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| RESEARCH ARTICLE

Determining the Effects of Covid-19 on the Stock Prices of Public Enlisted Consumer and Goods Companies January 2020 – May 2020

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| ABSTRACT
The COVID-19 health crisis has been the most significant occurrence witnessed in practically all countries across the world since the beginning of 2020, especially in the Philippines. This study examined the impacts of the COVID-19 pandemic on the Philippine Stock Exchange daily prices of five IPO companies, focusing on the consumer and goods industry to identify its winners and losers. The literature review focused on the rapid spread of COVID-19 and its major impact on financial markets, as well as how the world responded with pandemic-like COVID-19 outbreaks. With the outbreak of the COVID-19, the world's stock markets were confronted with significant uncertainty. Furthermore, the COVID-19 crisis has been found to have damaged nearly every aspect of human life, and the strict approaches implemented, such as border closures, stay-at-home orders, and lockdowns, have greatly affected the economies and financial markets of many countries. It was also observed that even though the COVID-19 disruption was global, not all countries were impacted in the same way, and they did not respond in the same way.

| KEYWORDS

Philippine Stock Exchange, COVID-19, Lockdown, Financial Market, Recession

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1. Introduction

On December 31, 2019, Chinese authorities immediately confirmed the novel coronavirus or COVID-19 pandemic to the World Health Organization (WHO). Since then, it has spread worldwide, and the Philippines reported its first outbreak of novel coronavirus on January 30, 2020, continuously infecting a significant number of Filipinos. Domestic infections are causing chaos in the country's economic activities and value chains, causing demand to fall across the board. As a result, COVID-19's global disturbances are affecting economies of all sizes and income levels.

Moreover, as a result of a pandemic and government-mandated social distancing measures, COVID-19 has caused serious and severe damage in several sectors of the economy. The negative effect and scope of the economic downturn on individual households as a direct consequence of the pandemic are difficult to predict because there are several discrepancies surrounding the length of the crisis, such as the duration of "stay-at-home" restrictions and possibly even the affected sectors and post-crisis consumption and recovery.

On the other hand, the Philippine Stock Exchange (PSE) is a private and non-profit organization that was established to develop and maintain a fair, efficient and transparent and orderly market for the buying and selling of securities such as stocks, warrants, bonds, and others. It also offers an appropriate market for trading securities to individuals and businesses looking to invest their savings or excess assets in the acquisition of securities. In Addition, the PSE brings together enterprises that would like to raise funds by issuing new securities, and companies might have easier access to money by listing their shares on the stock exchange. Therefore, the PSE plays an important role in financing productive firms, which use the money for development and the expansion of new jobs. As a result, the PSE is essential to the Philippine economy's growth.

In this study, the researchers scrutinize the effects of the COVID-19 pandemic on the Philippine Stock Market daily prices of 5 IPO corporations, specifically the consumer and goods industry, and determine its winners and losers. Most of the businesses were forced to shut down or were forced to close down last March to June 2020 because of the Enhanced Community Quarantine. In fact, more than 17.7 %, accounting for 7.7 million Filipinos, were unemployed last April 2020, which is a record high (PSA,2020). Moreover, more than 90,000 businesses remained closed (DTI, 2020) in September 2020, months after easing quarantine restrictions. Hence, many of the companies that have an Initial Public Offering (IPO) plummeted, affecting their stock prices. On the other hand, as horrible as it sounds, some companies have the possibility to benefit from this pandemic. This research aims to answer these questions by observing the behaviour of the Philippine Stock Market from January 1, 2020 - May 31, 2020. This paper investigates the effect of the COVID-19 outbreak on the daily stock prices of publicly listed consumer and goods companies in the Philippines.

1.2. Statement of the Problem

The stock market's reaction to the COVID-19 pandemic and its economic ramifications has raised concerns and questions (Blancard & Desroziers, 2020). Furthermore, strict lockdown implementations, specifically in the Philippines, were one of the longest across the globe, hurt the country's economic growth, resulting in an economic recession that affected the Philippine stock market index. As a result, the following question will be addressed in this study:

1. Did Enhanced Community Quarantine (ECQ) negatively affect the stock market prices in selected companies in the consumer and goods industry from January 2020 to May 2020?
2. Did Enhanced Community Quarantine (ECQ) positively affect the stock market prices in selected companies in the consumer and goods industry from January 2020 to May 2020?
3. Is there a significant relationship between the Philippine Stock Exchange (PSE) prices towards the COVID-19 cases, deaths, and recoveries?

1.3. Hypotheses

H0: Covid-19 cases have no significant relationship with the volatility of stock market prices of the selected companies under the consumer and goods industry from January 2020 to May 2020.

H0: Covid-19 deaths have no significant relationship with the volatility of stock market prices of the selected companies under the consumer and goods industry from January 2020 to May 2020.

H0: Covid-19 recoveries have no significant relationship with the volatility of stock market prices of the selected companies under the consumer and goods industry from January 2020 to May 2020.

1.4. Scope and Limitations

The researchers chose to observe the "essential" industry, specifically those that are under the consumer goods and manufacturing industry. The researchers will focus on Century Pacific Food Corporation, Universal Robina Corporation, San Miguel Pure Foods Inc, Puregold Price Club Inc, and Jollibee Foods Corporation, which are IPO companies in the Philippines. Based on all the data collected, the researchers will have 102 observations per company from January 2020 – to May 2020. The data will be gathered from scholarly journals, the Philippine Stock Exchange, quarterly reports, and the financial records of the corporations in concern.

