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Impact of Covid-19 on Stock Market Indices: Evidence from Colombo Stock Exchange

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ABSTRACT

Purpose: The study intends to address the question, "What is the impact of the Covid-19 pandemic on stock market indices in the Colombo Stock Exchange". This would support potential and existing investors to understand the behaviour of the stock market during the pandemic to make effective long-term decisions since there are only a few studies currently available in Sri Lankan context.

Design/Methodology/Approach: A log-linear multiple regression model was executed whereby the dependent variables, All Share Price Index and S&P SL 20 index, were regressed against independent variables, daily new cases and deaths reported, fiscal and monetary policy measures implemented, and island-wide travel restrictions imposed during the period to analyze the impact of Covid-19 on the financial market over 270 days, from 27th January 2020 to 30th April 2021, covering two waves of the pandemic.

Findings: The regression analysis revealed a positive relationship between the stock indices and the number of daily cases and deaths and a negative relationship with the travel restrictions imposed during the period. The policy measures implemented by the Government of Sri Lanka were insignificant in the index movements. Based on the results of this study, a positive impact on the stock indices was discovered during the pandemic; hence investors should refrain from panic withdrawals from the market.

Originality: This is among the few studies to analyze the stock market performance during the Covid-19 pandemic adapted to the Sri Lankan context. The variables taken in the study can cover various aspects of the pandemic situation.

KEYWORDS

All Share Price Index,
Covid-19 Pandemic,
Fiscal Policy,
Monetary Policy,
Stock Market Volatility

JEL CLASSIFICATION:

E44, I15

I. Introduction

Despite many developments in the pharmaceutical industry, globalization, increased travel and trade, urbanization, populated cities, changes in human behaviour, reviving pathogens, and improper use of antibiotics have caused the rising spread of infectious diseases (Shang et al., 2021). The recent virus outbreak Covid-19 shows that infectious diseases spread quickly due to open economies and easily threaten economic stability.

Although Covid-19 has become a widely spoken topic nowadays because of its severity and adverse economic impacts, this is not the first time the world has encountered such catastrophes. Previous infections such as Black Death, SARS, Influenza H1N1, and Swine Flu had caused similar tragedies in economies around the globe. The World Economic Forum estimated that the outbreak of the Influenza Pandemic in 1918 caused the reduction of real GDP per capita by 6-8% and was the 4th most negative macroeconomic shock in US history after World War I, II and the great depression. Businesses in the entertainment and service industries experienced huge losses while the revenue of healthcare businesses spiked. Similar

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observations were identified after the outbreak of the Covid-19 pandemic as well.

Actions taken such as social distancing, avoiding unnecessary travel, a ban on congregations and even lockdown restrictions ultimately resulted in severe damage to the world economies. Global stock markets have recorded the highest fall since 2008. The World Bank predicted that the deep recessions triggered by the pandemic are expected to leave lasting scars through lower investment, an erosion of human capital through lost work and schooling, and fragmentation of global trade and supply linkages.

Similar observations were found in the Sri Lankan economy as well. Actions such as imposing a curfew, lockdowns, and travel bans for foreigners from time to time severely impacted the economy with a fall in earnings from tourism, remittances, and outflow of foreign investment. This created great uncertainty among investors and was reflected in the capital market. On 10th March 2020, trading at the Colombo Stock Exchange was halted as the S&P SL20 index of more liquid stocks fell 5.01%. The 5% dip occurred within 10 minutes of trading. It was assumed to be caused by fear of foreign investors exiting the risky assets.

Few studies evidenced that stock markets have had positive influences during the pandemic. S&P 500 index seemed to have taken off since April 2020 (Stewart 2021). Industries such as information technology, consumer discretionary and materials sectors were discovered to have recovered with index values at 133%, 130% and 124% of the pre-crisis level (Wen, 2021).

This study is intended to do a thorough analysis of how the performance of the Colombo Stock Exchange has been affected after the Covid-19 pandemic. S&P SL 20 Index and All Share Price Index have been used as performance measures of the stocks. The study will be a valuable addition to the existing series of research carried out by other scholars worldwide on various emerging economies such as Bangladesh (Adnan et al., 2020); Australia (Burdekin et al., 2021) and the United States (Thakur, 2020).

The Colombo Stock Exchange consists of only 284 companies and the market indexes reflect only the performance of those companies. Therefore, there is a limitation in generalizing the results of this study to the overall economy. A limited number of variables were taken into consideration, but stock market performance is determined by various other factors as well. Hence the results are derived under the ceteris paribus condition, which means that the outcome may change if different variables were introduced. The rest of the paper consists of a review of the existing literature on the subject, the methodology of conducting the research, the presentation and discussion of findings and the conclusion arrived.

