

Impact of Government Decisions on the Stock Returns during COVID-19: A Sectorial Level Evidence from PSX

SHAHKAR KHAN

BBA (Hons.) Student at FATA University.

Email: shahkark353@gmail.com

Dr. ALAMZEB AAMIR

Assistant Professor, Department of Management Sciences at FATA University.

Email: alamzeb.aamir@fu.edu.pk

Dr. SHARIF ULLAH JAN

Lecturer, Department of Management Sciences at FATA University.

Email: sharifullah.jan@fu.edu.pk

Abstract

This study's goal is to ascertain how COVID-19 will affect the PSX-100 stock exchange index. This analysis makes use of information on closing prices at the sector level, deaths, recoveries, and 2021 PSX 100 positive cases. The results of the current study are in direct opposition to those of earlier studies, which claimed that COVID-19 had a negative impact on established stock markets. We conclude that the PSX 100 index has verified favorable stock return growth. According to the study's findings. This finding is consistent with a large body of research on pandemics and investor uncertainty and has withstood multiple robustness check exercises. According to the analysis, companies with stronger pre-2020 financial standing, lower pandemic risk, less entrenched leaders, and higher levels of social responsibility activity were less likely to experience a stock price decline due to the pandemic. The results also show that, in terms of performance, firms with more corporate ownership performed better than those with higher ownership of hedge funds. Additional research can be done by including variables connected to COVID-19 at the global level along with others like economic growth, interest rate, and inflation rate. However, this effect is transient, which may be attributable to a prompt regulatory response and Pakistani investors' low-risk tolerance. it's crucial to remember that a developing nation like Pakistan cannot use a daily database to analyze the effects of COVID-19 on economic activity¹⁰. Additionally, since the first COVID-19 case in Pakistan surfaced on February 25, 2020, it is impossible to offer opinions on how COVID-19 would affect the level of uncertainty in Pakistan's stock market and foreign exchange. Second, the impact of COVID-19, which struck Pakistan in February 2020, maybe lessened further because the majority of Pakistan's age groups have already received the necessary vaccinations. It is difficult to remark on how COVID-19 may affect investors' long-term level of uncertainty (as it relates to the stock market and exchange markets). Researchers may later be able to offer some insights into COVID-19's long-term effects if vaccination effectiveness remained poor and the disease maintained infecting patients. This is something we'll leave up to future study.

Keywords: COVID-19 and Stock Market, Pakistan Stock Market and Pandemic, Financial Markets and Pandemics, Lockdown, PSX, Stock Exchange.

Introduction

Over two million people have died from COVID-19 worldwide, which has over 100 million cases. One of the worst pandemics in recent memory, it cost the economies of the globe billions of dollars in addition to the human lives it claimed. Financial and labor markets in many economies saw significant contractions and upheavals. The WHO 2020; Sohrabi then declared the virus to be a pandemic on March 11, 2020, which caused the sickness to spread quickly and engulfed the population in dread and confusion. With China's exposure and the spread of illness, investors initially avoided equities. As time went on, markets began to consider the financial effects of these crises on businesses (Ramelli & Wagner, 2020).

The goal of this study was to ascertain, to the best of my knowledge, the impact of COVID-19 on the performance of the PSX. The hypothesis is that positive COVID-19 cases, deaths, and recoveries had an impact on Pakistan's stock market performance. According to the study's findings, only Recoveries from COVID-19 are trustworthy indicators of PSX performance. Additional research can be done by including variables connected to COVID-19 at the global level along with others like Interest rates, inflation, and economic growth. The factors associated with the pandemic influencing stock market performance can thus be found with clarity. This study examined the effects of three policies: lockout, stimulus package, and travel ban—affected the performance of 34 industrial stock indices in Pakistan. Evidence suggests a higher degree of integration across different industrial stock indexes during the early phases of the pandemic, according to daily data from January 1, 2019, through November 30, 2021. The fact that a single lock-in had a favorable effect on total stock returns shows that it might boost investor confidence across the board in the stock market. There are three response strategies' effects at the industry level are typically favorable but vary between sector stock indices. The fact that none of the three adopted policies has a major impact on the returns from the real estate, healthcare, or technology industries.