1.5. Significance of the Study

This academic study will prove beneficial sectors of society that are inclined in business, specifically the manufacturing and consumer goods industry, as this paper will try and unravel how different IPO companies have weathered this global pandemic. Therefore, the study will benefit the following:

Government: This study will serve as a basis for the government in developing or improving monetary and fiscal policies aimed at improving stock market returns in the Philippines.

Academe: The findings of this study will guide students, teachers, and academic personnel in the commerce, business, and economics branches of the academe in assessing the current impacts of the pandemic when it comes to stock market trading.

Corporations: Upon identifying the winners of this study, the result of this research aims to provide companies with policies that can help them to reflect income even in the face of a global health pandemic. In addition, this can be a motivational factor for such businesses that are not part of the food industry and consumer goods, where they can opt to venture and invest in companies that are mainly focused on consumer goods. This will gradually affect their profits as they adapt to the new normal that the world

is experiencing to date. This academic study will benefit companies that are in manufacturing and consumer goods as this paper will try and unravel how different companies have weathered this global pandemic.

Researchers: This study will benefit its researchers by expanding their knowledge and understanding about the effects of COVID-19 cases and deaths on the daily prices of the PSE.

Future Researchers: The findings of this study will serve as facts, foundations, and context for researchers trying to pursue related topics as this research (Keller & Lehmann, 2006; Brown & Eisenhardt, 1995; Marsh, 1987).

2. Literature Review

This chapter discusses the relevant literature and studies. Those included in this chapter helps in familiarizing with information that is relevant and related to the present study.

2.1. Increase of COVID-19 Cases

The rapid increase of COVID-19 has significantly affected global financial markets. It has added a new level of risk for investors, resulting in substantial losses in a short amount of time, and global stock markets have collapsed as investors fear the broader economic consequences of the coronavirus (Dayong Zhang, Min Hu & Qiang Ji, 2020; Min Liu, Wei-Chong Choo & Chien-Chiang Lee, 2020; Orhan Erdem, 2020; Di Mauro, & Gopinath, 2020). Apart from that, the COVID-19 pandemic has affected practically every aspect of human life, and the economy has been labeled a "black swan event" owing to its unanticipated severity, with financial markets throughout the world experiencing varying degrees of volatility in the aftermath of the pandemic, (Verma & Gustafsson, 2020). The stringent measures imposed, such as border closures, stay-at-home orders, and lockdowns, have severely affected many countries' economies and financial markets (Gormsen & Koijen 2020). However, the pandemic's repercussions and consequences are felt differently depending on our status as individual citizens and members of society (Maritza Vasquez, 2020).

The pandemic's negative impact on market economies has gradually decreased, and as of mid-April, it had officially begun to cut off. In terms of global impact, the coronavirus outbreak had the greatest impact in Asian emerging markets; however, it had the least impact in European emerging markets (Mert Topcu & Omer Serkan Gulal, 2020). The authors also discovered that the duration of the actual response time and the size of government stimulus packages are important in preventing the spread of this crisis (David Iheke Okorie & Boqiang Lin, 2021). Despite the fact that the COVID-19 disturbance was global, not all governments were affected in the same way, and they did not respond in the same way possible (Maretno Agus Harjoto, Fabrizio Rossi & John K. Paglia, 2020).

The pandemic's anxiety or distress as cases increased had a negative effect on the overall returns by raising the market premium demanded by investors. It lowered the expected return by influencing market growth projections (Aggarwal, S., Nawn, S., & Dugar, A., 2021).

2.2. Lockdown

The ways in which the world dealt with the COVID-19 outbreak was unimaginable in pandemic history, owing to the global lockdown, which had a negative impact on financial markets (Eleftheriou, K., & Patsoulis, P., 2020; Lekfuangfu, W. N. et al., 2020; Coibion, O, Gorodnichenko, Y. and Weber, M., 2020; Wagner, 2020; Mdaghri, Raghibi, Thanh, C. N., & Oubdi, 2020 and Mandel, A., & Veetil, V., 2020). Consequently, the risk of several waves of lockdowns persists, and economic agents will act with severe caution before a vaccine or suitable treatment is developed, as they expect the recession to last for many years (Kohlscheen et al., 2020). Furthermore, stringent lockout policies and a rise in reported cases around the world have had an effect on the majority of people. (Mdaghri, Raghibi, Thanh, C. N., & Oubdi, L.,2020; and Nikolopoulos, K., Punia, S., Schäfers, A., Tsinopoulos, C., & Vasilakis, C., 2020). This resulted in a liquidity disturbance on the stock market (Mdaghri, Raghibi, Thanh, C. N., & Oubdi, L., 2020); share prices fell significantly 20 to 50 percent in countries worldwide. (Davis, S. J., Liu, D., & Sheng, X. S.,2021; Coibion, O., Gorodnichenko, Y. and Weber, M., 2020; Aggarwal, S., Nawn, S., & Dugar, A., 2021).

