Navigating the New Normal: Performance of Stock Market During Pandemic

Dipendra Karki
Lecturer, Nepal Commerce Campus
Faculty of Management, Tribhuvan University
https://orcid.org/0000-0001-9045-7423
email: dipendra.karki@ncc.tu.edu.np

Abstract

This study analyzes the effect of COVID-19 on the Nepalese stock market. It utilizes data from January 23, 2020, to December 31, 2020, and examines variables such as confirmed cases, deaths, lockdowns, and interest rates. The results reveal a significant negative impact of COVID-19 related variables, interest rates, and lockdowns on the stock market performance, while total deaths had a positive impact. The study also found that all variables studied had a significant influence on the performance of all sectors. These insights are important for investors, market players, businesses, policymakers, and governments to establish recovery action plans and help investors to make better investment decisions.

Key Words: *COVID-19, pandemic, confirmed cases, lockdowns, investment decisions, stock market.*

Cite this paper
Karki, D. (2022). Navigating the New Normal: Performance of Stock Market During Pandamic. *Pravaha, 28*(1), 119-132.

Introduction

The COVID-19 pandemic, which was first confirmed in Wuhan, China on December 31, 2019, has caused a global economic downturn, resulting in factory shutdowns and unemployment around the world. This has left policymakers, businessmen, governments, managers, scientists, citizens, and medical professionals in dismay. The virus has been compared to Pandora's box and everyone has been on high alert since the 45-day lockdown in developed countries was completed (Ishtiaq et al., 2021). Due to the quarantine in most industrialized countries from March to the end of 2020 and the subsequent second wave, many scholars and economists predict a deep recession for 2020-21. Developing countries in South Asia are likely to experience their worst financial performance in the last four decades. The chances of people being infected with the virus are more prominent in these developing countries due to difficulties in maintaining social distancing and limited access to healthcare and basic necessities like soap in rural areas. Furthermore, there is a risk of rising unemployment and the worst inflation in the prices of basic commodities (Ishtiaq et al., 2021).

The Efficient Market Hypothesis posits that any event should result in the change of stock prices because investors in inefficient markets are fully vigilant and well-informed, and it shows the effect of this information disclosure. The Arbitrage Pricing Theory (APT) is an asset-pricing model that predicts that returns of assets can be predicted by using the linear relationship between the expected returns of the assets and macroeconomic variables such as chronic disease, which captures the systematic risk and is fully undiversifiable. Rational investors make decisions that are the opposite of what is predicted by standard finance models. COVID-19 is bringing major challenges for the developing countries of South Asia because people are losing their jobs due to the lockdown situation in the country. People are panicking because of the increased death rates and the spread of the disease across the globe. All these unexpected and external issues can bring the stock market down, and they hold the capacity to change the sentiments of rational

investors. Investment decisions are affected by the nervousness and pessimistic mood of investors, who take less risk as a result (Kaplanski & Levy, 2010).

The stock market fell and price volatility surged as the novel coronavirus (COVID-19) moved from a regional issue in China's Hubei province to a global pandemic (Baker et al., 2020). Not only has the pandemic created a global health disaster, but it has also resulted in a huge global economic crisis. To combat the outbreak, many countries implemented severe quarantine rules, causing their economic activity to abruptly halt. Transport restrictions impeded global economic activity. The market reacted abnormally as a result of people's altering consumption patterns as a result of worry among them. The impact was substantial all across the world as a result of the uncertainty and risk produced, hitting both advanced and growing economies such as the United States, Spain, Italy, Brazil, and India. In this environment, the financial market reacted dramatically. The pandemic had an impact on both the stock and bond markets. During the pandemic, the world saw a significant drop in the price of oil and a significant surge in the price of gold (Bora & Basistha, 2021).

Although there have been numerous studies on the impact of COVID-19 on developed-country stock markets, there is a lack of available data for countries like Nepal. Nepal, a developing country in South Asia, is one such country where little is known about the pandemic's effect on its stock market. The purpose of this study is to close this gap by evaluating the response of the Nepal Stock Exchange (NEPSE) index to the first wave of COVID-19. The outcomes of this study will contribute to the literature on the implications of COVID-19 on financial markets and will provide vital insights into the impact of the pandemic on a developing country's stock market.

Effects of COVID-19 in Nepal

The COVID-19 epidemic in Nepal has resulted in a sudden and widespread outage of economic activity, affecting almost every sector of the Nepalese economy. The Asian Development Bank predicts that the outbreak will reduce gross domestic product by up to 0.13% and unemployment up to 15,880 people (ADB, 2020). The impact is already evident in various sectors such as tourism, trade, manufacturing, and health. The tourism sector, which contributes 8% to the Nepalese economy, has been largely affected by the outbreak, with the arrival rate of tourists dropping from 70% to less than 10% (Nepal Tourism Board, 2020). The cancellation of all spring mountaineering expeditions, including Mount Everest, resulted in the loss of approximately 13,000 jobs for tour guides and mountaineers. The outbreak has also affected the manufacturing industry, as the supply of raw materials from China, including pharmaceuticals, has declined significantly (World Trade Organization, 2020).

Remittances from migrant workers, which contributed 26% to Nepal's GDP in 2019, have also been impacted by the outbreak (World Bank, 2020). In the current situation, the effects of COVID-19 on remittances are devastating, with contributions less than 1% to the country's economy for the past two months. The decline in remittances has a serious impact on overall domestic consumption. The wholesale and retail sector, which contributes 14.37% to the economy, has been hit by a sharp drop in imports from China after the outbreak of COVID-19, increasing the risk of general inflation in the future (Trading Economics, 2021). The impact of the COVID-19 outbreak has been felt across various sectors of Nepal's economy, leading to significant disruptions in the investment and business environment. Despite this, a study conducted by Karki et al. (2021) revealed some positive growth in the e-banking sector during the pandemic. The study found that in the Kathmandu Valley, 95% of consumers became aware of the existence of electronic payment systems, and e-businesses outperformed during the study period. This surprising growth of e-banking highlights the potential for technology-driven solutions to help mitigate the negative effects of the pandemic on Nepal's economy.