II. Literature Review

Covid-19 pandemic

The newly discovered coronavirus has become much more than a health crisis. United Nations identifies this as a human, economic and social crisis. In December 2019, Wuhan Province, China reported a novel virus (COVID-19) outbreak, which resulted in numerous deaths and complications such as pneumonia and acute respiratory distress syndrome. The infection rapidly spread across the globe, prompting the World Health Organization to declare a pandemic on 11th March 2020.

The pandemic has caused severe economic and social damage as well. Thousands of enterprises faced a threat to their survival. Informal economy workers are especially vulnerable because they lack social protection and access to proper healthcare and have lost access to productive assets. Many people are unable to feed themselves and their families during lockdowns as they lack the means to earn a living. (World Health Organization, 2020) The International Labor Organization (ILO) estimated that

there was a 4.5% reduction in hours in the first quarter of 2020, and a 10.5% reduction is expected in the second quarter. In February 2020, the US unemployment rate was at 5% (Fouad, 2020).

Many scholars have pointed out the need to assess the health impact and the social and economic impact of the pandemic. "No epidemic is ever just a health issue in isolation, and Covid-19 has emphasized this globally. We need to be looking at it in terms of an economic issue, a livelihood issue, a social issue and a political issue too" (Parkin, 2020).

Economic Impact of the Pandemic

The pandemic was expected to become one of the most economically costly pandemics in recent history. While every economy is affected disregarding its status, lower- and middle-income countries are worst affected because they have weak defences against economic shocks and tend to depend more on a few sectors, such as commodities and tourism. Millions of economically active populations across the globe have fallen below the poverty line as corporates laid off most of their work as a strategy to survive the difficult times. According to Oxfam research, government attempts to help people cope with the pandemic in 126 low- and middle-income countries, including a variety of benefits for those affected, were found to be insufficient to at least cover the basic needs.

The Efficient Market Hypothesis (EMH) assumes that an efficient stock market reflects all the economic, industrial and company information available in an economy in its stock prices. The global market has shown huge volatility since the outbreak of the pandemic. Many existing works of literature point out that with the announcement of a virus outbreak in a country resulted in huge shocks in stock market indices. Vast volatility in the global stock markets reflects the shake in investor confidence.

Stock market under Covid-19

In March 2020, the US stock market hit the circuit breaker mechanism four times in ten days. In their study, Baker, et al., 2020 state that no previous infectious disease outbreak, including the Spanish Flu, has impacted the stock market as forcefully as the COVID-19 pandemic. They state that the COVID-19 period stands out for an extremely high frequency of large daily stock market moves that had not been observed earlier in history in which pandemic-related developments hadn't driven any large daily stock market moves. They have observed both negative and positive jumps in response to news about COVID-19 and policy responses as drivers of the stock market. Statistics show that the MSCI World Index, which includes stocks from 23 developed countries and 24 emerging markets, lost 10.7% of its value between January 23 to March 6, 2020. In the same period, the STOXX Europe 600 index, which includes stocks of 600 companies from 17 European countries, fell by more than 12%. Approximately the same drop was recorded by the CSI 300 Index, which includes the 300 largest stocks in the Chinese Class-A share market, in the same period. On March 18, the S&P500 index was off 27% for the year to date, Germany's DAX was down 38%, and Japan's Nikkei was off 29%. By the end of February 2020, Gulf Corporation Council stock markets have seen their biggest monthly decline in four years due to rising coronavirus cases in the region (Bahrini & Filfilan, 2020).

The SSE50 index in China showed a very low coefficient for COVID-19. (Sattar et al., 2020) This was further reinforced by Sansa (2020) who stated that the China financial markets remain strong and stable regardless of the pandemic. Researchers have expressed that some industries such as healthcare, technology and e-commerce have thrived during the pandemic (Mehrotra, 2023). This suggests that not all markets were affected by the pandemic.

As this study is intended to analyze the impact of Covid-19 on market indices in Sri Lanka, the number of new cases reported per

day and the number of deaths reported per day play a major role as independent variables incorporating the effects of the pandemic to the regression model similar to many studies elaborated above. Hence four hypotheses to be tested in this study can be outlined below.