On the other hand, South Korea only saw a minor reduction in the pandemic's start with lockdown regulations and restrictions. Taiwan, however, had none. China, the very first country to be impacted by the pandemic, saw a significant drop in stock prices at the same time (Davis, S. J., Liu, D., & Sheng, X. S.,2021; Mandel, & Veetil, V., 2020 and Huo, X., & Qiu, Z, 2020). As the pandemic worsened, strict lockdowns and widespread economic disruptions occurred at an alarming rate and scale in advanced and emerging markets (Baldwin, di Mauro, & Gopinath, 2020). Furthermore, the subsequent lockdown triggered by the COVID-19 crisis affected global supply lines, cutting aggregate demand and consumption of goods and services, which saw a large fall owing to severe income loss and poor consumer confidence (Vidya and Prabheesh, 2020).

2.3. Unemployment

COVID-19 has caused economic downturns and increased unemployment in a number of countries (Martin Hensher, 2020). COVID-19's toll, simply put, threatens to undo years of progress and push thousands of individuals into job loss, not just today but also tomorrow (Luca Bentura, 2020). The will to survive, perhaps the most basic of human needs (Maslow, 2017), is now being called into question in more places around the world. Additionally, the public health system, which had been massively underfunded for decades, was inadequate, and the underlying state of national health made the United States particularly vulnerable to COVID-19-related morbidity and mortality. However, as one would conclude, COVID-19's effects have not been felt equally (Sandro Galea, 2020). The negative effect of instability on household expenditure could affect both the depletion rate of savings and the magnitude of the crisis's repercussions. Also, many households are unaware of the crisis' duration or severity (Amory Martin & Brian Walsh, 2020). Simultaneously, the COVID-19 crisis has profoundly destroyed the idea of job stability, resulting in a high volume of job losses (International Labor Organization, 2020).

Moreover, many slow-developing countries and new emerging economies, on the other hand, are unable to take the same steps as developed or wealthy developing countries (Oliveira et al., 2020). This is made more complicated by the global economy's instability, which is expected to shrink by 2.8 % in 2020 and on a global scale, such a decline would imply a -12.5 % drop in the third quarter. This situation is even darker in developing economies, where economic revival will be considerably more difficult (Innes, 2020).

However, during economic expansions, an announcement of increased unemployment is "good news" to the stock market, whereas it is "bad news" during economic contractions. As a result, when there is an increase in unemployment, stock prices usually rise because the economy is in an expansion phase (John Boyd & Jian Hu, 2020).

2.4. Household Consumption

Households were confined to drastic changes as a result of the health crisis. People and the economy as a whole have been upended to an unprecedented degree in recent memory (Scott R Baker, Robert A Farrokhnia & Steffen Meyer, 2020). Furthermore, the frequency and severity with which the economy is crumbling have made it extremely difficult for policymakers to adequately target fiscal stimuli and credit provision to individuals and enterprises. And besides, nothing is understood on a scientific basis and through a number of people about how every individual changed their spending habits during this crisis (Fuster, A., G. Kaplan, & B. Zafar 2018). Additionally, as word spread about the COVID-19's effect in their area, people's spending habits shifted dramatically (Steffen Meyer, 2020). Overall, expenditure surged dramatically as a result of the need to stock up on essential home products and the anticipation of being unable to buy at stores (Steffen Meyer, 2020).

On the other hand, in comparison to the first two weeks of 2020, household spending rises by more than 40% between February 26 and March 10 (Michaela Pagel & Jeffrey Pontiff, 2020). In addition, grocery spending remained high through March 31, up 10.4 percent from the same period last year. Card spending is also increasing, which is consistent with people stockpiling goods (Michaela Pagel & Jeffrey Pontiff, 2020). Moreover, as the virus spread and far more people stayed home, we saw a 25% to 30% decrease in spending (Brian Walsh & Constantine Yannelis, 2020). Travel, entertainment, and restaurant spending are areas with the greatest declines in spending. Despite significant drops in nearly all categories during this time period, grocery and food delivery spending increased dramatically compared to earlier in the year (Brian Walsh & Constantine Yannelis, 2020).

Alongside that, as local and state governments responded to varying sizes and levels of urgency, the speed and timing of these spending increases differed considerably across people based on their geographic location (Robert A Farrokhnia, 2020). Consequently, we observed that lockdowns had a massive effect on consumer expenditure and wages and the households' economic expectations (Coibion, Gorodnichenko, & Weber, 2020).

2.5. Synthesis and Research Gap

According to previous studies, the resurgence of COVID-19 had a significant effect on global financial markets. The literature study clearly demonstrates that the COVID-19 shock was global, and not all countries were impacted or reacted in the same way. The ways in which the world dealt with the COVID-19 outbreak was unimaginable in pandemic history. Consequently, the pandemic triggered global supply and demand disturbances due to decreased labor supply and efficiency, as well as lockdowns, company closures, social disconnection, loss of wages, reduced household consumption, and decreasing firm expenditure. On the other hand, share prices fell significantly 20 to 50 percent in countries around the world, which caused a liquidity shock on the stock market. Moreover, the global stock markets have plunged as investors fear the coronavirus' broader economic repercussions.
Moreover, based on prior studies, COVID-19 has caused economic recessions, and rapid increases in unemployment in a number of countries and with the onset of the pandemic, unemployment in many parts of the world reached its highest level since the Great Depression. Besides that, the will to survive is being questioned in more places around the world. On the other hand, Households were confined to drastic changes as a result of the health crisis. As news spread about the COVID-19's impact in their

area, people's buying patterns changed substantially. Travel, entertainment, and restaurant spending are the areas with the greatest declines in spending. Despite significant drops in nearly all categories during this time period, grocery store and food delivery spending increased dramatically. Furthermore, the lockdowns had a massive effect on consumer spending and wages and on household economic expectations.

