Stock Market Performance during Covid-19 Lockdown :
A Descriptive Analysis of Nepal Stock Exchange

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Abstract

This article aims to investigate how the Nepalese stock market behaved during the government-imposed closure to combat COVID 19. In order to analyze the secondary data from March 2020 to September 2021, the time period was divided into three parts: first part is the first lockdown period, second part is the time following the first lockdown and the time before the second lockdown, and the third part is the second lockdown period. The Nepse Index was used as the dependent variable in an OLS regression, while the sub-indices were used as the independent variables. To reduce the issue of heteroscedasticity, all the study variables were transformed into their natural logarithmic forms. Since the study's variables were time series data, the stationarity test was also carried out to produce reliable OLS regression findings. The findings show that the lockdown imposed by the government owing to COVID 19 caused a sharp decline in the share price of all indices on the Nepalese stock market. However, as soon as the lockdown was released, the market began to recover, and the share values began to rise significantly. The findings show that banking and non-life insurance have a significant positive impact on Nepse performance over all three periods, even if the impact of finance was never felt during the study period. Using the study's informative data, investors can manage their share portfolio in unexpected and bad circumstances.

Keywords: Nepse, lockdown, OLS regression, Covid 19, share price
JEL Classification Code: C30, G2, M210

Introduction

On January 30, 2020, the WHO declared a public health emergency of worldwide concern. The SARS-CoV-2 pandemic gained international attention and coronavirus disease 2019 (COVID-19) has posed a serious threat to global health due to its rapid global spread (Zhou. et ql. 2020).

Due of the tremendous setbacks that financial markets experienced worldwide during the pandemic, it is now more important than ever to understand how investors and the stock market behave in this extremely risky and fragile market trend (Devnath & Srivastava, 2021).Salman and Ali (2021) concluded in their research that Covid-19 had a negative short-term impact on stock markets in GCC and the impact of Covid-19 was less compared to the effects suffered by the global stock markets. Similarly, Varma et.al. (2021) examined the short-term impact of thepandemic on the Indian stock market's major index and its constituent sectors and found that all the sectors were impacted temporarily. The findings also suggest that financial sector was worst affected whereas pharma, consumer goods, and IT had positive or limited impacts.

Uttomo and Hanggraeni's (2021) investigation into the effects of the COVID-19 pandemic on Indonesia's stock market performance used data from 2 March 2020 to 27 November 2020 to look at 272 firms listed on the Indonesian Stock Exchange and found that the lockout had a favorable and significant impact on Indonesia's daily stock returns. Property, trade, services, and

investment all performed significantly worse than basic industries, consumer products, and mining out of the eight sectors considered for the study. Similarly, Anh and Gan (2020) found that where COVID-19 pre-lockdown had a significant negative impact on the stock performance, the lockdown period had a significant positive influence on stock performance in Vietnam and concluded that financial sector was hardest hit on theduring the COVID-19 outbreak.

In order to determine the extent of the lockdown's influence on the Indian stock market before and after the lockdown period, Alam, Alam, and Chavali (2020) studied stock market reaction to the COVID 19 lockdown in India. Their findings indicated that the market responded favorably, with significantly positive Average Abnormal Returns during the lockdown period, indicating that the lockdown had a favorable effect on the stock market in the Indian context.In another study Shrimali and Shrimali (2020) found that Indian banking sector which was in an increasing trend before lockdown started falling after the lockdown concluding that the COVID19 has the negative impact on banking sector.

Khan et.al. (2020) investigated the impact of COVID-19 pandemic on the stock markets of sixteen countries. They concluded that investors in these countries did not reacted to the media news of COVID-19 at the early stage of the pandemic but, once the human-to-human transmissibility was confirmed, all of the stock market indices negatively reacted to the news in the short- and long-event window.

Liew and Puah (2020) looked at how the lethal new corona virus (COVID-19) pandemic outbreak affected the performance of the Chinese stock market. The performance of the Shanghai Stock Exchange Composite Index and its component sectorial indexes was compared before and after the shutdown period using descriptive analysis. Regression analysis was used to examine how the pandemic affected the Chinese stock market. The analysis found that while certain industries were more severely impacted by the pandemic epidemic than others, the health care, information technology, and telecommunication services sectors were generally more pandemic-resistant.

