Problem For Researchers in Selecting Topic in Thesis: A Survey of Universities Scholars of SBA

The Synergistic Approach to Combat the Covid-19 Pandemic: An Empirical Evidence from Pakistan

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Abstract

The COVID-19 outbreak is the most severe natural disaster, which spread rapidly, restricted people from gathering, stopped product movement, and entangled entire global businesses. The potential risk that emerged from the Covid-19 pandemic was uncertain. Only effective measures from the government are helpful to combat such outbreaks. Response to Covid-19 varies across countries, depending on economic, cultural, and other relevant factors. Pakistan is one of the countries praised by WHO for combating covid pandemic effectively. This study contributes to the existing stock of literature by examining the synergistic approaches to COVID-19 in the context of Pakistan. Daily data is used for indices comprised of COVID pandemic and policy response from February 2020 to April 2022. The augmented Dickey-Fuller (ADF) test is used for stationarity and regression for accomplishing main objectives. The study's findings further proclaimed that a synergistic approach fights very well against COVID-19 and keeps such a pandemic in control. To the best of our knowledge, there is limited evidence in the literature on policy response with covid-19 outbreak in Pakistan, where WHO has praised Pakistan due to key measures effective in curbing the severity of the COVID-19 outbreak.

Keywords: Stringency Index, Financial Support Index, Health and Containment Index, Policy Measures, COVID-19 outbreak,

1. Introduction:

The COVID-19 pandemic is regarded as one of the most terrible natural catastrophes hurting humanity. It remains tough to predict future epidemics from previous. Many

natural disasters took place that suffered humanity, including SARS-CoV in 2003 (Magnus et al., 2015), the Polio pandemic in 2014, Zika and Ebola in 2016, and 2019 respectively. However, the COVID-19 pandemic is found to be more crucial and dangerous for the entire humanity. The impact of the Covid pandemic goes beyond affecting humanity and disturbs global business on a large scale. Because any abnormal event like severe acute respiratory syndrome (SARS), natural disasters, and political events dramatically alter investor sentiment (Chen et al., 2007; Caporale et al., 2019; Wang & Kutan, 2013; Beaulieu et al., 2006; Nazir et al., 2014; Iqbal et al., 2023).

The COVID-19 pandemic spread quickly and entangled entire humanity in a short period. This pandemic creates severe health and economic challenges for humanity and the economy (Ahmad et al., 2023a). At the commencement of COVID-19, along with other businesses, the stock market is a primary victim (Liu et al., 2020; Zhang et al., 2020; Ashraf et al., 2023). COVID-19 has caused investors to bear considerable losses due to high levels of risk (Zhang et al., 2020; Ahmad et al., 2023b). As gradually more cases were diagnosed, investors became cautious about the extraordinary unpredictability of the situation, specifically financial markets, leading to a highly volatile and uncertain market situation. The only weapon available to fight against COVID-19 is a timely government response because uncertainty remains at its peak, altering investors' sentiments very quickly, disturbing entire businesses, and declining economic growth across the countries.

Therefore, in such a situation, synergistic approaches like encouraging health professionals, providing health facilities, manageable restrictions, and providing economic facilities at the doorstep can fight well against the COVID-19 pandemic (Ghufran et al., 2022). The speedy spread of covid-19 pandemic primarily increased the unreported cases, which dispersed fear and made this pandemic challenging to control. So, in this regard, government responses from the national level in various shapes impede the pandemic spread. The government took various measures to tackle and manage such a pandemic. However, these measures may vary globally because all these are linked to economic and governance systems, which are pretty different.