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2.6. Theoretical Framework

This study aims to perceive the impacts of COVID-19 cases on the consumer and goods companies of daily stock market prices in the Philippines.

According to a similar study (Anh and Gan,2020), the researchers used the Capital asset pricing model to measure the impact of COVID-19 cases on the stock market prices of Vietnam, in which results showed that the rise of cases negatively impacted the stock returns (Anh, and Gan, 2020). The researchers also used the Markov-Switching Autoregressive model and the Vector Auto Regression (VAR).

- The Capital Asset Pricing Model (CAMP) evaluates the relationships between systematic risk and anticipated return on assets, namely stocks (Kenton, 2021).

- Markov-Switching Autoregressive model incorporates time-variation in the parameters in the form of their state or regime specific values, which can determine the regime change from a lower to higher market volatility (Baek, Mohanty, and Mina, 2020); this model also can predict patterns and make predictions of the data.

- The Vector Auto Regression (VAR) is used to forecast systems of connected time series and study the dynamic influence of random disturbances on the system of variables, the Vector Auto Regression (VAR) is used. By treating every endogenous variable in the system as a function of p-lagged values of all endogenous variables in the system, the reduced form VAR approach avoids the necessity for structural modeling (Christiano, 2012; Lütkepohl & Krätzig, 2004; Stock & Watson, 2001; Smith, 1993).

These models are fitted and can be utilized in this research to determine the effects of COVID-19 on the Philippine stock market. The Capital Asset Pricing Model will be used by researchers in this study because it is the most relevant model for measuring the effects of COVID-19 in a developing country like the Philippines.

2.7. Conceptual Framework

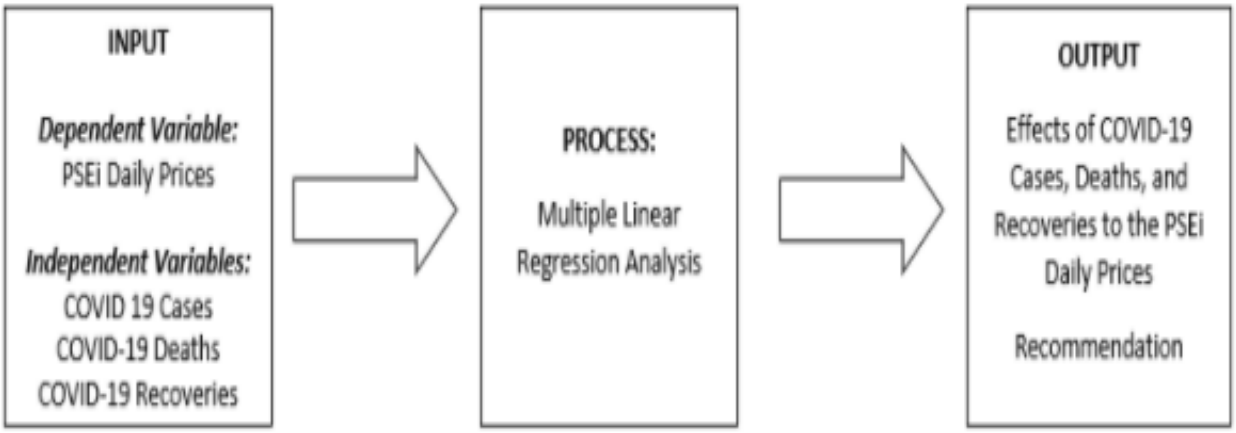

Table 1. Conceptual Framework

The researchers made a tabular representation of the conceptual framework; this basically explains the independent variables, COVID-19 cases, and COVID-19 deaths observed with the daily stock market prices as the dependent variable. Furthermore, factors such as lockdown, unemployment, and household consumption will be considered as factors that affect the stock market prices. Lastly, the output is where the researchers conclude if there are significant effects on the stock market prices on the consumer and goods industry due to the COVID-19 Pandemic.

3. Methodology

This chapter explains the approach that will be utilized to estimate the COVID-19 Cases and fatalities impact on the daily pricing of five consumer goods businesses on the Philippine Stock Exchange (PSE). Moreover, it covers the researcher's methodology, data collection, and evaluation. Lastly, this part of the research paper presents how data is processed and analyzed statistically.

3.1. Research Design

This research will use descriptive and correlational methods in gathering the necessary data for this analysis to evaluate the relationship of the COVID-19 cases, deaths, and the daily prices of five IPO consumer goods companies in the PSE. The descriptive approach is a type of data analysis that involves describing and summarizing data logically to find patterns in the data. Furthermore, the researchers utilized correlational methodologies, which required the use of several statistical instruments to determine the degree to which the variables were related to one another.

3.2. Data Gathering Procedure

The researchers used secondary data to answer the question of whether there is a connection between the rise in COVID-19 cases and deaths and the daily stock market prices of the PSE. The data will be taken from the Department of Health (DOH) for COVID-19 deaths and cases and the Philippine Stock Exchange (PSE) for the daily stock market prices of the five companies, which will be verified using the financial statements of the listed IPO companies.