Liu, et al. (2020) investigated the response of the stock market to the announcement of global pandemic. Their study concluded that the pandemic announcement provided considerable negative shock on the global stock market and there was differences in response with country's income level as stock market in higher income country overreacted at the beginning and bounded back more rapidly than low income country. Similarly, Salman and Ali(2021) concluded in their research that Covid-19 had a negative short-term impact on stock markets in GCC and the impact of Covid-19 was less compared to the effects suffered by the global stock markets.

Following the safety guidelines established by the WHO and accepted worldwide, Nepal also implemented a Lockdown beginning on March 24, 2020, to stop the spread of the corona virus (Nepal, 2020). A lockdown immediately affects the nation's economic activity. Transportation services were severely impacted, factories were forced to close, and the government implemented a work-from-home policy. The lockdown had a negative impact on the hospitality industry, hotels, and restaurants. The number of staff that were required to be present in the workplace during the lockdown was reduced for banks and other service industries. Due to the lockdown's nearly complete paralysis of transportation and distribution, availability of products and services decreased, and a shortage of essential goods was encountered. The performance of the stock market is significantly influenced by the nation's economic and financial performance. The lockdown's impact on the economy also had an impact on share transactions at that time. The purpose of the current study is to investigate how subindices affected the Nepse Index in Nepal while it was under lockdown.This essay makes an attempt to understand the stock market's activity in Nepal during the lockdown in this framework using OLS regression.

Materials and Method

Present paper employs secondary data on the variables. The necessary data are taken from Nepal Stock Exchange, Online Achieve on daily basis over the period from March, 2020 to July, 2020 (during first lockdown period), from August, 2020 to March 2021 (post first lockdown and before second lockdown period) and from April, 2021 to September, 2021 (during second lockdown period). The variables are NepseIndex used as dependent variable; and sub-indices on Banking, Development Bank, Finance, Manufacturing, Hydropower, Life Insurance and Non-Life Insurance as independent variables to examine the influence of the variables on NepseIndex. All the variables are transformed into natural logarithmic form to minimize the influence of heteroscedasticity that normally may exist in time series data. The logarithmic transformed data are represented as $LnNep, LnBanking, LnFinance, LnManu, LnHydro, LnLifeins, LnNonlifein$ for Nepse, Banking, Development Bank, Finance, Manufacturing, Hydropower, Life Insurance and Non-life Insurance respectively. Augmented Dickey Fuller (ADF) unit root test is carried out to check the stationarity of the variables under study. Since non-stationary data sets produce spurious regression results, we should employ the stationary data sets to generate robust regression results. Once the level data on the variables are converted into first differences, they are representedby

$dLnNep, dLnBanking, ddevtbanking, dLnFinance, LdnManu, dLnHydro, dLnLifeins$ and $dLnNonlifeins$ stationary data series for

$LnNep, LnBanking, Lndevtbanking, LnFinance, LnManu, LnHydro, LnLifeins, LnNonlifeins$ respectively.

Once the stationarity of the variables under study are tested, the next step is to employ the Ordinary Least Square (OLS) regression with dependent variable Nepse and independent variables Banking, Finance, Manufacturing, Hydropower, Life Insurance and Non-life insurance. The OLS regression model on the variables under study is represented by equation (1). Normally, time series data are non-stationary at level and they are stationary at first difference or second difference. The stationary data are used in OLS regression to produce robust results. With the expectation of the concerned data being stationary at first difference, the OLS regression model is presented as:

$$dLnNep = \alpha + \beta_1 dLnBanking + \beta_2 dLndevtbanking + \beta_3 dLnFinance + \beta_4 LdnManu + \beta_5 dLnHydro + \beta_6 dLnLifeins + \beta_7 dLnNonlifeins + Ln\varepsilon \qquad (1)$$

$where, \alpha$ is an intercept term and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ and β_7 are the coefficients of the independent variables (sub-indices) Banking, Development Bank, Finance, Manufacturing, Hydropower, Life Insurance and Non-Life Insurance respectively. Additionally, ε is a white noise error term, which also represents residuals or disturbance term.