Researchers contend that major things have an impact on stock markets (Haque & Sarwar, 2013; Waheed, Wei, Sarwar, & Lv, 2018). Unfortunately, once the infection spreads worldwide, it will start to have an impact on businesses, which will be reflected in worldwide stock markets. Certain research (Al-Awadhi, Al-Saifi, Al-Awadhi, & Alhamadi, 2020; Kowalewski & Piewanowski, 2020) looked into the effect of COVID-19 on developed stock returns. Four times in ten days in March, a brake system hit the American market. After 1987, the FTSE stock index in the UK also saw a drop, but it was more severe (Al-Awadhi *et al.*, 2020).

COVID-19 and Stock Exchange

Pakistan recorded its first COVID-19 case in 26-Feb-2020; by the time the study was done, that number had risen to 13,000 cases. The severity of the disease's spread and the amount of time it takes to implement preventive measures will determine how they impact Pakistan's economy. According to projections from the Asian Development Bank (ADB), the pandemic crisis might cost Pakistan's economy between \$16.38 and \$4.95 billion, or around 1.57% of its whole GDP. The researcher also claims that this epidemic has resulted in job losses of about 946,000. The nation, which has spent the last two years recovering, is suffering.

Trade is seen as the backbone of every business since it provides the US with foreign reserves to ensure price stability and manage exchange rates, among other things. Following this epidemic hit Pakistan, it determined to shut down the industries which impact the economy. Previously, we analyze the PSX to replicate the adjustments when a foremost event hits the country. This is identical to the contaminated instances pronounced in Pakistans, Later, when the IMF and other nations extended the mortgage payment dates, the IMF agreed to give Pakistan \$1.4 billion to combat the pandemic. This money, along with assistance from the World Bank, indirectly helped the country's stock market and business activity to revive. The PSX 100 index has significantly increased in response to these initiatives.

Objectives

1. The COVID-19 pandemic and how it affected market efficiency as a whole.
2. The COVID-19 outstanding cases, fatalities, and recoveries impact the performance of (PSX-100).
3. COVID-19 recoveries have had an impact on the market's performance, and major incidents and fatalities are no longer relevant in this particular situation.
4. To determine whether COVID-19 affects the overall health of the Pakistani stock market (PSX-100).

Problem Statement

This study's goal is to ascertain how the stock market will react as seems in the PSX one-of-a-kind website and NCOC. You hear about it every time it reaches a new excessive or a new low. The price of investment and business opportunities in the Stock market can increase if an environment-friendly algorithm should be devised to predict the momentary charge of an individual stock. As it brings foreign reserves into the nation to manage the balance of payments and govern exchange rates, among other things, trade is seen as the foundation of any economy. Pakistani authorities chose to shut down the sector as a result of the epidemic, which led the economy to contract. In the past, whenever a significant event or issue affects the nation, the stock markets alter. Similar to the infected cases reported in Pakistan, the stock market also began to decline; on March 19, it reached its lowest level in the previous five years. The pandemic crisis, which compels foreign investors to sell their international portfolio investments, is the primary reason for this precipitous collapse. Industries are under lockdown as a result of COVID-19, and this pressure is increasing on the stock market. As a result, at the beginning of this uncertain circumstance, the stock market had a downward trend. When the IMF and other nations later extended the loan repayment dates, the money from the World Bank and the IMF's acceptance of a \$1.4 billion grant to Pakistan to combat the epidemic helped the country's stock market and commercial activity recover inadvertently. The PSX 100 index has significantly increased as a result of these efforts, rising from 39,382 on March 5 to 44,960 on March 26.

Contribution

Awadhi et al. and Kowalewski & Piewanowski (2010) conducted studies in economies to examine the connection between pandemics and stock exchanges. In contrast, we look at how COVID-19 will affect emerging markets. The Karachi Stock Exchange (PSX), one of the top-rated emerging stock markets, is examined in this study for the first time to determine the effect of COVID-19. Studying Pakistan's stock market dynamics is crucial for a variety of reasons, including.