Nepal's first COVID-19 case was confirmed on 23 January 2020, and the first death occurred on 14 May. A nationwide lockdown was implemented from 24 March 2020 to 21 July 2020, which adversely affected Nepal's economy. The impact on tourism, remittances, manufacturing, construction, and trade has been significant (Ministry of Health and Population Nepal, 2022). According to a study conducted by Ganesh Man Singh Academy, Nepal has been losing NRS10 billion per day due to COVID-19 (Bashyal & Ranjan,

2020). The pandemic has impacted Nepal's business and investment environment. As a result, the objective of this study is to examine the effect of COVID-19 on the performance of the Nepali stock market using a panel regression technique and factors including the daily increase in confirmed cases and deaths, interest rate, and lockdown.

Statement of Problem

The pandemic can affect the global economy through multiple channels, including labor markets, global supply chains, and consumption patterns. Stock markets are one of the most significant components of these channels (Al-Awadhi et al., 2020). Due to their sluggish economic development and shortage of capital inflows, emerging markets are most vulnerable to the effects of a pandemic. Furthermore, they have comparatively few resources to combat the effects of a pandemic. In spite of the anticipated effect, it remains uncertain how COVID 19 is empirically affecting post-action emerging equity markets. In addition, an increase in the number of nations that have halted the spread of the virus by mid-April may cause confusion regarding how pandemics affect developing stock markets (Topcu & Gulal, 2020). Consequently, the goal of this study is to empirically examine the effect of COVID 19 on NEPSE.

The COVID-19 pandemic has not only posed a hazard to civic health, but also to the global economy. Typically, the economic performance of a nation is reflected in its capital market. Numerous studies have investigated the effect of the pandemic on various stock markets. The study on the impact of the recent pandemic on the capital market revealed varying results in various nations. The majority of studies concluded that COVID-19 has a negative effect on the capital market (Al-Awadhi et al., 2020; Baker et al., 2020; Lee, 2020; and others). Despite the fact that NEPSE has been bearish for several years, 2020 began with a bullish trend. As the pandemic began to stifle the Nepalese economy, the situation deteriorated into a situation worse than pandemonium. Investors were uncertain about the market's direction. The pandemic severely impacted the greatest stock exchange in the world (Bist, 2020). Despite the numerous publications on the effects of COVID-19 on the stock market, there are few researches on this topic, particularly in the case of least-developed nations. How the COVID-19 pandemic affected the performance of the Nepalese capital market remains unanswered. Consequently, the objective of this research is to investigate the impact of the COVID-19 pandemic on the performance of the Nepali stock market.

Objectives

The major goal of this research is to assess the effect of COVID-19 on the Nepal Stock Exchange (NEPSE), with a focus on the performance of the NEPSE index and the influence on each sector listed on NEPSE. More specifically, the study aims to:

- Analyze the effect of COVID-19 on the performance of the NEPSE index.
- Evaluate the influence of COVID-19 on sector-wise indices.

Literature Review

Global financial markets have been significantly impacted by the COVID-19 outbreak. Numerous studies have been carried out to examine this effect and comprehend the underlying mechanisms. Ishtiaq et al. (2021) investigated the effects of COVID-19 during the first, second, and third waves of the pandemic on the stock market indices of South Asian nations. All South Asian stock markets were impacted by COVID-19, according to the study, which revealed that the pandemic decreased the mean returns of all stock market indices and increased their volatility. Similar to this, Liu et al. (2021) investigated how the COVID-19 and Chinese stock market crashes affected the equities market at the Shanghai Stock Exchange. They calculated a COVID-19 fear index using data from the Baidu Index and utilized a GARCH-S model to determine the likelihood of an equity market catastrophe. The study discovered that because conditional skewness responds negatively to daily growth in the overall number of confirmed cases, the pandemic raises the chance of a stock market crash. Hassan (2021) used panel least squares Vector Auto-Regression (VAR) estimation to examine the dynamic impact of the COVID-19 pandemic on the stock market indices

of the first impacted nations and the global commodity markets. The study discovered that the rate of virus spread had a short-term detrimental effect on stock market performance.

In light of this, Hatmanu & Cautisanu (2021) examined the Bucharest Exchange Trading (BET) index, Romania's capital market reference index, to determine the effect of COVID-19 on the stock market. Three sets of variables—variables related to the epidemic, variables reflecting national regulatory actions, and variables describing the global financial market—were employed in an ARDL Bound cointegration model to analyze how the pandemic affected the Romanian stock market. The analysis discovered that pandemic factors and limitations had a negative impact on the Romanian stock market, but the interest rate on monetary policy had a beneficial impact. The effect of COVID-19 on stock markets has been the subject of much research by academics worldwide. Saleem (2021) looked into how COVID-19 affected the performance of the stock markets in SAARC member states. The results showed that the region strongly responded to COVID-19 with declining markets and growing volatility. When Fernandez-Perez et al. (2021) looked at how national cultures affected stock market reactions to a global health emergency, they discovered that nations with lower levels of individualism and higher levels of uncertainty avoidance had larger drops and more volatility. When Sun et al. (2021) examined the effects of COVID-19 on the Chinese stock market, they discovered a general negative impact on stock returns during the post-event window and a strong positive correlation between individual investor sentiment and stock returns, particularly for businesses with particular characteristics. However, the sectors related to agriculture, digitalization, and pharmacy saw growth during the time. The field's research needs are in the area of how to use individual investor sentiment as a tool to forecast stock market performance during a pandemic.

Studies indicate that the COVID-19 pandemic has had a substantial impact on financial markets, with diverse results across many industries and sectors. Using daily data from October 2019 to September 2020, Sumarsan et al. (2021) looked into the factors that will affect and predict the Jakarta Stock Exchange (JKSE) Composite Index during the pandemic. They discovered that the stock market index was significantly impacted by interest rates and exchange rates, with the latter having a favorable impact. Using panel data analysis, Al-Awadhi et al. (2020) examined the effect of COVID-19 on the Chinese stock market and discovered that the pandemic illness significantly impacted stock market returns for all companies. The survey also highlighted variances by industry, with the manufacturing of information technology and pharmaceuticals outperforming the market, while the beverage and air transportation industries underperformed. He et al. (2020) investigated the market performance and response trends of Chinese industries to the COVID-19 pandemic using an event study approach. According to their findings, some industries—including manufacturing, information technology, healthcare, and education—were resistant to the pandemic, while others—including the environment, mining, transportation, and energy & heating—were negatively damaged. Using big data, Lee (2020) investigated the first impact of COVID-19 sentiment on the US stock market and discovered that different industries were influenced by changes in sentiment in different ways, underscoring the necessity for strategic investment planning that takes time lag disparities into account.