Graphical Analysis of Share Market Performance during the Study Period
Figure 1
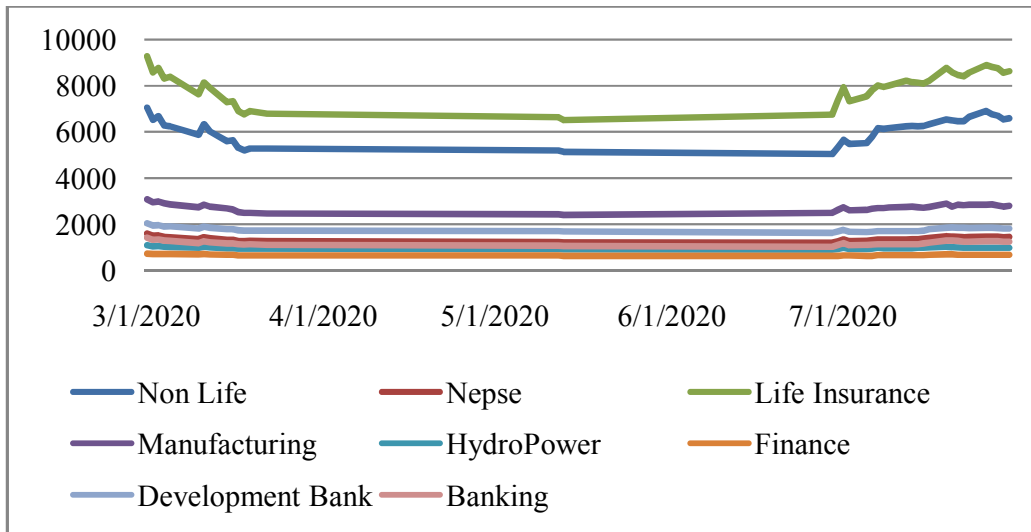*Share Market Performance during 1ˢᵗ Lockdown Period*

Figure 1 depicts the actions taken by Nepse and its seven subindices during the first lockdown. The picture illustrates how the lockdown immediately had a negative effect because all the indexes fell sharply in the first month. As shown by the figure, all of the indices were stable from April through the end of June and formed a nearly straight line. As the government loosened the rules for the lockup, the stock market's performance significantly increased beginning in early July.

Figure 2
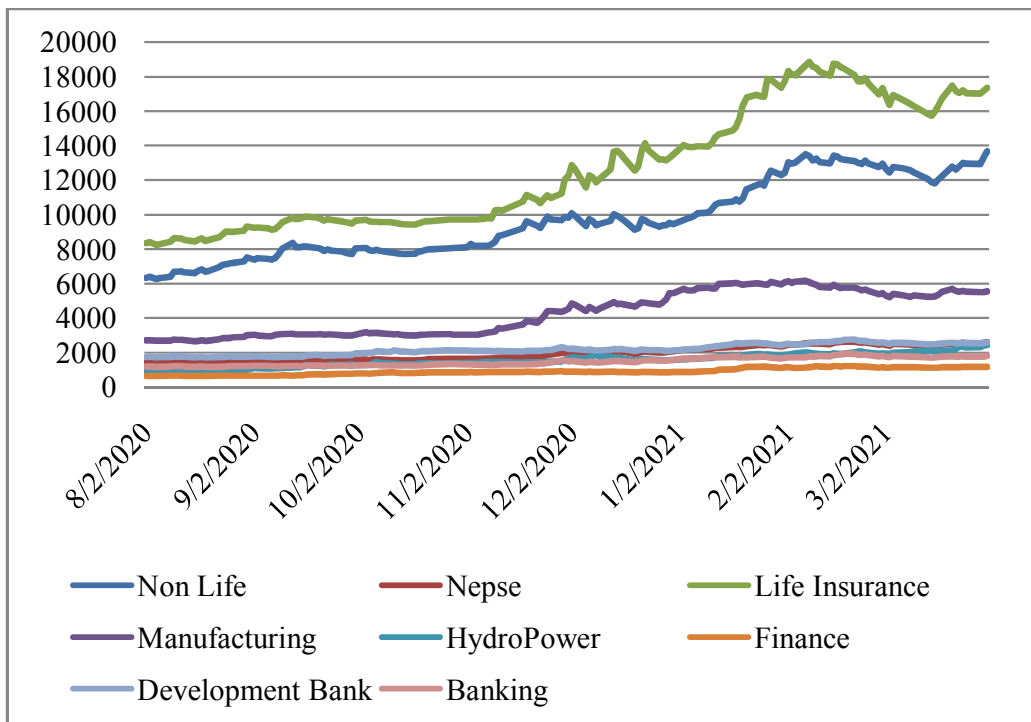*Share Market Performance during Post 1ˢᵗ Lockdown and Before 2ⁿᵈ Lockdown Period*