- (a) Understanding investor behavior in emerging markets,
- (b) Understanding the government intervention & lockdowns' impact on the market, particularly in the context of worst-case scenarios.
- (c) Determining the necessary steps to keep capital in emerging stock markets.

Time Trends in Industry-Level Returns

While many businesses may survive the crisis and some may even prosper, it is obvious that many industries will suffer considerably. Examples of these include the manufacturing of facemasks and home delivery services as potential winners. Examples of the sorts of losers include the transportation, leisure, hotel, and airline industries.

Literature Review

The emphasis of the current study is on COVID-19's effects on the Pakistani stock market, which is a part of a growing economy. The results of the current study are in direct opposition to those of earlier studies,

which claimed that COVID-19 had a negative impact on established PSX. We conclude that the PSX 100 index has verified favorable stock return growth. Additionally, we present the considerable rise in PSX 100 index utilizing three COVID-19 anticipated scenarios. However, it becomes obvious that the Pakistani government's prompt involvement protected investors from the complete collapse of the stock market.

Globally Overview of the Effect of Covid 19

Ding, Levine, Lin, and Xie (2020), investigated corporate immunity during the COVID-19 epidemic. they used data from more than 6, 000 businesses in 56 different countries. In this instance, they want to ascertain how the COVID-19 instances have affected stock prices and corporate traits. According to the study's findings, businesses with better pre-2020 financial standing, less pandemic exposure, less entrenched leaders, and more social responsibility initiatives were less likely to endure a mild stock price decline brought on by pandemics. The results also show that, in terms of performance, companies with higher corporate ownership performed better than those with higher ownership of hedge funds.

Islamic Equity Investments (IEIs)

Ashraf, Rizwan, and Ahmad (2020) examine how Islamic Equity Investments (IEIs) fared during the COVID-19 epidemic. S&P down Jones reports that IEIs continued to perform better than their traditional counterparts during 2020's first quarter. With careful treatment of the IEIs and the potential hedging benefits utilized, this claim has been made. The study's findings show that IEIs offer hedging benefits during market downturns, and they also imply that these benefits come at a premium.

UNCTAD asserts in its most recent report that Pakistan will be the nation most badly impacted by the global COVID-19 epidemic (UNCTAD, 2020). In her investigation of the effects of the COVID-19 outbreak on the stock markets of six nations that benefited from the pandemic, Kotishwar (2020) discovered evidence of a persistently unfavorable correlation between the outbreak and the stock market.

Mark of Affected Countries

According to the empirical findings, COVID-19 has a slightly shorter, negative influence on the stock markets of the affected countries. European, American, and Asian, countries all experience spillover effects from the COVID-19 stock market impact. Waheed et al. (2020) considered the PSX. Their examination in contrast to earlier research had a positive effect on the PSX-100 index stock market returns during COVID-19. The United Nations Conference on Trade and Development (UNCTAD) asserts in its most recent report that Pakistan will be the nation most badly impacted by the global COVID-19 epidemic (UNCTAD, 2020).

In his research, Schoenfeld (2020) examines how the risk factor relates to pandemics and financial markets. The study examines how the financial markets react to extensive pandemics using the COVID-19 pandemic as a real-world experiment. The results show that managers undervalue the danger of pandemics in comparison to the risk factors needed by the SEC, which lowers the value of businesses in this sector. The findings also suggest that pandemics have a consistent impact on the financial markets' performance. Russell Estrada, Koutronas & Lee give an analysis of the financial and economic impacts of the COVID-19 epidemic (2020). The spatial pattern of the COVID-19 type of virus's occurrence, as well as its effects and importance to the financial markets. The study suggests a unique multidimensional geometric method and the idea of aggression for the given pandemic situation. Estimates indicate that the FY 2021 will see financial damage of around 10% or 1.1 trillion Pakistani rupees. To understand how the government's implementation of lockdowns, social exclusion, and travel restrictions affected the livelihoods of over 7.15 million workers, these policies were extensively examined. As a result, a rise in poverty of 33.7% is anticipated.