H1: There is a significant impact on the number of new cases reported per day on the S&P SL 20/ ASPI

H2: There is a significant impact on the number of deaths reported per day on S&P SL 20/ ASPI

H3: There is a significant impact of the presence of fiscal & monetary policies introduced during the period on S&P SL 20/ ASPI

H4: There is a significant impact of the lockdown restrictions introduced during the period on S&P SL 20/ASPI

Impact of remedial actions taken by Governments on stock market indices

Many countries throughout the world have taken extreme efforts to combat the COVID-19 virus, including establishing social distancing, avoiding unnecessary travel, and restricting congregations. By the end of March 2020, more than 100 countries around the world had already undertaken several lockdown restrictions impacting negatively their social and economic activities (Nicola et al., 2020). This negative effect was further evidenced by Burdekin et al. (2021). Their study was carried out across 80 countries covering Africa, Australia, East Asia, Europe and America. The effect of travel restrictions during the pandemic on market indices in the Colombo Stock Exchange will be incorporated into this study via H4, where it will be assumed that there is a significant impact of the lockdown restrictions introduced during the period on S&P SL 20/ ASPI.

Therefore to avoid the economy from collapsing, governments had to implement economic recovery strategies that are both inclusive and long-term to relieve the public and corporates from the burden of a constrained economy. The goals of the policy packages that have been announced so far vary from country to country which include additional government spending (such as medical resources, keeping people employed, subsidizing SMEs, and public investment), deferred tax payments, export guarantees, liquidity assistance, credit lines through national development banks (D'Orazio & Dirks, 2020). Instilling sufficient trust in borrowers and entrepreneurs is very crucial at these times as they are the backbone of an economy. Implementing schemes that concentrate on loan disbursements at a fair pace, as well as providing sufficient relief from loan repayment moratorium periods, and relaxed debt payment structuring is supposed to achieve this requirement.

D'Orazio et al. (2020) explained that their study concerning the European Union discovered that measures that concern the lockdown and mobility restriction have negatively affected the stock markets in the period under scrutiny. In contrast, policies related to improvements in the health sector have a significant positive effect on stock market movements. Although fiscal policy announcements are supposed to positively influence the economy, their study showed that they did not significantly impact the stock indices.

Similarly, this study tries to capture the effect of fiscal and monetary policies implemented by the government to respond to the pandemic into the regression model in which H3 assumes that there is a significant impact of the presence of fiscal & monetary policies introduced during the period on S&P SL 20/ ASPI. Various types of policies implemented by the Sri Lankan government and measurement of the variable are elaborated on in the methodology chapter of this study.

Sri Lankan Economy under Covid-19

Sri Lanka's GDP declined by 3.6 per cent in 2020 as a result of the COVID-19 pandemic, the worst performance on record, as is the situation in many other countries facing the

pandemic. Measures enacted by the government to contain the first wave of COVID-19 hit sectors like tourism, construction and transport especially hard while collapsing global demand impacted the textile industry. Individual consumption was interrupted by job and earnings losses, while investment was constrained by uncertainty. A sudden increment in government expenditure and a decline in revenue resulted in a widening of the fiscal deficit in 2020. Public and publicly guaranteed debt is estimated to have increased to 109.7% of GDP (The World Bank, 2021).

The tourism sector, which is the third-largest foreign income generator for Sri Lanka has been severely affected by COVID-19. Major tourist destinations in Sri Lanka have been suffering due to the travel bans that also apply to domestic tourists. Total tourist arrivals during the period between January to April 2021 have dropped by 97.3% compared to the same period in 2020. Being the second-largest source market for Sri Lanka in terms of imports, China's slowdown due to COVID-19 has had a significant impact on Sri Lanka's economy (Deshapriya, 2021).

Decreased tourism receipts, reduced export earnings and outstanding foreign debt payments essentially increase the pressure on the foreign exchange rate. The Central Bank of Sri Lanka has immediately taken a few measures such as suspension of the import of motor vehicles, and non-essential goods and purchasing of Sri Lankan international sovereign bonds by licensed banks in Sri Lanka. However, those measures were not adequate to cushion the blow. Small and Medium Enterprises were the most affected segment. Many small-medium enterprises (SMEs) in Sri Lanka significantly failed to do their business as they had been unable to diversify their production processes before or immediately after the pandemic. The lack of resources (obtaining raw materials), capabilities, strategic vision, and negative attitudes towards the production process of the enterprises has hindered the Small Enterprises in immediately adapting to the situation (Rusniya & Nufile, 2020).

All these factors provide sufficient evidence that Colombo Stock Exchange must certainly have been affected due to the country's turmoil. However, the existing literature does not provide clear evidence of how the stock market was affected and its magnitude. This study's objective is to identify the impact of the newly found pandemic on stock market performance.

III. Methodology

This study is based on the secondary data extracted from the Colombo Stock Exchange, Health Promotion Bureau and Central Bank of Sri Lanka. The stock market indices include the daily S&P SL 20 index and the daily All Share Price Index. The independent variables, which represent the effect of the pandemic are measured in terms of the number of new Covid cases reported per day, the number of deaths reported per day, fiscal & monetary policies enacted and lockdown restrictions imposed during the period. The period under consideration for this study ranges from 27th January 2020 to 30th April 2021.