Figure 2 explains the share market performance during post 1st lockdown period and before 2nd lockdown period. After the lockdown was eased by the government in July, the stock market responded positively and significant rise was seen in all the indices under study. Despite some fluctuations in December and February, the share market experienced a steady growth during the period.

Figure 3

Share Market Performance during 2ndLockdown Period
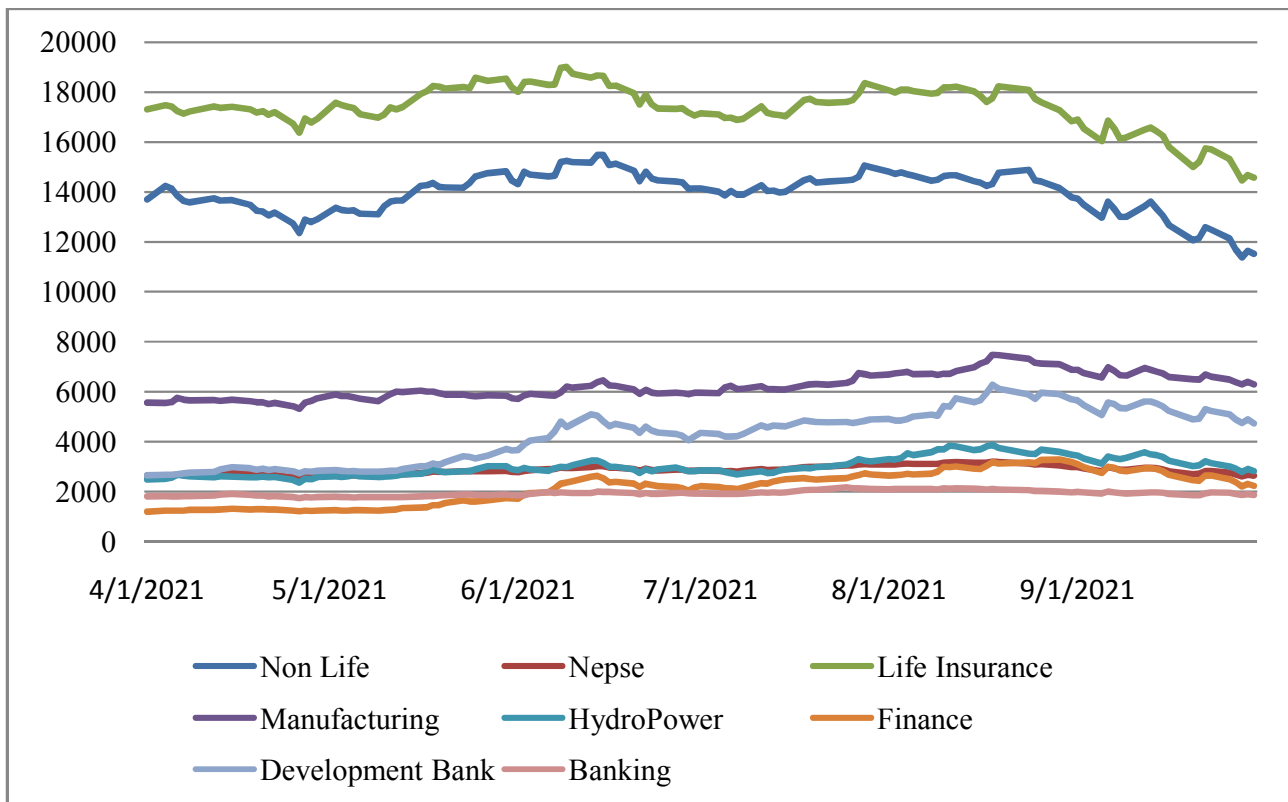
Similarly figure 3 portrays the share market's activity during the second lockdown. The performance of the stock market initially took a hit with an early decline in the month of April, but it quickly recovered in the months of May and June. The performance of all life insurance and non-life insurance, however, gradually declined after June until the lockdown ended in September 2021. Other sub-indices also grew steadily during this time until early September, when they began to trend downward.