Using a Markov Switching AR model, Baek et al. (2020) investigated the influence of COVID-19 news on financial market volatility and discovered that both positive and negative news had substantial effects, with negative news having a larger impact. A time-varying parameter vector autoregression (TVP-VAR) model was used by Liu et al. (2020) to investigate the relationship between the COVID-19 epidemic, the price of crude oil, and the American stock market. They discovered a link between the price of crude oil and stock returns during the pandemic that was unfavorable. Onali (2020) found that changes in the number of cases and fatalities in the most severely impacted countries did not have an influence on the US stock market returns, with the exception of reported instances for China. The number of cases and deaths associated to COVID-19 have also had an impact on the US stock market. The conditional heteroscedasticity of the Dow Jones and S&P 500 returns, however, was found to have a favorable effect in some countries, according to the study. The number of reported deaths in Italy and France may also have a negative influence on stock market returns while having a favorable impact on VIX returns, according to VAR models. Furthermore, Markov-Switching models predicted that by the end of February 2020, the VIX's negative impact on stock

market returns would have multiplied threefold. In a thorough literature review on the stock market's reaction to the COVID-19 pandemic, Ashraf (2020) discovered that the stock markets had a negative reaction to the rise in confirmed cases. The study also discovered that the stock markets responded more quickly to an increase in confirmed cases than an increase in fatalities. The market's unfavorable response was more pronounced in the early days following the initial verified cases and then 40 to 60 days later. According to the study's findings overall, financial markets react to the COVID-19 pandemic swiftly, and their reactions change over time depending on the severity of the epidemic.

Unprecedented upheavals in the global socio-cultural and economic environment have been brought about by the COVID-19 pandemic. Additionally, this has had a significant effect on stock markets all over the world. Anh and Gan (2020) looked at how the outbreak and ensuing lockdown affected Vietnam's daily stock returns. The study discovered that the daily increase in COVID-19 confirmed cases had a detrimental effect on stock returns in Vietnam using panel-data regression models. The lockdown had a favorable impact on the country's overall stock performance as well as that of its various business sectors, the study also showed that the Vietnam stock market fared differently before and during the shutdown period. Zeren and Hizarci (2020) focused a different study on potential COVID-19 pandemic stock market implications. Between January 23, 2020, and March 13, 2020, the researchers examined daily data using the variables COVID-19 daily total death and COVID-19 daily total case. The outcome showed that total instances did not have a cointegration relationship with FTSE MIB, CAC40, or DAX30, but did have one with SSE, KOSPI, and IBEX35. These studies illustrate the detrimental effects of the COVID-19 pandemic on financial markets around the world, but they also highlight the significance of taking context into account when assessing stock performance during this crisis, such as lockdowns.

The world economy and stock markets have both experienced severe disruptions as a result of the COVID-19 epidemic. Numerous studies have looked into how the pandemic has affected developing stock markets. From March 10 to April 30, 2020, Topcu and Gulal (2020) investigated the impact of the pandemic on emerging stock markets. According to the report, by mid-April, the pandemic's detrimental effects on emerging stock markets had started to wane off. The authors also discovered that whereas European emerging markets saw the least impact, Asian emerging markets were the most adversely affected. In order to lessen the negative consequences of the pandemic, the government's stimulus packages' magnitude and timeliness were crucial. A study on the effects of COVID-19 on the stock markets of sixteen nations was undertaken by Khan et al. in 2020. Researchers discovered that the growth rate of weekly COVID-19 new cases negatively impacted stock market returns after analyzing weekly panel data of COVID-19 new cases and stock returns. The returns on the top stock indices of these nations during the COVID-19 epidemic period and returns during non-COVID era were also compared by the authors. They discovered that during the early stages of the epidemic, investors in these nations did not respond to COVID-19 media reports. But following the confirmation of COVID-19's human-to-human transmissibility, all stock market indices reacted negatively to the news in the short- and long-event windows. Alam et al. (2020) concentrated on the effect of the COVID-19-related stock market shutdown on India. Using the Market Model Event study technique, the study examined a sample of 31 businesses listed on the Bombay Stock Exchange (BSE) between February 24 and April 17, 2020. The authors discovered that during the current lockdown period, investors expected the lockout and responded positively, however during the pre-lockdown period, investors panicked and their behavior was represented negatively in Average Abnormal Returns (AAR). According to the study's findings, the stock market performance of equities benefited by the lockout till the situation in India gets better.

According to Burdekin (2020), previous pandemics have had a substantial effect on the financial market, as seen by the responses of the European and US stock markets to the Spanish Flu in 1918–19. The COVID-19 pandemic in 2020, however, stands out due to its quick global spread and carriers who show no symptoms. Loh (2006) investigated the effects of SARS on the performance and risk profiles of a group of airline stocks traded on the stock exchanges of Canada, China, Hong Kong, Singapore, and Thailand. Pandemics are uncommon but frequently occur. They discovered that airline equities are more susceptible to non-aviation stocks on average and that the effects of SARS on stocks manifest as more volatility rather than

lower mean returns. Therefore, as Topcu and Gulal (2020) and many others did, it is crucial to look into how the COVID-19 pandemic affected emerging stock markets as well as how quickly governments responded and how much stimulus money they offered. These findings highlight the significance of comprehending how pandemics affect stock markets and how investors and governments react to lessen their consequences. In summary, the literature suggests that the COVID-19 pandemic has significantly harmed stock market performance internationally, with differing consequences seen in various nations and industries. It has been discovered that variables like interest rates, exchange rates, and investor emotion affected the stock market's performance throughout the epidemic. Studies have also shown how national culture affects stock market reactions to international health disasters and how different sectors performed differently during the COVID-19 outbreak. These research collectively show that the COVID-19 pandemic has had a major and detrimental effect on financial markets all across the world. However, more investigation is still required to examine the pandemic's long-term effects on the stock market and the potential mitigating measures that could be implemented to minimize its impact.