The dependent variables used in this study are intended to measure the performance of the stocks listed on the Colombo Stock Exchange over the research period while independent variables represent various implications of the pandemic on the economy.

Standard & Poor's Sri Lanka 20 Index

S&P SL 20 captures the performance of the 20 largest and most liquid public trading companies listed on the Colombo Stock Exchange. The 20 companies that constitute the index is picked by Standard & Poor's global index methodology and are reviewed every year. All S&P SL20 listed stocks are categorized using S&P and MSCI's Global Industry Classification Standard, allowing a more accurate comparison of Sri Lanka's largest and most liquid equities to other

global indices. The index takes into account market capitalization, the number of trading days, financial viability and liquidity of the stock when selecting a stock for the index calculation. The index is calculated using the divisor methodology used in all S&P Dow Jones Indices' equity indices.

All Share Price Index

All Share Price Index is referred to as the longest and broadest measure of the stock market. It incorporates the movement of share prices of all listed companies and is based on market capitalization. The index covers 285 companies with a market capitalization of Rs. 3,598.61 Bn as of 31st July 2021. The ASPI is a value-weighted index (VWI).

$$ASPI = \frac{Market\ capitalization\ of\ all\ listed\ companies}{Base\ Market\ Capitalization} * 100$$

Number of new cases reported per day

By July 2021, Sri Lanka was placed on the red list due to escalating covid-19 cases reported by many countries (Economy Next, 2021). The number of new cases reported will be useful in analyzing the magnitude of the spread of the virus. i.e. It is a major determinant of assessing the severity of the pandemic in the country during the research period.

Number of deaths reported per day

Although Sri Lanka was able to control the number of deaths to a minimum level at the start of the pandemic, during the fourth wave, Sri Lanka recorded the world's fourth-highest daily deaths even under lockdown restrictions (Economy Next, 2021).

Monetary and Fiscal Policies enacted during the period

With the sudden changes undergone by the economy, the Government of Sri Lanka needed to take immediate actions to prevent the economy from collapsing. This involves monetary policy actions that will influence the level of money supply in the economy and also fiscal policy measures which collectively would provide a protective shield against adverse economic shocks.

Some of the monetary policy responses include: Reducing the policy interest rates; Increasing the amount of foreign currency that can be retained by a person in, or resident in Sri Lanka in his possession; Encouraging the public to open Special Deposit Accounts (SDAs); Reducing the statutory reserve ratio; Reducing the bank interest rate for the first time since 2003; Reducing the Standing Deposit Facility Rate (SDFR) and Standard Lending Facility Rate.

And fiscal sector responses of the government include Granting tax exemptions on imports, donations of machinery and equipment required for the provision of health services; Providing cash allowances to senior citizens, differently-abled persons, kidney patients and farmers and displaced daily workers; Implementing debt moratorium facilities through banks complemented by guarantees from the Central Bank; Suspending the loan payment deductions from the salaries of all public sector employees; Extending the payment deadlines for Value Added Tax; Relief measures for SMEs such as wavering income tax arrears, granting grace periods to settle taxes in arrears/default, extension on seizure notices, and extension of the dates for the payment of taxes and filing tax returns. The monetary and fiscal policies implemented are measured as a dummy variable reflecting the time frames in which Central Bank has announced such policies.

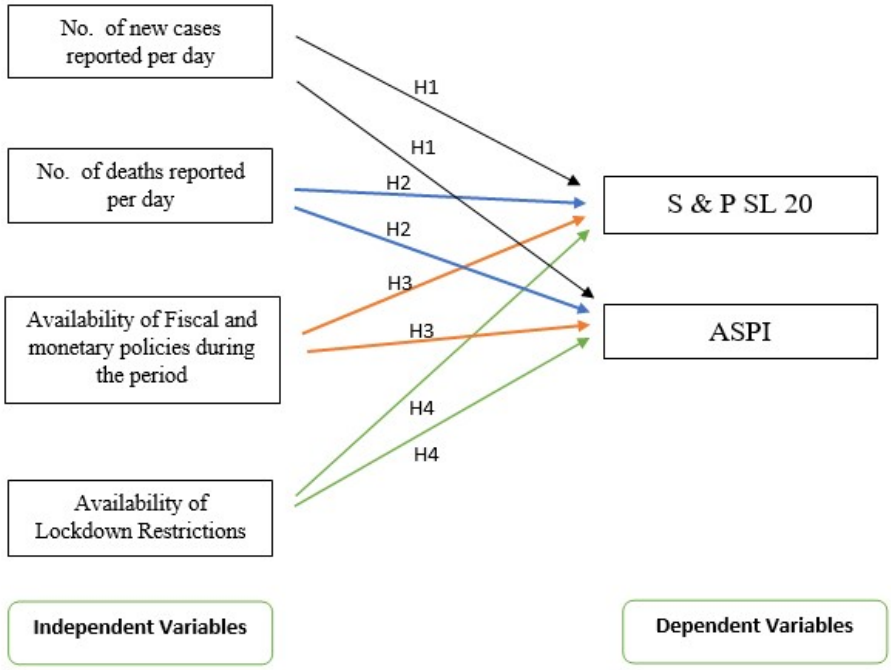
Travel restrictions imposed during the period

