-19 period. Results explain decrease (increase) the number of COVID-19 cases and deaths rate is directly related to the liquidity of Pakistan stock market in sense of improving or deteriorating. We also find that government policies to curb gatherings and people's movement helped improve the financial market's liquidity. Amidst COVID-19, when uncertainty was increasing among the investors, our results suddenly became insignificant. However, they improved slowly after government interventions by giving reliefs, concessions, and accessible loan facilities to the general public and businesses. The findings show a decrease in the number of COVID-19 cases and deaths, a sign of relief, and a decrease in uncertainty and insecurity, whereas enhanced liquidity in Pakistan's stock market.

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