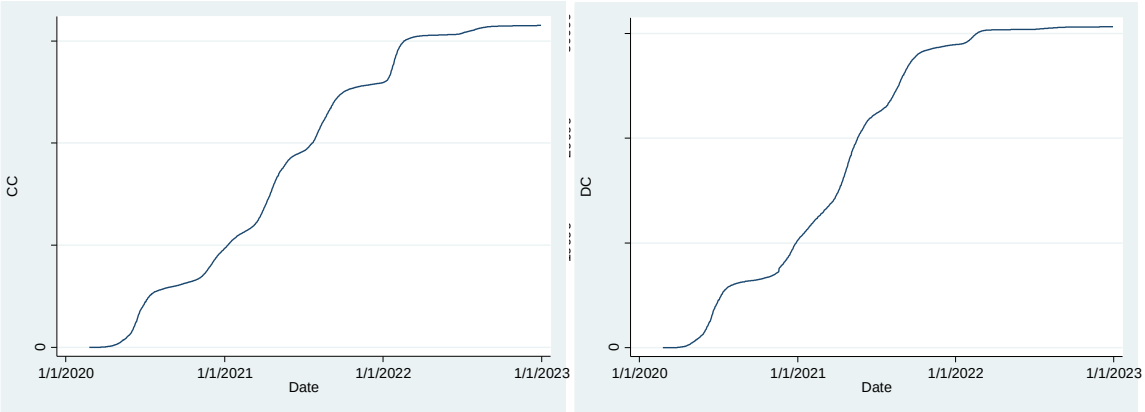


Figure 01: COVID-19 confirmed Positive and Death Cases in Pakistan

Restriction on men-made activities may be helpful (Shengsheng et al., 2020); however, have a diverse effect, especially for the capital market. Baker et al. (2020) reported that the main reasons behind the severe influence of the capital market from COVID-19 compared to the Spanish flu are the government restrictions on social distancing and business activities. All critical markets, including money and the capital market, respond differently to COVID-19 across the countries, Dow Jones Industrial Average (DJIA) descended 6400 points (Ngwakwe, 2020), and the Chinese market usually remained strong as compared to others, such as, Japan, Singapore, Korea, Germany, USA, UK, and Italy, (Liu et al., 2020). Developing countries, specifically in Asia, experienced more negative effects and got adversely influenced hence, tried hard to fight the COVID-19 pandemic through restrictions, financial support, and vaccination. There remained a dilemma for the policy measure because such measures like social distancing and restriction, badly hurt the economic practices (Ramelli & Wagner, 2020). A country with no or limited resources feels ferocity soberly of such practices which disturb its economy (Ashraf et al., 2023). Moreover, these become more alarming for economies where most citizens depend on daily wages like in Pakistan.