The emergence of new variants of the COVID-19 virus has prompted many governments to impose various types of travel restrictions from time to time, to prevent the virus from further spreading. Travel restrictions imposed not only within the country but also in other countries pose a significant threat to the smooth functioning of the economy. The World Travel & Tourism Council (WTTC) has revealed Sri Lanka's economy could face losses of more than LKR 260 million each day if it remains on the UK's disruptive and damaging 'Red List' for travel. (Daily News, 2021) Yet, health

authorities continuously insist on making sure such actions are kept in place. This is measured using a dummy variable, focusing on periods during which the Sri Lankan government has imposed an island-wide curfew to limit travelling within the country.

The graphical presentation of the conceptual framework is outlined below.

Figure 1. Conceptual Framework



Method of Analysis

A time-series regression analysis was employed to identify the relationship between dependent and independent variables. The regression model can be outlined as follows,

$$Log\ (YASP\ ) = \beta 0 + \beta 1\ new\ cases + \beta 2\ Deaths + \beta 3 Fiscal\ \&\ monetary\ policies + \beta 4 Lockdown\ Restriction + \varepsilon \quad (1)$$

$$Log\ (YS\&P20) = \beta 0 + \beta 1\ new\ cases + \beta 2\ Deaths + \beta 3 Fiscal\ \&\ monetary\ policies + \beta 4 Lockdown\ Restrictions + \varepsilon \quad (2)$$

Table1: Description of Variables

Variable	Description	Data source
ASPI	Daily All Share Price Index	CSE Data Library
S&P SL 20	Daily Standard & Poor's Sri Lanka 20	CSE Data Library
New cases	Number of new cases reported per day	Health Promotion Bureau
Deaths	Number of deaths reported per day	Health Promotion Bureau
Fiscal & monetary policies	Fiscal & monetary policy measures implemented during the period	CBSL, IMF
Lockdown restrictions	Lockdown policies implemented during the period	CoronaNet Database, A3M Global Monitoring

Source – Author compiled

Data Analysis and Presentation of Findings

The data analysis involves a correlation analysis to determine the relationship between variables and a multiple regression model is employed to assess the impact of each independent variable representing the Covid-19 pandemic on the stock market indices over the period from 27th January 2020 to 30th April 2021. The time-series regression analysis has been carried out separately for ASPI and S&P SL 20 market indices to determine the impact of each independent variable on both stock indices using Eviews software.

Descriptive Analysis

Table 2: Descriptive Statistics

	ASPI	S_P_SL_20	NEW_CASES	NEW_DEATHS
Mean	6096.621	2529.774	264.315	1.619
Median	5887.470	2458.865	93.500	0.000
Maximum	8812.010	3514.180	1662.000	17.000
Minimum	4247.950	1685.450	0.000	0.000
Std. Dev.	1035.504	367.903	318.511	2.685
Skewness	0.537	0.299	1.259	2.252
Kurtosis	2.351	2.676	4.614	9.531
Jarque-Bera	17.693	5.194	100.645	708.082
Probability	0.0001	0.075	0.000	0.000
Sum	1646088.	683039.1	71365.00	437.000
Sum Sq. Dev.	2.88E+08	36409763	27289872	1939.707

Observations	270	270	270	270

Source – Eviews Output

The average S&P SL 20 index value has been 2529.77 with a maximum value of 3514.18 and a minimum value of 1685.45. The average ASPI index reported has been 6096.62 with the highest and the lowest values of 8812.01 and 4247.95 respectively. The average number of new cases reported per day over the period under consideration has been 264 while an average of 1 death has been reported per day. The maximum number of cases reported per day has been 1662 while the highest number of deaths reported per day has been 17.