Financial Markets and the Pandemic

We may start with the research that was focused on how the current spread affected the financial market. According to research, the COVID-19 financial market impact is catastrophic compared to comparable crises that have occurred in the past (Baker et al., 2020; Umar, Rizvi, et al., 2021; Zhang et al., 2020). This research includes studies that examine volatility (Albulescu, 2021; Cheng & Yao; Su, Huang, et al., 2021; Su, Sun, et al., 2021), liquidity (Pavlyshenko, 2020; Topcu & Gulal, 2020; Umar, Mirza, et al., 2021), and the effects of a pandemic on the stock market (Haroon & Rizvi, 2020; Su, Qin, Tao, Shao, et al., 2020; Su, Qin, Tao, & Umar, 2020; Zaremba et al., 2020) Among the research on herding are Kizys et al. (2021), publications by Pástor and Vorsatz (2020) that study fund flows, or Bretscher et al. (2020), Gormsen and Koijen (2020), and Umar, Su, et al. that examine financial forecasts (2021).

Theoretical Framework

The purpose of our study is to assess the financial market's behavior during the epidemic and compare the results with those from before the pandemic, based on the literature and theoretical foundation indicated above. The study may provide data on the scope of behavior during the pandemic, which will aid in estimating the amount of sacrifice the pertinent markets will be required to make to contain the virus. The stock market's steady operation depends on the findings, which are thought to provide light on the events of the epidemic and provide a topic for further study.

Global value chains have a negative effect on stock returns for firms with exposure to China and the US. Additionally, these negative returns were first noted for enterprises that had exposure to China before becoming apparent for those that had exposure to the US. Although the Japanese stock market has fallen as much as the US stock market, there have been fewer COVID-19 incidents there. Further research by the team revealed that ownership by conventional business groups is favorably related to atypical returns while foreign ownership is adversely connected with these results.

Hypothesis

The Pre and Post Covid Crises of Different Sectors do not significantly alter. The standard deviation of several sectors has significantly changed between the pre-and post-Covid Crisis periods.

Methods and Material

The WHO website and the PSX Pakistan are two places where the data came from. The data sources also offer statistics on global finance (IFS). The information was gathered between February 2020 and December 2021. We used EVIEWS to analyze the data.

The PSX-100 index stock data from 2020 to 2021 [cycles (1st-12th)] is being considered daily. Each cycle has a six-month length. The information is gathered from investing.com. For calculating and analyzing the PSX-100 data, Statistical EViews version 8.0 software is utilized. For six-year data of the Karachi Stock Exchange 100 Index (PSX-100) on the day of closure, for instance, time series plots and fitted, residual, and projected plots are utilized, which are employed in the form of six-month cycles.

Data and Methodology

The study investigates the relationship between the Stock Exchange and COVID-19. The World Health Organization (WHO) provides the COVID-19 data for this purpose, while the Stock Exchange (<https://www.psx.com.pk>) provides the PSX-10 index data. Although the first COVID-19 patient was reported on February 26, 2020, we used COVID-19 and PSX data from February 26 to December 31, 2020. We computed the quantile-on-quantile estimations using the available data to investigate the effect of

COVID-19 on the PSX-100 index. Then, to anticipate the three scenarios—low instances in the future, average cases in the future, and high cases in the future we use ARIMA and the exponential smoothing (ES) technique. All applications approved by banks and DFIs up until September 30, 2020, were said to be eligible for refinancing under the COVID-19 refinancing facility and the Islamic refinancing facility in instructions released by the SBP on September 29, 2020. As a result, even LCs created under these authorized applications after September 30, 2020, will be qualified for refinancing. September 21, 2020, The Monetary Policy Committee (MPC) reduced the policy rate by a total of 625 basis points, from 13.25 percent to 7 percent. The major reasons for the aggressive policy rate reduction were persistently low inflation and a weakening economy. According to the MPC, the current monetary policy is sufficient to sustain the emerging recovery while keeping inflation low. I've collected the data from 4 variables, Technology and Communication, Transport, Food & Care, and Pharmaceutical.

Results and Analysis

This part shows the findings of summary statistics and GARCH (1, 1), for the Pakistan Stock Exchange (PSX) concerning the PSX-100 index and in light of the research questions studies. In addition, a detailed interpretation of these results is also included in this section along with the relevant results tables. Note that all analysis tables presented in this section summarize the results concerning PSX 100 index.