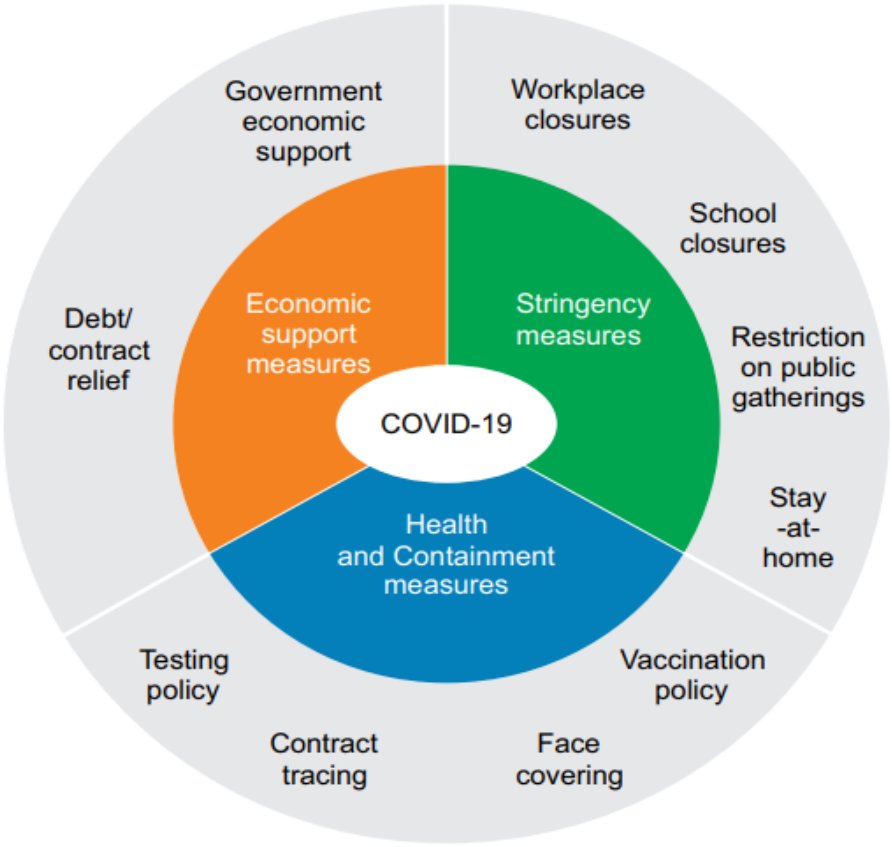


Figure 2: Government Response to Tackle the COVID-19 Pandemic

The policies which were implemented comprised financial support, stringency measures, and health facilities which reduced the risk of diffusion of COVID-19 because such measures help the poor, retain economic operation, reduce fear, combat uncertainty and build investor's confidence in the market. The devastating COVID-19 brought the World to standstill, stressed governments and people. Policy implications such as school closures, restriction on public gatherings, public awareness and testing policies were adopted to stop COVID-19 spread. Countries across the globe react to this outbreak differently based on their resources. Therefore, getting support from institutional and behavioral finance theories, this study also attempts to contribute to the existing stock of knowledge by examining the impact of a synergistic approach to combat the COVID-19 outbreak in the context of Pakistan. The variation in the synergistic approach is due to the implementation of this measure, which fights against Covid-19. In most countries, these measures must be adopted early, creating complications in curbing the Covid-19 outbreak.

2. Literature Review

The Covid-19 pandemic is regarded as one of the most severe natural disasters, affecting businesses across the globe significantly. The capital market, one of the most vulnerable markets, is influenced by many factors (Khan et al., 2022; Ashraf et al., 2021). The fast global spread of COVID-19 had been the most important event of 2020 (Wang et al., 2020), which not only lessened the market returns but also enhanced the volatility of the various sectors. The volatility of the various sectors, including the stock market, concerning COVID-19 is not only specific to certain countries but spread across the globe, which influenced the capital markets negatively in G-20 indices (Sansa, 2020; Ashraf, 2020). All these findings confirm that as COVID-19 cases go rise, this spreads fear in the market and alters investment sentiment quickly. The same is true when terror spreads fear in some terrorist-targeted countries where capital markets are badly influenced (Khan et al., 2020).

In the early stage of COVID-19, no one knew how to tackle it, so initiative was taken to control its spread through restrictions like lockdowns. Such restrictions adversely impacted economy and business operations at large. Pakistan introduced the concept of micro-lockdowns and smart lockdowns to the world (Ahmad et al., 2023a). Market participants considered early relaxations premature and counter-productive but deemed later relaxations judicious and advantageous for economic development (Maseeh et al., 2023). The argument behind such repercussion is that COVID-19 restrictions shocked global supply, particularly in the labor-intensive and manufacturing sectors (Liu et al., 2020; Younas et al., 2023). All of these led the way for financial markets to be in panic mode and remain highly volatile. Gao et al. (2021) investigated the role of the COVID-19 on the capital market volatility in China and the USA. The findings present that COVID-19 daily new cases had a more substantial effect on the capital market volatility.

The erratic behavior of the country's markets, like industrial sectors, money market, and capital market, to COVID-19 remains under consideration by the researchers in both cross-country and single-country analyses. Among all sectors, the equity sector of every country is severely influenced by such a pandemic. Harjoto et al. (2020) explored and presented that global equity markets across 76 countries responded negatively and were highly volatile to COVID-19 spreads. Similar findings were reported for countries like USA by Baek et al. (2020). Moreover, Chaudhary et al. (2020) presented a high volatility nexus between COVID-19 and the capital markets. To capture an accurate picture of COVID-19 on the stock market, the mean return of both indices remained positive in the pre-COVID-19 era but turned negative during the COVID-19. Concludingly, it is evidence in the literature that the capital market remains too erratic to COVID-19 (Khanthavit, 2020; Onali, 2020; Sharif & Yarovaya et al., 2020; Cevik et al., 2022; Iqbal et al., 2023; Ahmed et al., 2023). However, this conclusion varies across the countries due to differences in government measures

during the pandemic.