The skewness of the dataset measures how much the probability distribution of a random variable deviates from the normal distribution. The S&P SL 20 index shows a low level of skewness with a value of 0.2985 and ASPI, with a skewness value of 0.5366, shows a moderate skewness, while several new cases and new deaths are shown to be highly skewed since their skewness is greater than 1. The sharpness of the peak of the frequency distribution curve is measured by the Kurtosis value. It defines how heavily the tails of distribution differ from the tails of a normal distribution. Since the Kurtosis value for new cases and new deaths is greater than 3, we can derive that they have leptokurtic normal distributions. The S&P SL 20 index and ASPI index are shown to have a Platykurtic distribution since their kurtosis values are greater than 3.

Correlation Analysis

Table 3: S&P SL 20 - Correlation Analysis

	S_P SL20	New Cases	New Deaths	Policy Measures	Travel Restrictions
S_P_SL20	1.000				
New_Cases	0.560	1.000			
New_Deaths	0.510	0.662	1.000		
Policy_Measures	-0.089	0.088	0.064	1.000	
Travel Restrictions	-0.206	-0.080	-0.064	0.011	1.000

Source – Eviews Output

About S&P SL 20 index, the number of new cases and new deaths are shown to have a moderate positive correlation, since their coefficients of 0.56 and 0.51 are greater than zero. Policy measures and Travel Restrictions have negative coefficients of 0.08 and 0.21, indicating a weak negative correlation with the S&P SL 20 index.

Apart from the correlation between the dependent and independent variables,

independent variables within themselves show weak levels of correlation, which implies that the variables do not suffer from multicollinearity.

Table 4: ASPI - Correlation Analysis

	ASPI	New Cases	New Deaths	Policy Measures	Travel Restrictions
ASPI	1.000				
New Cases	0.773	1.000			
New Deaths	0.691	0.377	1.000		
Policy Measures	0.010	0.093	0.074	1.000	
Travel Restrictions	-0.174	-0.085	-0.074	0.011	1.000

Concerning ASPI, the correlation coefficient for daily new cases and news deaths are 0.77 and 0.69 respectively which means each variable has a strong positive relationship with ASPI. The policy measures are shown to have a weak positive relationship with the stock index. Travel restrictions are deemed to have a weak negative correlation with the ASPI. The correlation coefficients of independent variables within themselves show weak levels of correlations, implying the study does not worry about multicollinearity.

In addition to the above, the Variance Inflation Factor (VIF) test was performed as a measure of the amount of multicollinearity in a set of multiple regression variables. The presence of multicollinearity reduces the statistical significance of the independent variables. A high VIF factor indicates a high collinear relationship which needs to be eliminated. The VIF values in both ASPI and S&P SL 20 models are less than 10, it is concluded that the model does not suffer from multicollinearity.

The probability of the Jarque-Bera test determines whether to accept or reject the null hypothesis, which states that the residuals are normally distributed. Since the p-value for both models is greater than 5%, the null hypothesis can be accepted which implies that the residuals are normally distributed. This satisfies the assumption of the normality of the random errors in the model. Further, the Breusch-Pagan test performed confirms the non-existence of heteroscedasticity.

Regression Analysis

This study applies a log-linear multiple regression model to identify the relationship between each of the dependent and independent variables. The time-series data collected for the All Share Price Index and S&P SL 20 Index have been regressed against the independent variables; a daily number of new cases, new deaths, implementation of travel restrictions and policy measures implemented by the government. Adjusted R2 determines the fitness of the model. The two regression

models constructed for this purpose can be outlined as follows;

Model 01

$$Log\ (YASPI) = \beta 0 + \beta 1\ new\ cases + \beta 2\ Deaths + \beta 3 Fiscal\ \&\ monetary\ policies + \beta Lockdown\ Restrictions + \varepsilon$$

Model 02

$$Log\ (YS\&PSL20) = \beta 0 + \beta 1\ new\ cases + \beta 2\ Deaths + \beta 3 Fiscal\ \&\ monetary\ policies + \beta Lockdown\ Restrictions + \varepsilon$$

Table 5: S&P SL 20 Regression Analysis

Dependent Variable: S&P SL 20
Method: Least Squares
Included observations: 270

Variable	Coefficient	Std. Error	t-Statistic	Prob.
New_Cases	0.000181	2.93E-05	6.179675	0.0000
New_Deaths	0.013338	0.003466	3.848412	0.0001
Policy_Measures	-0.191925	0.066624	-2.880716	0.0543
Travel_Restrictions	-0.218393	0.066587	-3.279793	0.0012
C	7.948125	0.065983	120.4580	0.0000

R-squared	0.392523	F-statistic	42.80763
Adjusted R-squared	0.383354	Prob(F-statistic)	0.000000
S.E. of regression	0.114285		

The results of the regression analysis show that three out of four variables used to define the implications of the pandemic indicate a strong relationship with the independent variable. The P value for New Cases, New Deaths and Travel Restrictions are lower than 5% except for Policy Measures. The new cases and new deaths reported per day show a positive relationship with the S&P SL 20 index while the implementation of travel restrictions has a negative impact on the stock index. The coefficients of the above variables can be expressed as follows.