ADF Unit Root Test

ADF unit root test is common method for checking the stationarity of the variables. The null-hypothesis for this test is 'The variable has unit root'. If the null hypothesis is not rejected at minimum 5% level of significance, the variable is non-stationary having unit root. On the other hand, if null-hypothesis on the variable is rejected, the variable is stationary with no unit root. Once stationarity is checked, the stationary data sets are employed for carrying out the OLS regression for the robust results.

The econometric software, Eviews-10 has been used to check the stationarity of the data as well as carrying out OLS regression. Table 1 portrays the results from ADF unit root test on the variables during first lockdown.

Table 1
ADF Unit Test Results on the Variables Prior to First Lockdown

Variables	Test Critical Values at 5% Level	ADF t-Statistic	Probability
LnNep	-2.9388	-2.2942	0.1788
LnBanking	-2.9388	-2.5358	0.1151
Lndevtbanking	-4.2118	-2.4423	0.3534
LnFinance	-2.9388	-2.2254	0.2009
LnManu	-2.9389	-2.3149	0.1725
LnHydro	-3.5330	-2.3976	0.3749
LnLifeins	-2.9388	-1.8132	0.3688
LnNonlifeins	-2.9388	-1.6388	0.4537
dLnNep	-2.9434	-4.3828	0.0013
dLnBanking	-2.9434	-4.4976	0.0009
dLndevtbanking	-3.5366	-5.0318	0.0012
dLnFinance	-2.9411	-7.3376	0.0000
dLnManu	-2.9411	-6.4988	0.0000
dLnHydro	-3.5366	-5.5379	0.0003
dLnLifeins	-2.9434	-4.2951	0.0017
dLnNonlifeins	-2.9434	-4.2951	0.0017

Source: Author's Own Calculation by Using Eviews-10

From Table 1 it is observed that all the variables at level form are found to be non-stationary and they are stationary at first difference as reported by ADF t-Statistic and corresponding probability values. Hence, we can use the stationary data sets in our OLS regression to find the impact of sub-indices on NEPSE Index. Our next job is to test the stationarity on the same variables during post first lockdown and before second lockdown. Table 2 portrays the ADF unit root test on the variables.

Table 2
ADF Unit Test Results on the Variables During Post-First Lockdown and Before Second Lockdown

Variables	Test Critical Values at 5% Level	ADF t-Statistic	Probability
LnNep	-2.8793	-0.4406	0.8980
LnBanking	-2.9388	-0.5525	0.8763
Lndevtbanking	-2.8794	-0.8464	0.8027
LnFinance	-2.9388	-0.8128	0.8125
LnManu	-2.9389	-0.9787	0.7602
LnHydro	-2.8796	-0.5694	0.8727
LnLifeins	-2.8796	-0.7762	0.8227
LnNonlifeins	-2.8793	-0.7692	0.8246
dLnNep	-2.8796	-10.3356	0.0000
dLnBanking	-2.8794	-10.5643	0.0000
dLndevtbanking	-2.8794	-12.2412	0.0000
dLnFinance	-2.8794	-9.6962	0.0000
dLnManu	-2.8794	-11.5472	0.0000
dLnHydro	-2.8796	-10.1492	0.0000
dLnLifeins	-2.8796	-10.6041	0.0000
dLnNonlifeins	-2.8796	-10.6115	0.0000

Source: Author's Own Calculation by Using Eviews-10

From Table 2 it is observed that all the variables at level form are found to be non-stationary and they are stationary at first difference as reported by ADF t-Statistic and corresponding probability values. Hence, we can use the stationary data sets in our OLS regression to find the impact of sub-indices on NEPSE Index during post first lockdown and before second lockdown.