Descriptive Statistics

Descriptive statistics are calculated for two main reasons. First, descriptive statistics inform us about the nature and characteristics of the data. The second reason is even more important, namely to explore time series for further application of GARCH. For these purposes, some selective statistics are calculated PSX stock returns. Statistics reported included the mean (which is the average return of a firm on the PSX markets), and the standard deviation (SD), using Eviews. This statistic diagnoses the normality, stationarity, and serial correlation of data, which are important properties of time series data and help to further apply GARCH tests. The descriptive statistics have proven all the characteristics of the time series that make our data a suitable candidate to be analyzed through the GARCH (1, 1) model. Keeping in view the limitation of space in this paper, descriptive statistics are omitted to achieve sanctity.

Empirical Results of GARCH (1, 1): Evidence from the Sectorial Data

For the regression purposes between the dependent and independent variables, the GARCH (1, 1) model is run using the E-Views software. The results from the GARCH (1, 1) model are summarized in the following tables. In the subsequent paragraphs, these results are interpreted about each independent variable of the study. Moreover, the results are provided for sectorial-level analysis (see table 1) and at individual firms' level (see table 2) as well within these sectors (i.e. technology & communication, transport, food & care, and pharmaceuticals).

In the following table 1, the results from the GARCH (1, 1) table are provided. The results are reported against the average returns for all the sectors of the study. More specifically, for the communication and technology sector, the lockdown variable has shown a negative impact along with the negative impact of S1 and S4. However, S2, S3, and S5 have shown a positive impact on the stock returns of the communication and technology sectors. The same results were also indicated for the food and care sector, pharmaceuticals, and transport sectors. All these results indicate that the lockdown variable has a negative impact on the stock returns of these sectors.

Table 1: Results of GARCH (1, 1) Model – Sectorial Level Effect for PSX 100 index

Sector	Constant	Independent Variables						
		Lock Down	S1	S2	S3	S4	S5	S6
Communication & Technology	0.015992***	-0.0053	-0.027	0.0067	0.0047	-0.0058	0.0611	-0.0545
Food and Care	0.0154***	-0.0010	0.0271	0.0055	0.0033	-0.0075	-0.0108	-0.0308
Pharmaceutical	0.0133***	-0.0017	0.0281	0.0030	0.0010	-0.0056	-0.0023	-0.0367
Transport	0.0162***	-0.0029	0.0234	0.0142***	0.0096***	-0.0065	-0.0094	-0.0360

To specifically understand and realize the impact of the lockdown as the main independent variable and other government policies, the GARCH (1, 1) analysis is also performed at each the firm-level. The firm-level GARCH analyses are provided in the following table 2. In the table, the results are presented concerning significant and insignificant, positive and negative impacts of the independent variables on the stock returns of the firms belonging to these sectors. More specifically, the number of firms along with their respective percentages is provided in each sector in the following table 2. For a stable GARCH (1, 1) analysis and results, the values of the ARCH and GARCH parameters must be positive and significant. As evident from the table the ARCH parameter values are significant and positive for almost all the firms in each sector; however, the GARCH parameter values are significant and positive for the majority of the firms in each sector. This indicates that the GARCH model is appropriately applied to the stock returns data of these firms. In the subsequent paragraphs, the results are further interpreted with each of the independent variables:

Table 2: Results of GARCH (1, 1) Model – Sectorial Level Effect for PSX 100 index