Financial theory related to behavior presents the role of emotions and anxiety in affecting investment decisions. From this perspective, Chundakkadan (2021) reported that sharp drop in capital markets during the pandemic are not only due to lockdowns that restrict economic activity but also because of fluctuations in sentiments of the investors. COVID-19 related news increased uncertainty and hence adversely impacting investor sentiments. Investors behave more optimistically at the rise of the capital market while relatively pessimistic at the downfall of the stock market. According to the literature of traditional finance, the government policy response positively impacts financial markets. Investors interpret the policy response as a positive signal, and hence make more investments in the stock market. Testing, containment, and income support policies reduced the infection rate and mortality risk and help avert and control the outbreak. And hence, the policy response by the government during COVID-19 has positively impacted investors' sentiments, and investors tend to invest in equity.

On the contrary, the absence of a government policy response hurts investors' sentiments. Investors tend to withdraw their investments during COVID-19, so capital market returns get affected. So, policy measures positively impact the confidence of the investors regarding economic recovery and growth. The influential role of a synergistic approach varies across countries because of its timely implementation (Hale et al., 2020; Zafar et al., 2023). Countries adopt this measure based on available resources and economic conditions, which differ in different countries.

3. Methodology

The foremost objective of the study is to examine the Synergistics approach to the COVID-19 outbreak in Pakistan. The nature of the study is quantitative and relies on daily time series data from 1st February 2020 to 30th April 2022. The study looks at the policy measure like financial support, health facilities, and restrictions taken by the government to control COVID-19. The current study uses four various sorts of indices, including the stringency index (SI), health and containment index (HCI), financial support index (FSI), and COVID-19 index (COI). The index for COVID-19 is constructed through the following formula.

$$COVID-19\ Index = Ln(1 + CCt + DCt) \qquad (1)$$

Ln represents the natural logarithm, CC_t is the confirmed positive cases during the period, and DC_t is the confirmed death cases. This study treats COVID-19 as a dependent variable, while the synergistic approach comprises the health and containment index, financial support index, and stringency index, which are used as independent variables. Table 1, for the description of variables, highlights all variables along with the measurement. The study relies on time series data, so data

must be diagnosed for any error. This study used a unit root test for the detection of stationarity means and data has reported constant mean, variance, and covariance. Usually, time series data are trended and non-stationarity, which violates one of the basic assumptions and results in the misleading calculation of OLS. For the detection of unit root, the Augmented Dickey-Fuller test is employed.

$$\Delta Y = \alpha o + \gamma Y(t-1) + \sum_{i-i}^{p} \beta i \Delta Y t - i \; + \varepsilon \, t \qquad (2)\Delta Y$$

$$= \alpha o + \gamma Y(t-1) + a1T + \sum_{i-i}^{p} \beta i \Delta Y t - i \; + \varepsilon \, t \qquad (2)$$

Where αo is the intercept, γ, and β is the coefficient, $\alpha 1$ presents the coefficient of the trend variable, ε shows the error term, and summation i shows the length of the log in the model. Further, the current study also used other diagnostic tests like multicollinearity and heteroskedasticity to confirm that data is error-free. Based on the augmented Dickey-Fuller test findings, the current study further used a regression model to achieve the core objectives of the study. The study analyzed the following two models for examining the policy and stock market response to the COVID-19 pandemic.

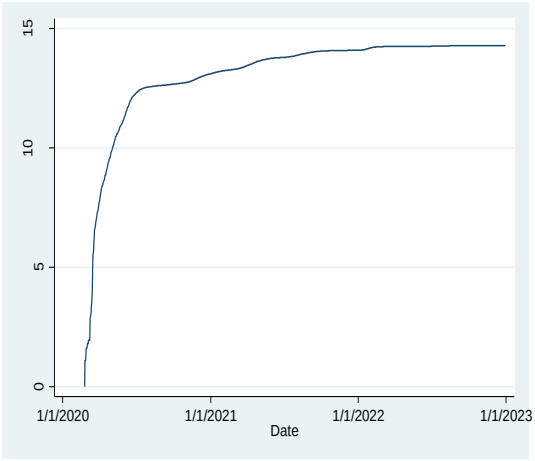
$$(COV)t = \alpha + \beta 1(CH)t + \; \beta 2(STR)t + \; \beta 3(FIN)t + \; \varepsilon t \qquad (3)$$