Major events can have a significant impact on stock market returns (Zach, 2003). For the purpose of examining the overall stock market performance and sector-wise performance during pandemic, this study used four independent variables i.e., 1) No. of Covid-19 cases confirmed and 2) Death rate 3) Interest rate and 4) Lockdown. Based on the reviewed literature, the conceptual framework for the study is as presented below:

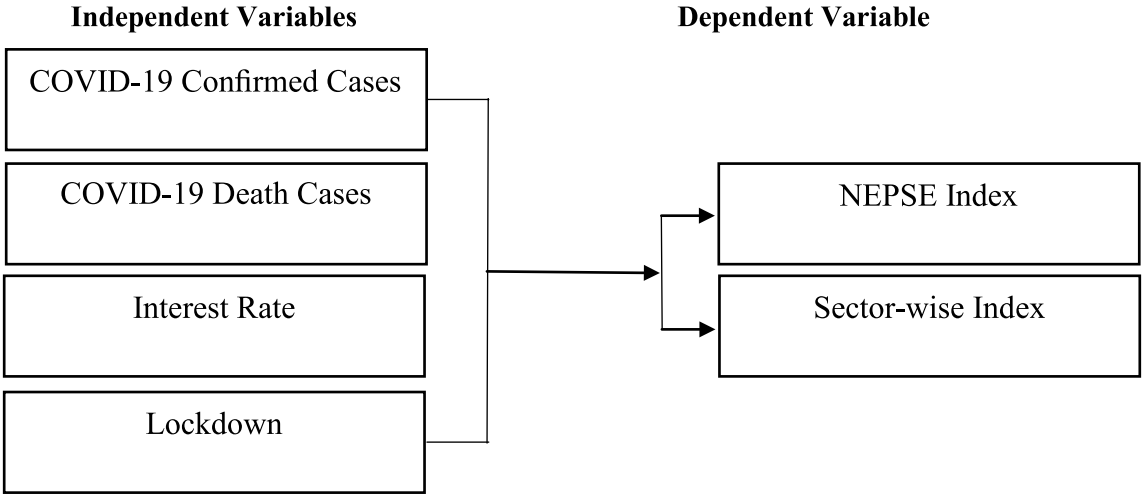

Figure 1. Conceptual Framework

Specification of Variables

Dependent Variables:

The dependent variables of this research are NEPSE index and Sector-wise index. The primary goal of this research is to examine how COVID-19 affects NEPSE index and how it affects sector-wise index.

NEPSE Index

The COVID-19 pandemic caused significant uncertainty for stock markets around the globe. As a result, every sector has suffered harm, and the majority of stock market indices throughout the world have had their largest one-day drops on record. For investors, the Covid-19 has produced an unpredictably volatile environment. Studies already conducted have looked at how COVID-19 affects stock market volatility or returns, with some findings backed up by data (Al-Awadhi et al., 2020; Alam et al., 2020; Liu et al., 2021). This study, which was inspired by the aforementioned literature, focuses on Nepal's stock market performance in relation to COVID-19.

Sector-wise Index

According to a study conducted by Alam et al. (2020), while the transportation sector performed poorly during COVID-19, the pharmaceutical, healthcare, and telecommunications industries performed well. Different sectors reacted differently to the news of this pandemic. This research purposes to analyze the type and level of influence on each sector listed in NEPSE.

Independent Variables

COVID-19 confirmed cases

The majority of earlier studies came to the conclusion that the stock market reacts negatively to daily rises in the number of confirmed cases, suggesting that the pandemic raises the probability of a stock market crash. Additionally, the fear emotion increases this risk, particularly when it comes to COVID-19's effects. In particular, the chance of a stock market fall is more substantially impacted by the pandemic when fear and emotion is high (Liu et al., 2021). The study has divided the variable into two sub-variables in order to analyze the effects of COVID-19 confirmed cases. These are; Total Confirmed Cases (TCC) and New Confirmed Cases (NCC)

COVID-19 death cases

Death rate indicates severity of a disease. This increases public fear and negatively impact economic activity (Baker et al., 2020). According to a study conducted by Ashraf (2020), returns on the stock market decrease as the number of death increases. Al-Awadhi et al. (2020) also concluded that the daily increase in COVID-19-related deaths has significant negative effects on the stock market performance of all companies. For making the study more detail and meaningful, the variable has divided into two sub-variables which are; Total Death (TD) and New Death (ND)

Interest Rate (IR)

The stock market often reacts quickly to interest rate changes. When banks are lending money more cheaply with a lower interest rate, this can be passed into the consumer by lenders, keeping the rates lower for borrowing as well. Traders are affected by these interest rates as they can affect the price of stocks, causing them to move up or down (Wagg, 2020). Interest rates impact the stock market mainly in two ways. Firstly, lower interest rates can mean more public spending and increased business growth - stock prices rise. Secondly, higher interest rates can mean cuts in public spending and limited business growth - Stock prices fall.

Lockdown (LD)

The COVID-19 epidemic has had a detrimental effect on the world economy and dramatically altered how people live around the world. The lockdown limits implemented to stop the virus's spread were largely responsible for this negative impact rather than the disease itself. Numerous research have examined how the COVID-19 affects stock market performance. Anh & Gan (2020), for instance, found that while the COVID-19 lockdown had a significant, negative impact on Vietnam's stock returns prior to the lockdown, the lockdown period had a significant, positive impact on the market's overall performance as well as that of the country's various business sectors. The COVID-19 lockdown and social isolation were measured by Konstantinos & Patroklos (2020) in relation to the financial market indices of 45 different countries. The performance of global stock markets and the lockout were determined to be negatively correlated by the writers. However, Konstantinos & Patroklos 2020 did not specify how the lockdown would affect every individual nation.