3.3. Statistical Treatment of Data

The researchers will be using statistical software such as EViews and Microsoft Excel. The data will be subjected to a diagnostic test and multiple linear regression.

3.3.1. Breusch-Pagan-Godfrey Test.

This is a regression test for error heteroscedasticity, often known as the Breusch-Pagan test. In contrast to homoscedasticity, which means "identical scatter," heteroscedasticity indicates "differently distributed." Homoscedasticity is a crucial assumption in regression; if it fails, you cannot perform regression analysis. On the other hand, this test focuses on how errors grow when the explanatory variable, Y, increases. According to the technique, error variances are a linear function of one or more explanatory variables in the model. That is, heteroscedasticity can still exist in your regression model, but any inconsistencies (if they exist) have nothing to do with Y-values.

N * R2 (with k degrees of freedom)

Figure 1

Where:

n = sample size
R2 = R2 (Coefficient of Determination) of the regression of squared residuals from the original regression.
k = number of independent variables.

3.3.2. Multicollinearity testing.

This test occurs when two or more independent variables are strongly correlated with one another. A regression model means that an independent variable can be estimated from other independent variables, which will determine if there is a positive or negative relationship and prediction between the dependent and independent variables. Also, it is the degree to which the independent variable is associated with the other independent variables in the regression equation is one of the factors that influence the standard error of a partial regression coefficient. When all other factors are equal, an independent variable with a high degree of correlation with one or more other independent variables would have a significant standard error. This suggests that the partial regression coefficient is inherently unpredictable, varying widely from one sample to the next.

3.3.3. Durbin Watson.

In regression analysis residuals, a statistic measures autocorrelation or serial correlation. The Durbin-Watson statistic has a fixed value ranging from 0 to 4. A score of 2.0 indicates that there is no autocorrelation in the sample. Positive autocorrelation is defined as a value smaller than 2, and negative autocorrelation as a value between 2 and 4. The resemblance of a time series over repeated time periods is referred to as autocorrelation.

The Durbin Watson test hypotheses are as follows:

$\mathbf{H_0}$ = no first order autocorrelation.
$\mathbf{H_1}$ = first order correlation exists.

(**Note**: For a first order correlation, the lag is a one-time unit).

3.3.4. Multiple Linear Regression (MLR).

This is a statistical strategy that uses a large number of explanatory variables in order to predict the result of a response variable. Additionally, multiple regression is a subset of linear (OLS) regression that includes just one explanatory variable.

The above-mentioned linear regression equation:

$$Y = a + bX1 + bX2 + Ui$$

Figure 2

Where:

*bX*1 = Independent Variable COVID-19 Cases

*bX*2 = Independent Variable COVID-19 Deaths

bX3 = Independent Variable COVID-19 Recoveries

Y = Dependent Variable PSE Prices

Ui = Error term

The slope of the line is *b*, and *a* is the intercept (the value of *y* when *x* = 0)

4. Results and Discussion

This proposed research used panel data on stock prices of IPO companies in the Philippines listed in the retail industry from January 2020 to May 2020. The Department of Health (DOH) COVID-19 Case Bulletins were also used to track the number of COVID-19 cases, deaths, and recoveries throughout the country. Stock prices for Century Pacific Food Corporation, Universal Robina Corporation, San Miguel Pure Foods Inc, Puregold Price Club Inc, and Jollibee Foods Corporation are included in the panel data, which was largely collected from the Philippine Stock Exchange (PSEi).

Additionally, COVID-19 daily cases, COVID-19 fatalities, and COVID-19 recoveries were utilized as independent variables to reflect the impact of COVID-19 on the stock market. The data on stock prices for these five companies are categorized as the dependent variable to assess the ongoing pandemic's financial market implications. Furthermore, the study will have 102 observations from the abovementioned time period for each company.

As stated by (Fagerholm, Hanna, 2021), current stock prices are an accurate picture of the entire market situation. They also utilized descriptive statistics to develop transitory coefficients that included the whole data set. Table 2 presents descriptive data for the stock prices of the five listed companies and COVID-19 instances from January 2020 to May 2020, while Table 3 presents descriptive statistics for the COVID-19 independent variables.

Table 2. Descriptive Statistics (Dependent Variables)

	CPFC	URC	PPCI	JFC	SMPI
Mean	14.24219	130.5184	40.28812	159.2500	65.54100
Median	14.67600	129.1100	39.65000	148.6000	63.75000
Maximum	15.30800	159.7800	49.00000	217.0000	84.50000
Minimum	9.955000	93.75000	29.00000	91.10000	45.00000
Std. Dev.	1.067609	17.06443	4.896765	37.92587	10.65772
Skewness	-2.238351	-0.197881	-0.046245	-0.039782	-0.157492
Kurtosis	8.367912	2.146438	2.140299	1.706838	1.879005
Jarque-Bera	205.5996	3.725194	3.146318	7.064103	5.649349
Probability	0.000000	0.155269	0.207389	0.029245	0.059328
Sum	1438.461	13182.36	4069.100	16084.25	6554.100
Sum Sq. Dev.	113.9790	29119.48	2397.831	143837.1	11245.11
Observations	101	101	101	101	100