4. Results and Discussion

Table 01: Descriptive Statistics

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
COV	1042	13.11445	2.117532	0	14.28951
CH	1042	57.71157	8.601384	16.07	74.58
STR	1042	54.78481	14.62604	0	96.3
FIN	1042	0.873320	0.332773	0	1

Table (2) reflect statistical information like mean, standard deviation, minimum and maximum values of COV (COVID-19), and synergistic approach comprised of Containment and health (CH), Stringency (STR), and financial support (FIN) used in the study.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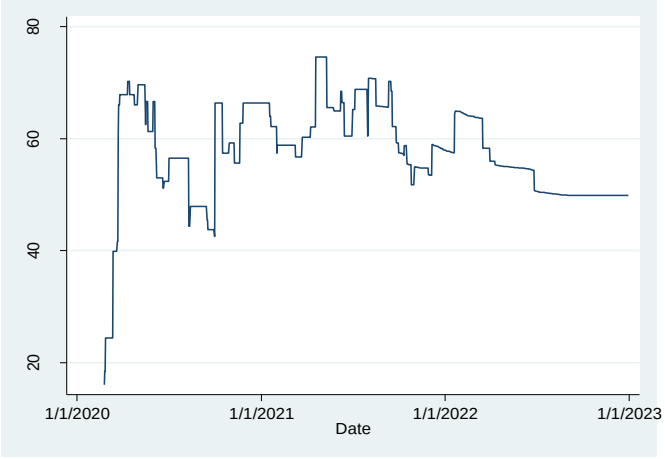
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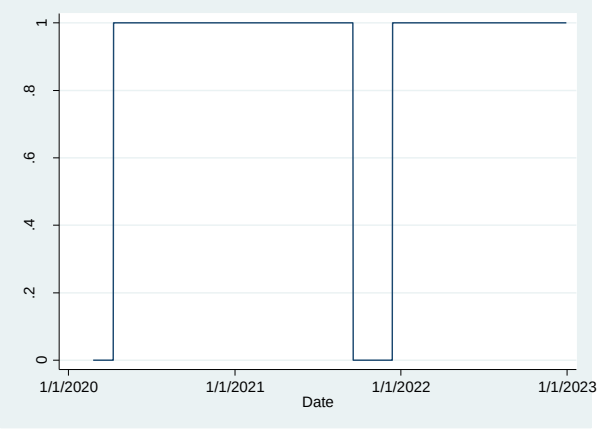
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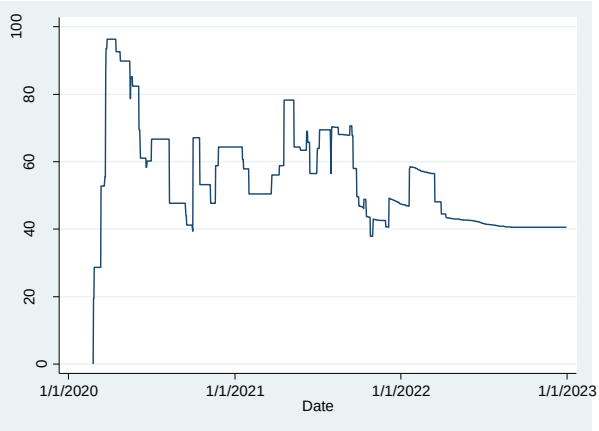

Figure 3: Graphical representation of COV, CH, FIN, and STR.