Table 3

ADF Unit Test Results on the Variables during Second Lockdown

Variables	Test Critical Values at 5% Level	ADF t-Statistic	Probability
LnNep	-2.8852	-1.4124	0.5742
LnBanking	-2.8852	-1.5759	0.4918
Lndevtbanking	-2.8852	-1.6857	0.4359
LnFinance	-2.8852	-1.7671	0.3952
LnManu	-2.8852	-1.6470	0.4555
LnHydro	-2.8852	-1.7757	0.3910
LnLifeins	-2.8852	-0.0377	0.9525
LnNonlifeins	-2.8852	-0.2472	0.9280
d*LnNep*	-2.8854	-10.7404	0.0000
dLnBanking	-2.8854	-10.2509	0.0000
dLndevtbanking	-2.8854	-10.6493	0.0000
dLnFinance	-2.8854	-9.1653	0.0000
dLnManu	-2.8854	-10.4631	0.0000
dLnHydro	-2.8854	-10.4676	0.0000
dLnLifeins	-2.8856	-9.4842	0.0000
dLnNonlifeins	-2.8854	-10.5899	0.0000

Source: Author's Own Calculation by Using Eviews-10

Similarly, from Table 3 it is observed that all the variables at level form are found to be non-stationary and they are stationary at first difference as reported by ADF t-Statistic and corresponding probability values. Hence, we can use the stationary data sets in our OLS regression to find the impact of sub-indices on NEPSE Index during second lock-down

OLS Regression Results

Presents study employs OLS regression of dependent variable Nepseon independent variables: Banking, Development Banking, Finance,Hydropower, Life Insurance and Non-Life Insurance. These variables are transformed into natural logarithmic forms and their first differences are used to find the robust results. The first difference of the concerned variables in logarithmic forms are denoted as *LnNepse*, *LnBanking*, *LnFinance*, *LnManu*, *LnHydro*, *LnLifeins* and *LnNonlifeins*. The study is based on three periods: during First Lockdown, during Post-First Lockdown and before Second Lockdown. Table 4 demonstrates the results from OLS regression during First Lockdown.

Table 4

Results from OLS Regression during First Lockdown

Variables	Coefficients	Standard Error	t-Statistic	Probability
$dLnBanking$	0.6170	0.0561	10.9908	0.0000
$dLnDevtbanking$	-0.0860	0.0759	-1.1335	0.2654
$dLnFinance$	0.0001	0.0574	0.0024	0.9980
$dLnManu$	-0.0163	0.0475	-0.3438	0.7332
$dLnHydro$	0.0792	0.0399	1.9859	0.0557
$dLnLifeins$	0.0720	0.0481	1.4953	0.1446
$dLnNonlifeins$	0.2229	0.0306	7.2657	0.0000
Constant	0.492711	0.201904	2.440327	0.0204

Source: Author's Own Calculation by Using Eviews-10

From Table 4, it is observed that the coefficients of $dLnBanking$ and $dLnNonlifeins$ are found to be significant at minimum 1% level and coefficient of $dLnHydro$ is significant at 10% level and they are positive. During the study period, Nepal Stock Exchange is affected by the sub-indices of Banking, Non-life Insurance and Hydropower. Nepal Stock Exchange is affected positively by these three sub-indices. However, other variables have no effect on Nepse Index.

Our next job is devoted to analyzing the impact of independent variable on dependent variable during After First Lockdown and Before Second Lockdown. Table 5 reveals the results from OLS regression on the concerned variables.