A unit increase in the number of new cases will result in a 0.2% increase in the S&P SL 20 index and a unit increase in the number of deaths will positively influence the S&P SL 20 index by 1.3%. But the imposition of island-wide travel restrictions has a negative influence on S&P SL 20 index by 21.8%. The policy measures seem to have a negative relationship with S&P SL 20 index but this coefficient is concluded as statistically insignificant.

The adjusted R2 value is 38% which implies that the dependent variables used in this model can explain the independent variable by 38% which is at a satisfactory level and the overall model is statistically significant at 5%.

Table 6: ASPI Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
New_Cases	0.000326	2.81E-05	11.58014	0.0000
New_Deaths	0.017928	0.002821	6.355114	0.0000
Policy_Measures	-0.101437	0.056544	-1.793962	0.0740
Travel_Restrictions	-0.162347	0.056510	-2.872893	0.0044
C	8.685735	0.055966	155.1975	0.0000
R-squared	0.664556		F-statistic	131.2494
Adjusted R-squared	0.659493		Prob(F-statistic)	0.000000
S.E. of regression	0.096935			

Source – Eviews Output

The P value of the regression analysis on the All-Share Price Index revealed that daily new cases, new deaths and travel restrictions had a significant relationship with the ASPI index. The P value for Policy measures was higher than 5% which makes the variable statistically insignificant. A unit increase in daily new cases, the ASPI index has increased by 0.03%. A unit increase in the number of deaths has increased the ASPI value by 1.7%. Implementation of travel restrictions has shown to have a negative impact on ASPI as the index figure has dropped by 16%. The Adjusted R^2 value of 0.6594 implies that the independent variables can explain the dependent variables by 66%. Therefore, this satisfies the goodness of fit criteria.

IV. Discussion of Results

The analysis showed that there is a positive relationship between the S&P SL 20 index with a coefficient of 0.000181. The p-value of 0.0000 which is less than 5% indicates that the relationship between S&P SL 20 and the number of new cases reported per day is significant at a 95% confidence level. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. The coefficient of 0.000326 indicates that there is a positive relationship between ASPI and the number of new cases and the p-value being less than 5% indicate that this relationship is statistically significant at 95% confidence level.

The relationship between the number of deaths and the S&P SL 20 index is deemed statistically significant with a coefficient of positive 0.013338. The regression analysis presented a coefficient of 0.017928 between the number of deaths and the All Share Price Index value. This means that with every death reported due to Covid-19, the All Share Price Index has gone up by 1.7%. Since the probability value of this relationship is less than 5%, this relationship is statistically significant. Therefore, the null hypothesis can be rejected, and the alternative hypothesis (H2) can be accepted.

The above findings in H1 & H2 contradict the many outcomes of previous research. Sattar et al. (2020) emphasized that many covid cases have posed a substantial negative influence on stock indices like FTSE 100, NIKKEI 225, NASDAQ 100 etc. This was further reinforced by D'Orazio & Dirks (2020) as well.

The policy measures had a negative influence on the stock market index. However, this relationship was concluded as statistically insignificant since the p statistic of 0.0543 is greater than 5%, resulting in the null hypothesis (H3) being rejected.

Similar results were derived for ASPI as well, in which a negative coefficient of 0.101437 showed a negative relationship between the two variables. But this is deemed insignificant as the p-value of 0.074 is higher than 5%. Therefore, in this scenario, the null hypothesis is not rejected.

Findings on H3 challenge many other research outcomes such as Burdekin & Harrison (2021) and D'Orazio et al. (2020) whereby they supported that fiscal and monetary measures had positive influences on stock indices. But the variable is deemed insignificant, this research does not give conclusive evidence about the impact of fiscal and monetary policy measures on stock indices in Sri Lanka during the period under scrutiny.

There are several phases of travel restrictions imposed within the country to contain the pandemic which is discussed in the previous chapter. This study takes into consideration the periods when curfew was imposed island-wide. According to the analysis based on the above criteria, it was derived that there is a statistically significant negative relationship between travel restrictions and S&P SL 20 index where the p-value is stated as 0.0012 and the coefficient stated as -0.218393.

The regression analysis showed a negative coefficient of 0.1623 between travel restrictions and ASPI as well, and the p-value derived from the analysis was less than 5% (0.0044) indicating that this relationship is statistically significant. Therefore, the null hypothesis (H4) is rejected, concluding that travel restrictions and ASPI have a significant negative relationship with each other. This means, during the periods when an island-wide curfew had been imposed, the All Share Price Index dropped by 16.23%.