Table 3. Descriptive Statistics (Independent Variables)

	CASES	REC	DEATHS
Mean	182.5347	60.79208	8.277228
Median	169.0000	1.000000	3.000000
Maximum	1162.000	381.0000	39.00000
Minimum	0.000000	0.000000	0.000000
Std. Dev.	208.2616	90.47379	10.44904
Skewness	1.396190	1.476593	1.215228
Kurtosis	6.275329	4.441154	3.736351
Jarque-Bera	77.96008	45.44255	27.14093
Probability	0.000000	0.000000	0.000001
Sum	18436.00	6140.000	836.0000
Sum Sq. Dev.	4337289.	818550.6	10918.24
Observations	101	101	101

4.1. Econometric Model

The Ordinary Least Squares (OLS) multiple regression method is used in this study to investigate the relationship between the dependent variable, stock price, and the independent variables, COVID-19 cases, deaths, and recoveries. In addition, histograms and correlograms will be utilized to describe the data and findings. Figure 3 illustrates the OLS multiple regression equation.

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots \beta_p x_{ip} + \varepsilon_i \text{ for } i = 1,2, \dots n.$$

Figure 3.

Where;

$\beta_0, \beta_1, \ldots, \beta_p$

are the parameters,

$x_1, x_2, \ldots, x_p$

are the explanatory variables

ε, is the error term

The equation below describes the econometric model discussed in multiple regression for this research study.

CPFC = B_0 + $CASES_1$ + $DEATHS_2$ + $RECOVERIES_3$ + Ɛ

URC = B_0 + $CASES_1$ + $DEATHS_2$ + $RECOVERIES_3$ + Ɛ

PPCI = B_0 + $CASES_1$ + $DEATHS_2$ + $RECOVERIES_3$ + Ɛ

JFC = B_0 + $CASES_1$ + $DEATHS_2$ + $RECOVERIES_3$ + Ɛ

SMPI = B_0 + $CASES_1$ + $DEATHS_2$ + $RECOVERIES_3$ + Ɛ

Figure 4.

Where;

***B0** is the intercept*

***Ɛ** is the error term*

4.2. Diagnostic Tests

4.3. Test for Heteroscedasticity

4.3.1. Breusch-Pagan-Godfrey Test

A test for heteroscedasticity was created in 1979 by Trevor Breusch, Leslie G. Godfrey, and Adrian Pagan. The assumption of homoscedasticity, which is the polar opposite of heteroscedasticity, is crucial when employing OLS regression. The Prob F of the Chi-Square regression equation is used, with heteroscedasticity present if the value is less than 0.05 and homoscedasticity present if the value is more than 0.05.

Results show that CPFC PPCI (Figure 5 and 7) is less than 0.05. Hence, heteroscedasticity is present. However, URC, JFC, and SMPI's (Figure 6, 8 and 9) P-value exceeding 0.05, meaning homoscedasticity is present.

Century Pacific Food Corporation (CPFC)

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	7.586179	Prob. F(3,97)	0.0001
Obs*R-squared	19.19372	Prob. Chi-Square(3)	0.0002
Scaled explained SS	42.27952	Prob. Chi-Square(3)	0.0000

Figure 5.

Universal Robina Corporation (URC)

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	2.313382	Prob. F(3,97)	0.0808
Obs*R-squared	6.743830	Prob. Chi-Square(3)	0.0805
Scaled explained SS	4.304793	Prob. Chi-Square(3)	0.2304

Figure 6.

Pure gold Price Club Inc. (PPCI)

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	4.899537	Prob. F(3,96)	0.0033
Obs*R-squared	13.27805	Prob. Chi-Square(3)	0.0041
Scaled explained SS	14.25553	Prob. Chi-Square(3)	0.0026

Figure 7.

Jollibee Foods Corporation (JFC)

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.375204	Prob. F(3,97)	0.2550
Obs*R-squared	4.120489	Prob. Chi-Square(3)	0.2487
Scaled explained SS	3.512255	Prob. Chi-Square(3)	0.3192

Figure 8.

San Miguel Purefoods Inc. (SMPI)

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.711030	Prob. F(3,97)	0.5477
Obs*R-squared	2.173262	Prob. Chi-Square(3)	0.5372
Scaled explained SS	3.875276	Prob. Chi-Square(3)	0.2753

Figure 9.

4.4. Test for Multicollinearity

4.4.1. Variance Inflation Factor

The Variance Inflation factor is used to detect multicollinearity, where, if present, two explanatory variables are highly linearly correlated. Using the Centered VIF, a result of higher than 10 indicates multicollinearity. The results presented in Figures 10-14 shows that there is no multicollinearity

Century Pacific Food Corporation (CPFC)

Variance Inflation Factors
Date: 09/26/21 Time: 17:39
Sample: 1 102
Included observations: 101

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.012365	2.032321	NA
CASES	2.12E-07	2.651919	1.493300
REC	1.08E-06	2.099837	1.442191
DEATHS	6.99E-05	2.028595	1.241658

Figure 10.

Universal Robina Corporation (URC)

Variance Inflation Factors
Date: 09/26/21 Time: 17:42
Sample: 1 102
Included observations: 101

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1.468286	2.032321	NA
CASES	2.51E-05	2.651919	1.493300
REC	0.000129	2.099837	1.442191
DEATHS	0.008298	2.028595	1.241658

Figure 11.