Table 5

Results from OLS Regression during After First Lockdown and Before Second Lockdown

Variables	Coefficients	Standard Error	t-Statistic	Probability
$dLnBanking$	0.4573	0.0561	10.9908	0.0000
$dLnDevtbanking$	0.0509	0.0234	2.1697	0.0316
$dLnFinance$	0.0029	0.0185	0.1583	0.8744
$dLnManu$	0.1320	0.0129	10.167	0.0000
$dLnHydro$	0.1171	0.0099	11.777	0.0000
$dLnLifeins$	0.1410	0.0173	8.1524	0.0000
$dLnNonlifeins$	0.1241	0.0191	6.4731	0.0000
Constant	0.0000	0.0002	0.4464	0.6559

Source: Author's Own Calculation by Using Eviews-10

From Table 5, it is observed that the coefficients of $dLnBanking$, $dLnManu$, $dLnHydro$, $dLnLifeins$ and $dLnNonlifeins$ are found to be significant at minimum 1% level and coefficient of $dLnDevbanking$ is significant at 5% level and they are positive. During the study period, Nepal Stock Exchange is positively affected by the sub-indices of Banking, Manufacturing, Life Insurance, Non-life Insurance and Development Bank. However, other variables have no effect on Nepse Index.

Similarly impact of independent variable on dependent variable during Second Lockdown Period is analyzed in Table 6. Table 6 reveals the results from OLS regression on the concerned variables.

Table 6

Results from OLS Regression during Second Lockdown

Variables	Coefficients	Standard Error	t-Statistic	Probability
dLnBanking	0.4165	0.0199	20.929	0.0000
dLnDevtbanking	0.0459	0.0137	3.3403	0.0011
dLnFinance	0.0084	0.0118	0.7067	0.4812
dLnManu	0.1060	0.0183	5.7860	0.0000
dLnHydro	0.1217	0.0106	11.4452	0.0000
dLnLifeins	0.2446	0.0428	5.7119	0.0000
dLnNonlifeins	0.0908	0.0351	2.5845	0.0110
Constant	0.0000	0.0000	-0.9959	0.3214

Source: Author's Own Calculation by Using Eviews-10

From Table 6, it is observed that the coefficients of *dLnBanking*, *dLnDevbanking*, *dLnManu*, *dLnHydro*, *dLnLifeins* and *dLnNonlifeins* are found to be significant at 1% level and they are positive. During the study period, Nepal Stock Exchange is positively affected by the sub-indices of Banking, Development Bank, Manufacturing, Hydro, Life Insurance and Non-life Insurance. However, other variables have no effect on Nepse Index.

Conclusion and Recommendation

The lockdown imposed by the Nepali government immediately hurts the country's stock market performance. As soon as the first shutdown was implemented, the Nepse Index and the other 7 sub-indices under consideration all experienced a sharp decline. In contrast to other variables, banking, non-life insurance, and hydropower had a positive impact on the Nepse Index during the first shutdown period. Banking, life insurance, non-life insurance, and development banks have a beneficial impact on Nepse performance during the time following the first shutdown and prior to the second lockdown. Similarly, during the second lockdown era, banking, development banks, manufacturing, hydro, life insurance, and non-life insurance all had a favorable impact on Nepse. In contrast to the impact of finance, which was never felt during the study period, the results demonstrate that banking and non-life insurance had a major impact on Nepse performance during all three periods.

Overall, the results show that COVID 19-related government-enforced lockdown caused a significant decline in the share price of all indices on the Nepali stock market. The abrupt corona virus outbreak caused unexpected business disturbances, which led to a decrease in share prices across all of the sub-indices considered in this study. Investment in the stock market was discouraged by the uncertainties surrounding future prospects, the operation of the banking sector, and government response to the corona virus outbreak. But as soon as the lockdown was released, the market began to recover. After the environment improved, the share price of Nepse showed gradual and significant development. The changing investors' attitude was also reflected in the performance of Nepse as the sudden shocks were not seen in Nepse during second lockdown period.

The study's findings are advantageous to Nepal Stock Exchange stakeholders. The outcome reflects the sudden changes in investment flow that occurred as soon as the lockdown was implemented owing to the corona virus outbreak. The fact that the investors lacked positive incentives to make additional investments demonstrates that the government was unable to establish and maintain a persuasive environment for secondary market investment.

The banking and non-life insurance sub-indexes played a significant role in determining the performance of the stock market over the whole study period. The volume of shares traded under these subindices may be the cause of the impact. In order to promote other sectors, policymakers and investors should evaluate these elements and create the necessary directions. Additionally, the investors will gain knowledge on how to manage their share portfolio under sudden and unfavorable circumstances that could develop in the future. The results of the study will also encourage future research looking at share market activity in terms of volume of shares traded over time.

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