Data and Methodology

The study is conducted by following a descriptive research design based on secondary data over the period of

23 January 2020 to 31 December 2020. Data period started with 23 January because the case of COVID-19 in Nepal was first established on this date. This research purposes to examine the overall effect of the pandemic on the stock market's performance and evaluates the impact on different sectors. To conduct the analysis, the study employs a dummy variable to represent the presence or absence of lockdown. In this study, the dummy variable takes the value of 1 to represent the presence of lockdown and 0 to represent the absence of lockdown. The sample size for the study was 344 record indices of NEPSE and 11 different listed sectors i.e., banking, development bank, finance, microfinance, life insurance, non-life insurance, hydropower, hotels and tourism, manufacturing and production, trading, and others for the study period.

Dummy Variable Regression Model: The regression analysis using ordinary least squares (OLS) is the fundamental technique utilized to develop models of normal stock returns in relation to overall market performance during the period of occurrence. The study used the dummy variable regression model, which is regarded as the most efficient way to assess the impact of events on market performance, in order to calculate the abnormal return (Gujarati et al., 2012):

$$NI_{it} = \alpha_i + \beta_i D_{it} + e_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

Where, NI_{it} is the stock return on the event *i* on day *t* and D_{it} is the lock down dummy (takes value 1 if lockdown happens, 0 otherwise). Following Regression model was used to examine the relative performances of stocks in relation to COVID-19.

$$NI = \beta_0 + \beta_1 TCC + \beta_2 NCC + \beta_3 TD + \beta_4 ND + \beta_5 IR + \beta_6 LD + e_0 \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(ii)}$$

Where,
NI is the NEPSE Index
β0 is the regression coefficient
TCC is the total confirmed cases
NCC is the new confirmed cases
TD is the total number of death cases
ND is the new death cases
IR is the interest rate and
LD is the lockdown restriction, a dummy variable (takes value 1 if lockdown happens, 0 otherwise).
e0 is the error term

Research Results

The study presents the data, their extent and direction of relationship, and estimates Eq. (ii) on the data sets of the eleven sub-groups of indices to evaluate the effect of COVID-19 on stock markets.
The figure 1 provides a visual representation of the impact of the COVID-19 pandemic on Nepal, specifically in terms of confirmed cases, deaths, interest rates, and the performance of the Nepalese stock market.

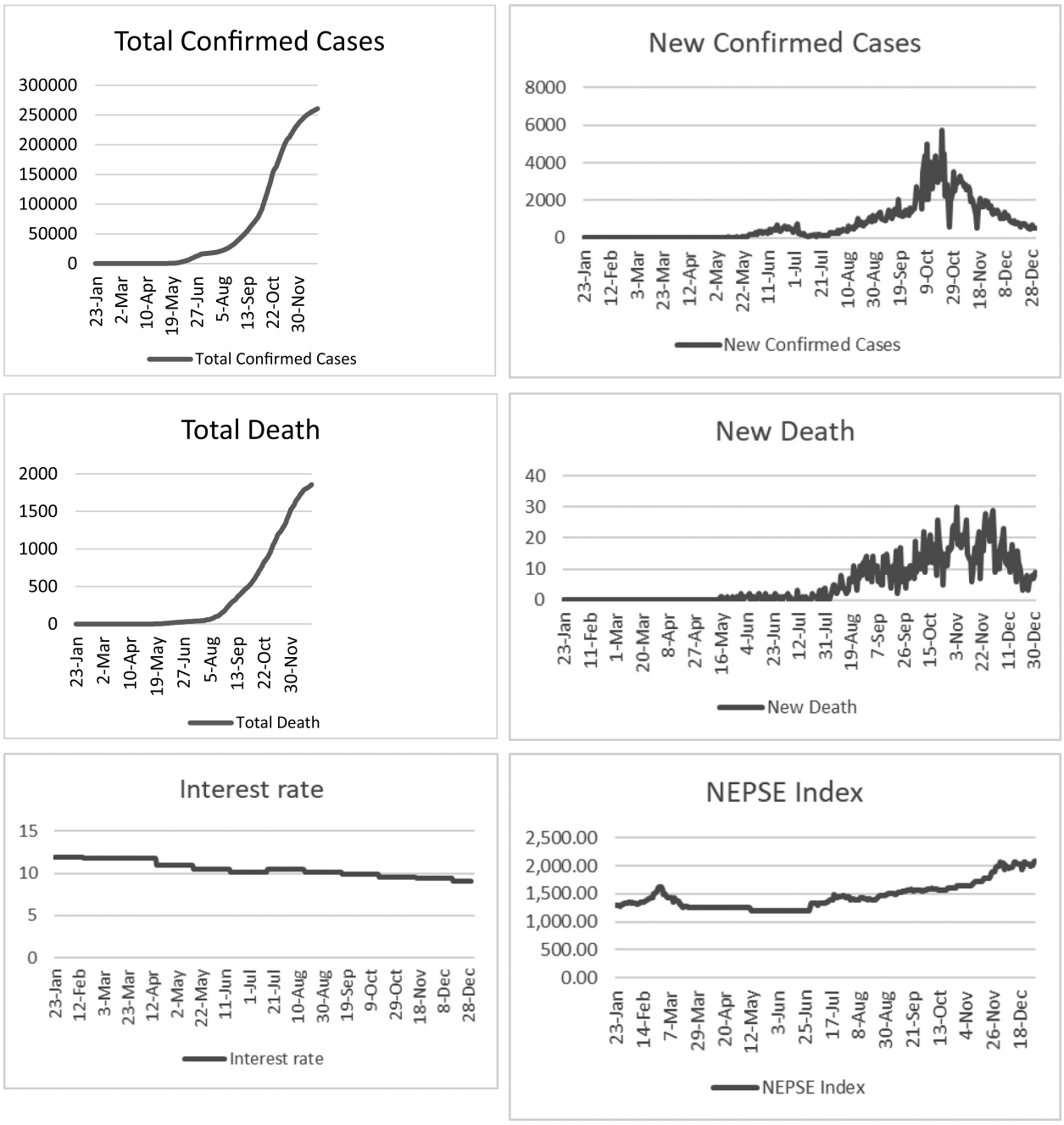

Figure 1: Different metrics of study variables during COVID-19 pandemic (January-December 2020)