The above figure represents the timely movement of each index in Pakistan. Initially, COVID-19 spread quickly across the globe, but along with COVID-19, policy measures from the government also moved with the same pattern, reflecting that government responds efficiently to COVID-19. Policy measures from Pakistan are lauded by World's renowned organizations, including (WHO) for handling COVID-19, for controlling its spread. The country has taken dramatic measures very quickly, like, a smart lockdown, containment measures, and establishing an emergency center to detect the route of disease spread and then respond, keeping all other factors in front. PSX plot observed a sudden fall at the commencement of COVID-19 due to uncertainty and then restored its position as the government dealt with COVID-19 cleverly by taking various measures.

Table 02: Correlation Matrix

	COV	***CH***	***STR***	***FIN***
COV	1.0000			
CH	-0.2954	1.0000		
STR	-0.2474	0.7861	1.0000	
FIN	-0.3904	0.2500	0.1277	1.0000

Table (02) highlight the correlation among all variables used in the study to detect the presence of multicollinearity issues in the data. Finding prevails no multicollinearity issue and hence fulfilling one of the basic assumptions of the classical linear regression model.

Table 03: Result of the Augmented Dickey-Fuller Test & Regression

Variable	*t-state*	*Prob*	*Conclusion*
COV	-16.717	0.0000***	I (0)
CH	-22.465	0.0000***	I (0)
STR	-3.045	0.0309**	I (0)
FIN	-3.279	0.0158***	I (0)

In order to check stationarity in data, the current study applied the augmented dickey-fuller test. The findings confirmed that all the data used in the study were free from unit root problems and stationary at the level. This is a smooth way for researchers to analyze data further to achieve the study's primary aim. The above table reflects that all variables are stationary at level, so simple ordinary least square (OLS) is the appropriate model for the study.

Table 04: Result of Regression

COV	*Coef.*	*Std. Err.*	*t*	*P>|t|*
STR	-0.153881	0.005539	-27.78	0.000*
FIN	-1.458367	0.114204	-12.77	0.000*
CH	-0.268270	0.009127	-29.39	0.000*
Cons	4.788862	0.280011	17.10	0.000*
R^2	0.5777		Prob > F	0.000*

The current study employed a regression test to examine the impact of a synergistic approach comprised of containment and health, stringency, and financial index on the COVID-19 outbreak. The results show that the country's synergistic approach is vital in combating the Covid-19 pandemic. The current study focused on the most meaningful measures like financial support, stringency policy, and health facilities and found significant (0.000) and negative (-1.458367, -0.153881, -0.268270) impacts on the COVID-19 pandemic. This highlights that regulatory measures from the government in the shape of appropriate policies play an influential role in combating the covid-19 pandemic. Every step of the synergistic approach is influential in curbing COVID-19. However, various measures that remain focused in the current study cover the requirements that must be considered while fighting against covid-19. The foremost step during covid-19 period is to stop its spread which

may be possible through stringency where restrictions took place, like restrictions on public gatherings and closing schools and other populated institutions. Restrictions have a double-edged sword as they control the spread but adversely affect the daily wages of people at the same time. So financial support was mandatory to reduce covid-19 effects. Finally, citizens already affected by covid-19 needed special treatment and facilities from the government, which help them fight covid-19. The study's findings confirmed that all these synergistic approaches (stringency, health, and Containment, financial) were beneficial in tackling the covid-19 pandemic. However, the implementation of these measures created a difference in various countries. Pakistan is among those countries praised by the World Health Organization (WHO) for fighting will against the Covid-19 pandemic. The country implemented all these measures timely and efficiently so that the main objective of tackling covid-19 pandemic would be achieved.

Findings of the study aligned with the literature (Wong et al., 2021; Lam et al., 2020; Khan et al., 2021; Ahmed et al., 2023) and proclaimed that each policy measure helped in tackling COVID-19 significantly. World Health Organization also praised Pakistan for fighting tirelessly against COVID-19 and for dealing such outbreak effectively. This indicated that during such a situation where uncertainty was at its peak, the policy measures only helped restore investors' confidence in the market, allowing individuals to overcome fear and create a friendly environment. Tackling covid-19 was mandatory as it badly disturbed the entire business, specifically the capital market, which reacted at once during the covid-19 period due to completely altering investor sentiments. This change in sentiment, in turn, notably shifts the behavior of the capital market. As behavioral finance theory put forward, any abnormal event can easily change investor behavior towards the investment. COVID-19, one of the severe outbreaks, spread rapidly, entangling the entire globe and restricting people gathering and free movement. All these harshly influenced investors' decisions regarding investment in the capital markets (Mazur et al., 2021; Fernandez-Perez et al., 2021).