		SECTORS					
		Sig. Level	Technology and Communication	Transport	Food & Care	Pharmaceutical	
		SECTORS	[10]	[04]	[16]	[08]	
C	Sig. +ve		7(70%)	2(50%)	8(50%)	3(37.5%)	
	Sig. -ve		0(0%)	2(50%)	0(0%)	0(0%)	
	InSig. +ve		3(30%)	0(0%)	6(37.5%)	2(25%)	
	InSig. -ve		0(0%)	0(0%)	2(12.5%)	3(37.5%)	
ARCH	Sig. +ve		10(100%)	4(100%)	15(93.25%)	7(87.5%)	
	Sig. -ve		0(0%)	0(0%)	0(0%)	1(12.5%)	
	InSig. +ve		0(0%)	0(0%)	1(6.25%)	0(0%)	
	InSig. -ve		0(0%)	0(0%)	0(0%)	0(0%)	
GARCH	Sig. +ve		8(80%)	4(100%)	15(93.25%)	8(100%)	
	Sig. -ve		0(0%)	0(0%)	0(0%)	1(12.5%)	
	InSig. +ve		2(20%)	0(0%)	1(6.25%)	0(0%)	
	InSig. -ve		0(0%)	0(0%)	0(0%)	0(0%)	
LOCK DOWN	Sig. +ve		1(10%)	0(0%)	1(6.25%)	0(0%)	
	Sig. -ve		2(20%)	1(25%)	1(6.25%)	1(12.5%)	
	InSig. +ve		1(10%)	0(0%)	7(43.75%)	1(12.5%)	
	InSig. -ve		6(60%)	3(75%)	7(43.75%)	6(75%)	
STIMULUS POCK	S1	Sig. +ve		0(0%)	0(0%)	2(12.5%)	0(0%)
		Sig. -ve		0(0%)	0(0%)	1(6.25%)	0(0%)
		InSig. +ve		9(90%)	4(100%)	10(62.5%)	6(75%)
		InSig. -ve		1(10%)	0(0%)	3(18.75%)	2(25%)
	S2	Sig. +ve		1(10%)	2(50%)	5(31.25%)	3(37.5%)
		Sig. -ve		0(0%)	0(0%)	1(6.25%)	0(0%)
		InSig. +ve		7(70%)	2(50%)	4(25%)	3(37.5%)
		InSig. -ve					

	InSig. -ve	2(20%)	0(0%)	6(37.5%)	2(25%)
S3	Sig. +ve	0(0%)	1(25%)	3(%)	1(12.5%)
	Sig. -ve	0(0%)	0(0%)	1(6.25%)	0(0%)
	InSig. +ve	8(80%)	1(25%)	4(25%)	3(37.5%)
S4	InSig. -ve	2(20%)	2(50%)	8(50%)	4(50%)
	Sig. +ve	0(0%)	0(0%)	2(12.5%)	0(0%)
	Sig. -ve	2(20%)	0(0%)	3(18.75%)	1(12.5%)
	InSig. +ve	2(20%)	1(25%)	1(6.25%)	2(25%)
S5	InSig. -ve	6(60%)	3(75%)	10(62.5%)	5(62.5%)
	Sig. +ve	0(0%)	0(0%)	0(0%)	1(12.5%)
	Sig. -ve	0(0%)	0(0%)	1(6.25%)	0(0%)
	InSig. +ve	6(60%)	2(50%)	5(31.25%)	4(50%)
S6	InSig. -ve	4(40%)	2(50%)	10(62.5%)	3(37.5%)
	Sig. +ve	0(0%)	0(0%)	1(6.25%)	0(0%)
	Sig. -ve	0(0%)	0(0%)	3(18.75%)	2(25%)
	InSig. +ve	0(0%)	0(0%)	4(25%)	0(0%)
	InSig. -ve	10(100%)	4(100%)	8(50%)	6(75%)

Lockdown

In the case of communication and technology, this variable has shown a negative relationship with 80% of the firms. However, out of 80%, merely 20% of the firms, this result shows the significance and with the rest of 60%, it is insignificant.

Independent Variables

Stimulus 1

The Government of Pakistan (GOP) recently unveiled a Special Incentive Programme for the building sector on 03 April 2020: the creation of a building industry development board for the growth of the sector. There has been a proposal for complete amnesty, and until June 30, 2022, no inquiries regarding the source of investments will be made. Shortening the project approval period, ideally to 45 days.

The Central Bank contains, and treats the Coronavirus will be financed by banks through a refinancing program by the Central Bank at a lower end-user rate of 3 percent for five years. The deferral of monthly and quarterly fuel adjustments in energy bills for power customers for the following 3 months (until June 2020) has been authorized by the Economic Coordination Committee (ECC) of the Cabinet. PKR 110 billion in savings for consumers' power bills.