Puregold Price Club Inc. (PPCI)

Variance Inflation Factors
Date: 09/26/21 Time: 17:46
Sample: 1 102
Included observations: 100

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.196607	2.053520	NA
CASES	3.30E-06	2.658020	1.485122
REC	1.69E-05	2.100355	1.435968
DEATHS	0.001091	2.032599	1.236223

Figure 12.

Jollibee Foods Corporation (JFC)

Variance Inflation Factors
Date: 09/26/21 Time: 17:48
Sample: 1 102
Included observations: 101

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	5.785421	2.032321	NA
CASES	9.90E-05	2.651919	1.493300
REC	0.000507	2.099837	1.442191
DEATHS	0.032697	2.028595	1.241658

Figure 13.

San Miguel Purefoods Inc. (SMPI)

Variance Inflation Factors
Date: 09/26/21 Time: 17:50
Sample: 1 102
Included observations: 101

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.540973	2.032321	NA
CASES	9.26E-06	2.651919	1.493300
REC	4.74E-05	2.099837	1.442191
DEATHS	0.003057	2.028595	1.241658

Figure 14.

4.5. Empirical Results

The following are the findings of the multiple linear regression for each dependent variable using the statistical tool EViews. Figure 16 shows the results of the multiple linear regression for Century Pacific Food Corporation (CPFC), figure 18 shows the results of the multiple linear regression for Universal Robina Corporation (URC), figure 20 shows the results of the multiple linear regression for Puregold Price Club Inc. (PPCI), figure 22 shows the results of the multiple linear regression for Jollibee Foods Corporation (JFC), and lastly figure 24 shows the results of the multiple linear regression for San Miguel Purefoods Inc. (SMPI). Given the empirical results of the OLS multiple linear regression using EViews, this research study came up with the following econometric equations;

Century Pacific Food Corporation (CPFC)

CPFC = 14.67979 + -0.001591 + -0.057781 + 0.005305 + *Ui*

Figure 15.

Where a decrease in COVID-19 cases and deaths would equate to an increase in Century Pacific Food Corporation (CPFC) stock price, while on the other hand, an increase in COVID-19 recoveries would equate to an increase in CPFC stock price.

Dependent Variable: CPFC
Method: Least Squares
Date: 09/21/21 Time: 14:16
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.67979	0.115922	126.6348	0.0000
CASES	-0.001591	0.000468	-3.403720	0.0010
REC	0.005305	0.001051	5.045298	0.0000
DEATHS	-0.057781	0.008729	-6.619634	0.0000

R-squared	0.441814	Mean dependent var	14.23489
Adjusted R-squared	0.424371	S.D. dependent var	1.070453
S.E. of regression	0.812155	Akaike info criterion	2.460926
Sum squared resid	63.32115	Schwarz criterion	2.565133
Log likelihood	-119.0463	Hannan-Quinn criter.	2.503101
F-statistic	25.32859	Durbin-Watson stat	0.674849
Prob(F-statistic)	0.000000		

Figure 16.

Universal Robina Corporation (URC)

URC = 144.3086 + -0.030640 + -1.115878 + 0.016112 + *Ui*

Figure 17.

Whereas a decrease in COVID-19 cases and deaths would result in an increase in the stock price of Universal Robina Corporation (URC), an increase in COVID-19 recoveries would result in a rise in the stock price of URC.

Dependent Variable: URC
Method: Least Squares
Date: 09/21/21 Time: 14:28
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	144.3086	1.249453	115.4974	0.0000
CASES	-0.030640	0.005039	-6.080349	0.0000
REC	0.016112	0.011333	1.421638	0.1584
DEATHS	-1.115878	0.094081	-11.86081	0.0000

R-squared	0.746720	Mean dependent var	130.4319
Adjusted R-squared	0.738805	S.D. dependent var	17.12812
S.E. of regression	8.753704	Akaike info criterion	7.216009
Sum squared resid	7356.224	Schwarz criterion	7.320216
Log likelihood	-356.8004	Hannan-Quinn criter.	7.258183
F-statistic	94.34257	Durbin-Watson stat	0.906428
Prob(F-statistic)	0.000000		

Figure 18.

Puregold Price Club Inc. (PPCI)

PPCI = 38.40388 +-0.001666 + -0.078025 + 0.046255 + *Ui*

Figure 19.

Whereas a decrease in COVID-19 cases and deaths would result in an increase in the stock price of Puregold Price Club Inc. (PPCI), an increase in COVID-19 recoveries would result in a rise in the stock price of PPCI.

Dependent Variable: PPCI
Method: Least Squares
Date: 09/21/21 Time: 14:42
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	38.40388	0.446399	86.03041	0.0000
CASES	-0.001666	0.001800	-0.925484	0.3570
REC	0.046255	0.004049	11.42337	0.0000
DEATHS	-0.078025	0.033613	-2.321298	0.0224

R-squared	0.608391	Mean dependent var	40.29050
Adjusted R-squared	0.596153	S.D. dependent var	4.921375
S.E. of regression	3.127483	Akaike info criterion	5.157512
Sum squared resid	938.9904	Schwarz criterion	5.261719
Log likelihood	-253.8756	Hannan-Quinn criter.	5.199687
F-statistic	49.71409	Durbin-Watson stat	0.895134
Prob(F-statistic)	0.000000		

Figure 20.