5. Conclusion

The foremost objective of the study is to empirically examine the synergistic approach to the COVID-19 outbreak in the context of Pakistan. Initially, uncertainty peaked during the pandemic, and only the synergistic approach to the COVID-19 pandemic can tackle such a catastrophe. For the current study, various Indices are used, like an index for COVID-19 and a synergistic approach which is further comprised of stringency, financial support, health, and containment. The study relies on daily time series data from February 2020 to April 2022 to get an accurate picture of the pandemic. Data is tested for various sorts of error, precisely unit root, which is common in time series data. Using an appropriate model, this study finds that policy

response has a very significant role in curbing COVID-19 in the context of Pakistan. All these measures (financial support, stringency, health, and Containment facilities) from the government side help minimize COVID-19 because all these measures collectively overcome each aspect that seems mandatory in controlling such a pandemic.

Moreover, the result of the study highlights that the covid-19 affect entire business, specifically the capital market, which is one of the most vulnerable markets influenced by the COVID-19 pandemic negatively across the globe. Like another catastrophe, this pandemic also spread fear within the market, quickly altering investors' sentiment toward investment in various sectors. Initially, no one knew how to deal with the covid-19 pandemic. Therefore, every sector reacted negatively to the COVID-19 outbreak, but markets were stable after a short period when the synergistic approach was employed in the country. This is because government reacts too nicely in curbing COVID-19 by taking various measures. United Nations has confirmed that Pakistan fights tirelessly combating COVID-19, which is a welcome relief for such poor developed economies. These policy measures recreate hope in the people and restore investors' trust in the market. This study contributes to the existing stock of knowledge. It is also helpful for policymakers by suggesting that a responsible country can protect its citizens and investors in any uncertain situation by taking calculative steps.

Recommendation and Limitation:

The COVID-19 outbreak caused global catastrophe that has affected millions of people. In reaction to the pandemic, governments have taken various measures to contain the virus around the World, to protect public health, and to support their economies. The effectiveness of government responses to the pandemic has varied widely depending on several factors, including the resources available, the level of preparedness, and the speed and effectiveness of implementation. The study's findings proclaimed that governments have played a critical role in mitigating the impact of the pandemic. Findings substantiate the effectiveness of various measures which helped policymakers design policy for such unforeseen events. These measures have helped to curb the spread of virus and prevent healthcare systems from being overwhelmed. This study is also helpful for investors to be rational in such situations when the government is adequately involved in curbing disasters. Findings suggest that researchers examine the nexus of policy measures on covid pandemic as there have also been challenges and criticisms of some government responses to COVID-19, criticized for a slow response or a lack of preparedness.

In contrast, others have been criticized for overreaching or implementing measures that were not evidence-based. Overall, while there is always room for improvement, the government's response to COVID-19 has been a critical factor in mitigating the

impact of the pandemic. Governments must continue working closely with public health officials and stakeholders to ensure a coordinated and effective response to the ongoing challenges. Finally, the study is limited to specific data and methodology, which can be improved by considering other samples and methods.

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Appendix 01: Table for Description of Variables

Variable	***Measurement***
COVID-19 index	The index comprises several confirmed and death cases due to COVID-19.
Economic support index (ES)	This index will be used as a proxy for the economic policy of COVID-19. The index includes the following indicators, government economic support and debt/contract relief for poor families.
Containment and Health Index (HC)	This index includes testing policy, face covering, contact tracing, vaccination policy, and the number of people vaccinated. This index will be used as a proxy for the health and containment measures of COVID-19.
Stringency index (SI)	This index will be used as a proxy for the stringent social measures of COVID-19. The index includes the following indicators, school closures; workplace closures; restrictions on public events; restrictions on public gatherings; public transport; stay-at-home; public information campaigns; restrictions on national and international travel.