Figure 1 displays the cumulative number of confirmed COVID-19 cases in Nepal. The figure shows a gradual increase from June with the highest number of cases reported in December. Lockdown was effective in reducing the number of cases, with the period between March and July showing the fewest confirmed cases. The number of new confirmed cases initially increased from June, decreased in early July, and then started to rise again from mid-July due to the relaxation of restrictions. The maximum number of new cases was found in October and November. Figure 1 also shows the total number of COVID-19-related deaths in Nepal. The first case of death was reported in May 2020, with a sudden increase from August and a rapid rise until December. The maximum number of new death cases occurred in October and November. The interest rate on credit charged by commercial banks is showing a continuous decrease except for July. The stock market performance is typically favoured by low interest rates, but the low interest rate during this period was due to the COVID-19 pandemic. The daily NEPSE Index has been shown with a constant pattern from March to June due to NEPSE remaining closed during this period. Once it reopened, the index

showed a bullish pattern.

Table 1
Descriptive Statistics

	Min.	Max.	Mean	SD
TCC	1.00	260593.00	61752.95	86819.21
NCC	0.00	5743.00	757.54	1028.14
TD	0.00	1856.00	374.84	568.42
ND	0.00	30.00	5.40	7.23
IR	9.09	11.94	10.48	0.90
LD	0.00	1.00	0.35	0.48
NI	1188.71	2087.28	1463.01	241.91
BI	1016.29	1585.22	1211.43	134.48
DBI	1624.68	2318.11	1856.68	174.15
FI	625.14	911.21	713.69	95.39
MFI	1968.92	3357.19	2399.46	351.30
LI	6509.45	14136.05	8612.58	1884.36
NLI	5040.80	10079.01	6813.43	1516.74
HTI	1413.90	2118.59	1702.46	191.31
HPI	886.34	1850.41	1120.09	251.63
TI	751.06	2450.97	1048.57	444.67
MPI	2390.65	5446.25	2961.29	693.37
MI	9.38	11.78	10.38	0.62
OI	641.77	1817.16	902.24	310.06

Where, BI = Banking Index, DBI = Development Bank Index, FI = Finance Index, MFI = Microfinance Index, LI = Life Insurance Index, NLI = Non-life Insurance Index, HTI = Hotel and Tourism Index, HPI = Hydropower Index, TI = Trading Index, MPI = Manufacturing and Production Index, MI = Mutual Fund Index, and OI = Other Index.

Table 1 provides a summary of the descriptive outputs of the independent and dependent variables in the study. The total number of confirmed COVID-19 cases in Nepal until December 31, 2020, was 260,593 with a total of 1,856 deaths, indicating significant human loss in the country. During this period, the average lending rate provided by commercial banks in Nepal was relatively low, ranging from a maximum of 11.94% to a minimum of 9.09%, with an average of 10.48%. This suggests that there was high liquidity possessed by commercial banks due to low demand for credit in the market caused by the pandemic. The NEPSE index deviated significantly during this period, reaching a maximum of 2,087.28 points from 1,188.71, which was a new record in the stock market of Nepal. The increase in investors' confidence in the stock market during this time was positively favored by the low interest rate in the market, refinance facilities provided by the government, an increase in the number of market participants, and intervention of regulatory bodies and the government.

Among the sectors, the highest deviation was observed in the stock index of life insurance and non-life insurance companies, indicating that these stocks were favored by investors due to an increase in customer engagement with these companies caused by the fear created in the market by the pandemic. The banking and finance sector showed less deviation, suggesting that the pandemic had less influence on these sectors. The trading and manufacturing sectors also experienced a significant increase in their indices during this time. Overall, these results indicate that the pandemic had a significant impact on the Nepalese economy and stock market.

Table 2

Correlation between Independent Variables and NEPSE Index

	TCC	NCC	TD	ND	IR	LD	NI
TCC	1	0.593**	0.994**	0.780**	-0.777**	-0.481**	0.925**
		0.000	0.000	0.000	0.000	0.000	0.000
NCC		1	0.533**	0.799**	-0.633**	-0.433**	0.486**
			0.000	0.000	0.000	0.000	0.000
TD			1	0.738**	-0.750**	-0.468**	0.934**
				0.000	0.000	0.000	0.000
ND				1	-0.697**	-0.513**	0.701**
					0.000	0.000	0.000
IR					1	0.216**	-0.657**
						0.000	0.000
LD						1	-0.643**
							0.000

***. Correlation is significant at the 0.01 level (2-tailed).*

Table 2 presents the correlation coefficients between the NEPSE index and various independent variables. The results indicate that there is a positive relationship between the NEPSE index and total confirmed cases, new confirmed cases, total death, and new death, with total confirmed cases, total death, and new death showing a significant positive relationship. In contrast, interest rate and lockdown have a negative relationship with NEPSE index, with a significant negative correlation coefficient. This means that an increase in interest rate and lockdown leads to a decrease in the NEPSE index, while an increase in total confirmed cases, total death, and new death leads to an increase in the NEPSE index. The relationships are significant at a 0.01 significance level.

Table 3

Correlation between Independent Variables and Sector-wise Index

	BI	DBI	FI	MFI	LI	NLI	HTI	HPI	TI	MPI	MI	OI
TCC	0.841**	0.894**	0.951**	0.855**	0.894**	0.904**	0.597**	0.956**	0.935**	0.899**	0.829**	0.957**
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NCC	0.415**	0.610**	0.694**	0.439**	0.477**	0.596**	0.244**	0.612**	0.385**	0.334**	0.502**	0.484**
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TD	0.851**	0.881**	0.933**	0.867**	0.906**	0.898**	0.614**	0.958**	0.945**	0.929**	0.818**	0.969**
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ND	0.623**	0.735**	0.813**	0.638**	0.670**	0.780**	0.403**	0.762**	0.672**	0.591**	0.716**	0.724**
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IR	-0.54**	-0.56**	-0.69**	-0.62**	-0.68**	-0.70**	-0.133*	-0.68**	-0.66**	-0.63**	-0.63**	-0.73**
	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.000	0.000	0.000	0.000	0.000
LD	-0.69**	-0.632**	-0.594**	-0.670**	-0.659**	-0.700**	-0.598**	-0.568**	-0.444**	-0.507**	-0.747**	-0.531**
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