Jollibee Foods Corporation (JFC)

JFC = 191.6989 + -0.066579 + -2.337048 + -0.023071 + Ui

Figure 21.

Whereas a decrease in COVID-19 cases, deaths and recoveries would result in an increase in the stock price of Jollibee Foods Corporation (JFC).

Dependent Variable: JFC
Method: Least Squares
Date: 09/21/21 Time: 14:48
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	191.6989	2.445256	78.39623	0.0000
CASES	-0.066579	0.009862	-6.751049	0.0000
REC	-0.023071	0.022180	-1.040169	0.3009
DEATHS	-2.337048	0.184122	-12.69290	0.0000

R-squared	0.800063	Mean dependent var	158.7125
Adjusted R-squared	0.793815	S.D. dependent var	37.72832
S.E. of regression	17.13153	Akaike info criterion	8.558897
Sum squared resid	28174.99	Schwarz criterion	8.663104
Log likelihood	-423.9448	Hannan-Quinn criter.	8.601071
F-statistic	128.0502	Durbin-Watson stat	1.099818
Prob(F-statistic)	0.000000		

Figure 22.

San Miguel Purefoods Inc. (SMPI)

SMPI = 74.57870 + -0.015868 + -0.727485 + -0.001437 + Ui

Figure 23.

Whereas a decrease in COVID-19 cases, deaths and recoveries would result in an increase in the stock price of San Miguel Purefoods Inc. (SMPI).

Dependent Variable: SMPI
Method: Least Squares
Date: 09/21/21 Time: 15:00
Sample (adjusted): 1 100
Included observations: 100 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	74.57870	0.693146	107.5945	0.0000
CASES	-0.015868	0.002796	-5.676268	0.0000
REC	-0.001437	0.006287	-0.228547	0.8197
DEATHS	-0.727485	0.052192	-13.93853	0.0000

R-squared	0.798674	Mean dependent var	65.54100
Adjusted R-squared	0.792382	S.D. dependent var	10.65772
S.E. of regression	4.856199	Akaike info criterion	6.037567
Sum squared resid	2263.936	Schwarz criterion	6.141774
Log likelihood	-297.8784	Hannan-Quinn criter.	6.079741
F-statistic	126.9460	Durbin-Watson stat	0.976894
Prob(F-statistic)	0.000000		

Figure 24.

5. Conclusion

5.1. Discussions and Interpretation of Findings

This study demonstrated how favourable sectors of society that are oriented in business, particularly the retail and goods industry, have coped with the global pandemic, as this research untangled how various companies have dealt with the COVID-19 outbreak. Moreover, the researchers unravelled that COVID-19 cases, deaths and recoveries negatively affect the stock market prices of 4 out of 5 consumer and goods companies, which concluded that an increase in COVID-19 cases and deaths affects the stock market price negatively.

The researchers measured the relationship between COVID-19 Cases, Deaths and Recoveries to the Daily stock market prices of 5 consumer and goods companies from January 1, 2020, to May 30, 2020, as the health crisis started with a total of 101 observations per company. Results show that there is a significant relationship between PSEi daily prices (Dependent Variable) and COVID-19 Cases, Deaths and Recoveries (Independent Variable).

Given the relationship between the dependent and independent variables, the outcome from JFC, SMPI, URC, and PPCI showed the highest correlation with an R2 value of 0.80 (JFC), 0.79 (SMPI), 0.74 (URC) and 0.60 (PPCI), which reflects that decrease in COVID-19 cases, deaths and recoveries would result in an increase in the stock price of the said companies. On the other hand, CPFC showed the lowest significance with an R2 value of 0.44, meaning that an increase in COVID-19 cases and deaths has a minor impact on the daily stock market price of CPFC. On the other hand, Results show that heteroscedasticity is present in three of the four models tested. However, URC, JFC and SMPI's P-value exceeding 0.05 (Figure 4, 6 and 7) indicates homoscedasticity is present, whereas CPFC, PPCI and other models' P values are lower. Consequently, there is no multicollinearity present, according to the results shown in Figures 8-12.

Lastly, Anh and Gan 2020 conducted a similar study. Using panel-data regression models, similar results showed that the daily increase in the number of confirmed COVID-19 cases has a negative impact on stock returns. Prior to the lockout, COVID-19 had a significant unfavourable link with Vietnam's stock returns. In other words, the COVID-19 epidemic wreaked havoc on Vietnam's stock markets, which was unsurprising.

5.2. Recommendations

1. Knowing that Covid-19 Cases, Deaths, and lockdowns have a negative impact on the PSEi daily prices, this study can help the government supplement new economic policies that can be applied in a pandemic. These policies on regulations protecting the business owners as well as its workers for businesses reopen and slowly regain the country's economic growth.

2. Future researchers may opt to observe other IPO registered sectors such as the Financial, Transportation and Mining, and Oil industries to examine the effects of Covid-19 on their respective fields.

3. Future researchers can also use other statistical tests such as ADF, Histogram Normality test, and the Granger causality test to measure the relationship between the variables. On the other hand, other variables such as GDP, GNP and consumption can also be observed to scrutinize the volatility of the Philippine Stock Market.

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