Stimulus 2

The Pakistan National Emergency Preparedness and Response Plan for Covid-19 to satisfy the nation's needs for 12 months through emergency operations was approved by the ECC on September 23, 2020. A grant of US\$ 5 million will be given by the government of Norway and a loan of US\$ 100 million from the Asian Development Bank will be used to operate the program.

Stimulus 3

With a budget of Rs 144 billion, the government started the "Ehsaas Emergency Financial Program" to give 12 million families of daily wage earners urgent money assistance of Rs 12,000 each. The GOP established a method of 16.9 million beneficiaries for the Ehsaas Emergency Cash Program, and the financial allotment has been increased to Rs 203 billion. The program has already reached its first goal of distributing money to over 12 million recipients.

Stimulus 4

April 10, 2020 Pakistan's National Disaster Risk Management Fund (NDRMF) has been used by the Asian Development Bank (ADB) to reallocate \$50 million to assist the Government of Pakistan in preventive and response actions against the novel coronavirus (COVID-19) outbreak. in the nation. Until March 30, 2020, Utility Stores Corporation will be allocated 50 billion rupees to subsidize the cost of providing essential food items to the neediest members of society. PKR 50 billion will be used to finance Utility Stores.

Stimulus 5

30 March 2020, funding for reducing the impact of COVID-19 on the affected populace, the Government of Pakistan (GOP) has authorized the Fiscal Stimulus Package of Rs. 1.2 trillion and a Supplementary Grant of Rs. 100 billion for the "Residual/Emergency Relief Fund."

Stimulus 6

26-03-2020 To combat the Corona Virus, Pakistan is negotiating with the International Monetary Fund (IMF) for an extra \$1.4 billion fast-track and upfront payment package.

The Impact of Lockdown and Stimulus on the Sectors' Stock Returns

The below table defines the different sector's lockdown statuses. In the table below, the number of firms (as well as their percentages in parentheses) in each sector and their level of positive/negative significance for ARCH and GARCH parameters of PSX. In the following paragraphs, the scholar presents the interpretations of the results against each sector.

Communication and Technology

The communication and technology sector consists of Ten firms. These firms deal with communication and technology AVN, HUMNL, MDTL, NETSOL, PTC, SYS, TELE, TPL, and TRG. For this sector, the GARCH results show that the lockdown has a negative impact and three of the stimulus factors have also affected this sector negatively. This stimulus included S1, (electricity bills for Small and Medium Enterprises (SMEs)) (special incentive package for the construction industry (escalating budget deficit)) S4, (Pakistan's National Disaster Risk Management Fund (NDRMF)), and S6, (International Monetary Fund (IMF)) respectively. The possible justification for their negative impact on the stock return of this sector. The remaining three stimuli i.e. S2, (Pakistan National Emergency Preparedness and Response Plan for Covid-19) S3, (Ehsaas Emergency Cash Program), and S5, (fiscal stimulus package) respectively.

Transportation

This negative impact is logical as this obvious that a lockdown restricted the public movement and people used transportation for commuting less frequently. This in turn affected the business of communication.

The transportation sector consists of Four firms. These firms deal with Transport PIAA, PICT, PIBTL, PNSX.

With COVID-19, public transportation has suffered greatly. Operators in developing cities will need to answer challenging concerns about their future viability as ridership has decreased dramatically. Planning for emergencies is necessary for the appropriate reaction, but shared transit's importance in the process of economic development must never be overlooked. Cities all across the world have had to impose severe limitations on public transportation since the COVID-19 pandemic began to stop the spreading virus and guarantee the safety of essential personnel during the emergency response. A handful of the main cities where public transportation has had to operate at less than 60% of capacity under lockdown are Addis Abeba, Lagos, and Johannesburg.