***. Correlation is significant at the 0.01 level (2-tailed).*

Table 3 shows that there is a positive relationship between total confirmed cases, new confirmed cases, total death, and new death with all the sectors indices, while interest rate and lockdown have a negative relationship with all the sectors indices. All the relationships are significant at 1 percent level of significance. The most significant relationship among all the studied variables is found between total confirmed cases and total death with sectoral indices. There is also a significant and positive relationship between new confirmed

cases, new deaths, and sectoral indices. Interest rate has the most significant impact on other sectors, and there is a significant negative relationship between interest rate and sectoral return. The lockdown has most significantly affected mutual fund performance, and there is a significant and negative relationship between lockdown and sectoral indices, indicating that the lockdown has negatively affected sectoral performance.

Table 4

Regression Analysis

Model	Intercept	TCC	NCC	TD	ND	IR	LD	Adj. R2	SEE	F-value
1	1303.90 (0.000)	0.003 (0.000)						0.86	92.23	2017.64 (0.000)
2	1376.30 (0.000)		0.114 (0.000)					0.23	211.67	106.01 (0.000)
3	1313.93 (0.000)			0.398 (0.000)				0.87	86.24	2356.69 (0.000)
4	1336.53 (0.000)				23.442 (0.000)			0.49	172.76	330.51 (0.000)
5	3317.23 (0.000)					-176.85 (0.000)		0.43	182.6	259.98 (0.000)
6	1576.76 (0.000)						-36.09 (0.000)	0.41	185.46	241.57 (0.000)
7	1311.12 (0.000)	0.003 (0.000)	-0.022 (0.000)					0.86	90.49	1055.12 (0.000)
8	1318.25 (0.000)	-0.001 (0.065)		0.533 (0.000)				0.87	85.94	1188.47 (0.000)
9	1312.33 (0.000)			0.390 (0.000)	0.851 (0.373)			0.87	86.26	1178.04 (0.000)
10	849.25 (0.000)	0.003 (0.000)				41.40 (0.000)		0.86	89.32	1087.37 (0.000)
11	1036.08 (0.000)	0.000 (0.662)		0.463 (0.000)		25.52 (0.000)		0.88	84.94	813.88 (0.000)
12	1204.17 (0.000)	0.002 (0.000)				14.91 (0.043)	-12.13 (0.000)	0.91	73.91	1111.27 (0.000)
13	1599.28 (0.000)	-0.001 (0.003)	-0.019 (0.003)	0.555 (0.000)	0.632 (0.539)	-17.97 (0.010)	-15.24 (0.000)	0.93	62.03	813.14 (0.000)

Dependent Variable is NEPSE Index (NI)

Table 4 presents the regression results of the NEPSE index on independent variables using pooled data from 23 January 2020 to 31 December 2020. The table includes different model specifications in the form of simple and multiple regressions. The dependent variable is the NEPSE index denoted as NI and the independent variables are Total Confirmed Cases (TCC), New Confirmed Cases (NCC), Total Death (TD), New Death (ND), Interest Rate (IR), and Lockdown (LD). The simple regression model 1 shows a positive relationship between the NEPSE index and Total Confirmed Cases (TCC). The slope coefficient of 0.003 is significant at 1 percent level, indicating that an increase in total confirmed cases leads to an increase in the NEPSE index. The adjusted coefficient of determination is 0.86, implying that 86 percent of the total variations in NEPSE index is captured by total confirmed cases. The F-statistics (2017.64) is also significant at 1 percent level. The results are consistent with the study by Anh and Gan (2020) but contradict the results by Hatmanu & Cautisanu (2021), Liu et al. (2021), Hassan (2021), and Al-Awadhi et al. (2020).The other models in Table 4 show the impact of other independent variables on the NEPSE index.

The regression results of models 2, 3, and 4 show a positive relationship between NEPSE index and COVID-19 indicators, with statistically significant coefficients at the 1 percent level. Specifically, model 2 indicates that 23 percent of the total variations in NEPSE index can be explained by new confirmed cases, model 3 shows that 87 percent of the variability in NEPSE index is associated with total death, and model

4 demonstrates that 49 percent of the variability in NEPSE index is related to new death. The positive relationship between NEPSE index and COVID-19 indicators contradicts prior studies by Hatmanu & Cautisanu (2021), Liu et al. (2021), Hassan (2021), and Al-Awadhi et al. (2020) for model 2, and Onali (2020), and Topcu and Gulal (2020) for model 4. These regression results suggest that there is a positive association between NEPSE index and COVID-19 indicators in Nepal.

Model 5 demonstrated a negative impact of interest rate on NEPSE index, whereas model 6 showed that lockdown has negatively impacted the NEPSE index. Model 7 indicated that in the presence of total confirmed cases, new confirmed cases negatively impacted the NEPSE index. Furthermore, the study found that interest rate had a positive impact on NEPSE index in the presence of total confirmed cases and total death. Model 12 showed a positive impact of total confirmed cases and interest rate while lockdown reacted negatively. The reported coefficient of determination values for the various models ranged from 0.23 to 0.43. The results were mostly in line with prior studies but contradicted some.

The final model 13 involved a multiple regression analysis between the NEPSE index and all the independent variables in the study. The results showed a negative impact of total confirmed cases, new confirmed cases, interest rate, and lockdown on the NEPSE index. Conversely, total death and new death had a positive impact. Upon examining the regression table, it was concluded that interest rate had the greatest impact on the NEPSE index, as its coefficient was greater than that of the other variables. On the other hand, the variable with the least impact on the NEPSE index was total confirmed cases.