The above findings are further supported by Hatmanu et al. (2021) as well concerning the Romanian Stock Market whereby a negative influence of the movement restrictions was discovered against the stock index.

V. Conclusion and Recommendations

The regression analysis concluded that there is a positive relationship between stock market indices and the Covid-19 pandemic. During the Covid-19 period, stock market indices have been positively affected by the number of new cases reported per day and the number of deaths. Also, the presence of island-wide travel restrictions during the period under consideration has had a negative influence on the market indices. There is a negative relationship between policy measures and stock indices but this relationship is statistically insignificant. Based on the p-value, six hypotheses were accepted except for the policy measures variable which showed p-values of 0.054 and 0.074 under both models which are higher than 5%.

The results of the analysis showed that there is a significant positive relationship between several cases and deaths reported daily and stock index values. Although this finding is quite surprising, further research into the stock market performance during the period under consideration concluded that even though the stock market dropped at the outbreak of the pandemic, it started to slowly recover in the later periods and performed better by mid-2021. Ekanayake, 2021 in his interview with DailyFT shares his thoughts on this unusual market performance for considerable reasons.

By September 2021, Colombo Stock Exchange's market capitalization was up by 42% YTD. ASPI had not recorded an overall increase for the period 2016-2020. A gradual decline since 2016 was followed by a sharp drop in March 2020, but the Index slowly recovered by September/October 2020. The sharp increase of 30.35% in January 2021, has cancelled out all the losses suffered during the previous four years. Similar observations have been discovered for S&P SL 20 index as well, whereby the sharp increase in January 2021 (31.2%), has cancelled out almost all the losses suffered during the previous four years. Economists declare that with the gradual stabilization of the economic activities in the latter period in 2020, especially with the opening of

borders in January 2021, businesses were able to continue their operations as earlier (Trading Economics, 2022).

This outstanding performance in the indices can further be justified by the increase in average world indices in 2021. By September 2021, the broad index of the USA share market and S&P 500 index had increased only by 20%. Abeywardena (2020) the Chairman of the Colombo Stock Exchange, in an interview, stated that with the new changes introduced to the CSE activities during the pandemic and the various strategies implemented to promote investment in the share market among local and foreign investors, the market is predicted to perform further.

Ekanayake (2021) brings out several concerns regarding stock performance in his article. The sharp rise in the share market had been driven by a few large companies. The increase in share prices of these companies has occurred without the backing of the Net Assets Value per share. This raises some concerns about the realistic growth prospects of these companies.

Another important aspect to be concerned about is that the share market boom aroused against the backdrop of foreign investors leaving the market. Statistics showed that foreign investors had dumped around $273 Mn worth of shares in 2020 and net $25 Mn worth of shares in January 2021. (Bloomberg). This reveals that the increase in share market indices was derived solely from local investors. This suggests that the recent market-up has been entirely driven by heavy share purchases among local investors.

Another significant relationship identified through the analysis is between the share market indices and the implementation of island-wide travel restrictions. Accordingly, the coefficient of travel restriction was recorded as -0.218393 and -0.162347 for S&P SL 20 and All Share Price Index respectively. This means that during the period of curfews imposed, S&P SL 20 has declined by 21% while ASPI dropped by 16%. This can be due to the hindered operations in Colombo Stock Exchange with the travel restrictions imposed by the Government. Mostly in the initial months, Colombo Stock Exchange had to be closed down and the CSE authorities initiated their first step to transfer its core operations to digital platforms in late June. Also, it was observed that with the announcement of curfews, most indexes weighted companies witnessed substantial selling pressure (Senewiratne, 2021). The results of the regression analysis can be justified by the above-mentioned factors.

Above findings can be used as a guide in understanding the behaviour of investors in the Colombo Stock Exchange during the pandemic which will be useful for potential entrants and existing investors in making well-informed decisions. Much research proved that comparative markets had brought negative returns, but a deep analysis of the market returns revealed that there is a possibility for earning high returns in the long run. This study refers solely to the companies listed on Colombo Stock Exchange and the stock market reflects only a small proportion of the entire economy. The findings of this study are arrived at based only on the observations during the period under scrutiny.

It is advisable to assess the impact of the pandemic on other companies which are not reflected in the stock market and a sector-wise analysis would bring more detailed findings. The researchers can employ different types of models such as VAR, ARCH and GARCH models. Researchers are advised to assess the impact of COVID-19 on economic factors like GDP, inflation, and interest rate, and the effects of COVID-19 on credit markets as well.

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