Food & Care

The food & care sector consists of Sixteen firms. These firms deal with the Food & care ASC, PREMA, BNL, CLOV, FFL, FCEPL, GLPL, MFL, MFFL, NATF, QUICE, SHEZ, SCL, TREET, UNITY, ZIL. The global COVID-19 pandemic situation has significantly strained the food and health systems all over the planet. Viruses caused serious obstacles to economic growth, which had a profound impact on people's livelihoods and food security, and nutrition conditions. The virus's global spread is mostly caused by rising rates of globalization, as well as international travel and trade. Additionally, lockdowns and restricted travel inside and between nations have had a significant impact on local, national, and international markets, which has slowed down global economic activity. The issue is significantly worse in underdeveloped and low socioeconomic growth countries, severely compromising the already precarious agri-food systems and, as a result, the people's means of subsistence. A "crisis" level of acute food insecurity affects almost 135 million people, according to the Global Report on Food Crises 2020, and this situation requires rapid response.

Pharmaceutical

The Pharmaceutical sector consists of eight firms. These firms deal with the Pharmaceutical APL, AGP, FEROS , GSKCH, GLAXO, Highnoon, IBL, SEARL. Nearly 70% of the demand for finished medicines in Pakistan is satisfied by Pakistan's 759 pharmaceutical product manufacturing facilities (Pakistan Pharmaceutical Manufacturers Association, PPMA). These 25 international corporations, who collectively control an equal market share with indigenous producers in Pakistan, are included in the total. Around 183 businesses are located in Sindh (PPMA).

Conclusion

Analysis of the COVID-19 impact on Pakistan's stock exchange's stock market returns is provided in this article. As previously documented by research, the pandemic is having a significant impact on financial markets in industrialized nations. Throughout this time, there have been multiple occasions when the stock markets of industrialized nations have experienced circuit breaks. However, emerging markets like Pakistan have seen the reverse trend in their stock markets. When a pandemic first begins, things take a dip, but once the government has taken precautions, things are improving. The stock market benefits from these preventative actions, such as the relief package for the general public, enterprises, and industries, as well as the decrease in interest rates. as taking out loans for commercial operations has grown simpler. On the other way, the government made an effort to support industrial consumption by giving cash to unemployed people. Additionally, it is expected that the three COVID-19 predicted scenarios of low, average, and high increase in cases will all result in continued improvement in the economic situation. It demonstrates how, in contrast to the stock markets of rich nations, this epidemic has a variety of effects on emerging economies.

Future Work

The COVID-19 epidemic around the globe was met with unprecedented volatility and return reductions in the stock and foreign exchange markets. But according to early research in the literature (Waheed et al. (2020); Ahmed (2020)), there is no correlation between Pakistan and the data about the world stock markets. Using a daily dataset for the sample period of February 25, 2020, to May 6, 2021, we looked at the effects of COVID-19 on EXU and SMU in this article. To lessen the damages caused by the epidemic, we can regulate how economic factors, governmental policies, and central bank actions will play out. To calculate the effect of COVID-19 on EXU and SMU, we employed a VAR model. These findings hold up well across a variety of conditions, variable changes, and model lag times. These findings agree with those published in recent academic literature. However, after a short while, the impact of the stock market and currency rate volatility faded away. This may be ascribed to steps made by policymakers to control investors' risk-averse behavior and eroding confidence.

At this point, it's important to make two things clear. First off, it's crucial to remember that a developing nation like Pakistan cannot use a daily database to analyze the effects of COVID-19 on economic activity¹⁰. Additionally, since the first COVID-19 case in Pakistan surfaced on February 25, 2020, it is impossible to offer opinions on how COVID-19 would affect the level of uncertainty in Pakistan's stock market and foreign exchange. Second, the impact of COVID-19, which struck Pakistan in February 2020, maybe lessened further because the majority of Pakistan's age groups have already received the necessary vaccinations. It is difficult to remark on how COVID-19 may affect investors' long-term level of uncertainty (as it relates to the stock market and exchange markets). Researchers may later be able to offer some insights into COVID-19's long-term effects if vaccination effectiveness remained poor and the disease maintained infecting patients. This is something we'll leave up to future study. Policies did have a substantial role in reducing the influence of COVID-19 on EXU and SMU, even though these impacts were favorable and considerable. This may explain the effect of COVID-19 on the stock market and exchange rate.

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