Conclusion

The research findings provide evidence of the impact of COVID-19 on the stock market of Nepal, revealing that the pandemic's influence varies across different variables. Total confirmed cases, new confirmed cases, total death, and new death show a positive correlation with the stock market performance, while interest rate and lockdown show a negative correlation. The significant positive correlation between NEPSE index and total confirmed cases, new confirmed cases, total death, and new death suggests that they move in the same direction, while interest rate and lockdown move in the opposite direction. Furthermore, the study indicates that total confirmed cases, new confirmed cases, total death, interest rate, and lockdown have a significant impact on the stock market performance. Notably, new death does not appear to affect the stock market. Among all the variables studied, interest rate and lockdown show the highest impact on the stock market performance, while total confirmed cases and new confirmed cases have the least impact. In light of these findings, policymakers need to take decisive measures to mitigate the pandemic's negative impact on the stock market indices. They should also consider addressing other influencing factors, such as interest rates and forex. By implementing appropriate policies, policymakers can help alleviate the pandemic's effects and stabilize the stock market.

References:

Alam, N. M., Alam, S. M., & Chavali, K. (2020). Stock Market Response during COVID-19 Lockdown Period in India: An Event Study. *The Journal of Asian Finance, Economics and Business*, 7(7).

Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhammadi, S. (2020). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, 27.

Anh, D. T., & Gan, C. (2020). The impact of the COVID-19 lockdown on stock market performance: evidence from Vietnam. *Emerald Insight*, 1-2.

Ashraf, B. N. (2020). Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance*, 2-5.

Baek, S., Mohanty, S. K., & Glambosky, M. (2020). COVID-19 and stock market volatility: An industry level analysis. *Finance Research Letters*, 37.

Baker, S. R., Bloom, N., Davis, S. J., Kost, K. J., Sammon, M. C., & Viratyosin, T. (2020). The Unprecedented Stock Market Impact of COVID-19. *National Bureau of Economic Research*, 16.

Bashyal, K., & Ranjan, A. (2020, June 18). Impact of COVID-19 on Nepal's Economy. *ISAS Insights*, pp.

1-2.

Bist, J. P. (2020). The stock market after the pandemic. *The Kathmandu Post*.

Bora, D., & Basistha, D. (2021). The outbreak of COVID-19 pandemic and its impact on stock market volatility: Evidence from a worst-affected economy. *Jornal of public affairs*.

Burdekin, R. C. (2020). Death and the stock market: international evidence from the Spanish Flu. *Applied Economics Letter*, 1512-1520.

Fernandez-Perez, A., Gilbert, A., Indriawan, I., & Nguyen, N. H. (2021). COVID-19 pandemic and stock market response: A culture effect. *Journal of Behavioral and Experimental Finance*, 29.

Hassan, S. M., & Gavilanes, J. M. (2021). First to React Is the Last to Forgive: Evidence from the Stock Market Impact of COVID 19. *Journal of Risk and Financial Management*, 14(1).

Hatmanu, M., & Cautisanu, C. (2021). The Impact of COVID-19 Pandemic on Stock Market: Evidence from Romania. *International Journal of Environmental Research and Public Health*, 1-21.

He, P., Sun, Y., Zhang, Y., & Li, T. (2020). COVID–19's Impact on Stock Prices Across Different Sectors—An Event Study Based on the Chinese Stock Market. *Emerging Markets Finance and Trade*, 10.

Ishtiaq, M., Imtiaz, A., & Mushtaq, H. (2021). The Impact of different Waves of the COVID-19 Pandemic on the Stock Markets in South Asia Countries . *Global Social Sciences Review*.

Kaplanski, G., & Levy, H. (2010). Sentiment and stock prices: The case of aviation disasters. *Journal of Financial Economics*.

Karki, D., Magar, S.R., Devkota, N., Parajuli, S., & Paudel, U.R. (2021). Online Shopping in Kathmandu Valley: Users' Knowledge, Challenges and Way Forward. *The Journal of Social Sciences Research, 7*(3), 135-144.

Khan, K., Zhao, H., & Jahanger, A. (2020). The Impact of COVID-19 Pandemic on Stock Markets: An Empirical Analysis of World Major Stock Indices. *The Journal of Asian Finance, Economics and Business*, 7(7).

Konstantinos, E., & Patroklos, P. (2020). COVID-19 Lockdown Intensity and Stock Market Returns: A Spatial Econometrics Approach. *Munich Personal RePEc Archive*, 3-9.

Lee, H. S. (2020). Exploring the Initial Impact of COVID-19 Sentiment on US Stock Market Using Big Data. *Sustainability*, 12(16).

Liu, L., Wang, E.-Z., & Lee, C.-C. (2020). Impact of the COVID-19 pandemic on the crude oil and stock markets in the US: A time-varying analysis. *Energy Research Letters*, 1(1).

Liu, Z., Huynh, T. L., & Dai, P.-F. (2021). The impact of COVID-19 on the stock market crash risk in China. *National Library of Medicine*, 57.

Loh, E. (2006). THE IMPACT OF SARS ON THE PERFORMANCE AND RISK PROFILE OF AIRLINE STOCKS. *International Jornal of Transport Economics*, 1-3.

Onali, E. (2020). COVID-19 and Stock Market Volatility. *SSRN*.

Saleem, A. (2021). Action for Action: Mad COVID-19, Falling Markets and Rising Volatility of SAARC Region. *Annals of Data Science*, 1-22.

Sumarsan, T., Henry, H., & Albert, A. (2021). Determinants and Prediction of the Stock Market during COVID-19: Evidence from Indonesia. *The Journal of Asian Finance, Economics and Business*, 1-6.

Sun, Y., Wu, M., & Zeng, X. (2021). The impact of COVID-19 on the Chinese stock market: Sentimental or substantial? *Finance Research Letters*, 38.

Topcu, M., & Gulal, O. S. (2020). The impact of COVID-19 on emerging stock markets. *Finance Research Letters*, 36.

Wagg, L. (2020). The Relationship Between Interest Rates & Stock Prices . *DAILY FX*, 1-4.

Zach, T. (2003). Political Events and the Stock Market: Evidence from Israel. *ELSEVIER*.

Zeren, F., & Hizarci, A. (2020). The Impact of COVID-19 Coronavirus on Stock Markets: Evidence from Selected Countries. *Muhasebe Ve Finans Incelemeleri Dergisi*, 3(1).