IMPACT OF THE COVID-19 PANDEMIC ON STOCKS MARKET PERFORMANCE OF SERVICE INDUSTRY IN INDONESIA

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ABSTRACT
In March 2020, Corona Virus Disease (COVID-19) was officially declared a pandemic. As a result, the economic and financial sectors, especially business activities that involve inter-actions between people severe due to the physical distancing policy. Several studies have analyzed the impact of the pandemic on the economic and financial sectors, but none have specifically discussed the impact on the service sector, especially in Indonesia. This study aims to analyze the impact of COVID-19 on abnormal returns and abnormal volume of stocks in the service industry in Indonesia. Using the event study method, three business sectors most affected by COVID-19 in the service industry are investigated. Impact of the company's internal factors on the cumulative abnormal return is also examined using the robust least square regression method. This study finds a negative stock market reaction to the pandemic and social distancing announcement, and positive reaction for announcement of national economic recovery program and reopening economic activity with health proto-col. All events had a negative impact on the abnormal volume of the stocks. Finally, either size or liquidity is found to be a significant driver of abnormal returns.

KEYWORDS	*Cumulative Abnormal Return, Abnormal Volume, COVID-19 Pandemic, Stock Market.*

INTRODUCTION

The World Health Organization officially declared the corona virus (COVID-19) a global pandemic on March 11, 2020. The COVID-19 outbreak began and continues, affecting almost all countries in all parts of the world with an expeditious rate of spread and transmission. The first positive case of COVID-19 in Indonesia was announced on March 3, 2020 and after that the daily positive cases experienced a steep increase. The peak occurred in mid-2021 with the highest number of daily positive cases of 56,757 people, and the highest number of daily death cases of 2,048 people.

The existence of the COVID-19 pandemic then became the main reason for the crisis in all fields, especially in the health and economic sectors. Indonesian government prioritizes public health through a physical distancing policy or more commonly known as Large-Scale Social Restrictions (PSBB) to avoid and control the expansion of COVID-19 transmission. PSBB implementation is based on Government Regulation (PP) Number 21 of 2020 concerning Large-Scale Social Restrictions in the Context of Accelerating the Handling of Corona Virus Disease 2019. Apart from that, the government seeks to maintain, protect, and improve the economic capacity with Government Regulation of the Republic of Indonesia No. 23 of 2020 dated May 11 2020 concerning Implementation of the National Economic Recovery Program in the Context of Supporting State Financial Policies for Handling the Corona Virus Disease 2019 Pandemic and/or Facing Threats that Endanger the National Economy and/or Financial System Stability and Rescue the National Economy.

The PSBB policy implementation then causes a significant decline in the service sector performance, which produces intangible products and is closely related to human interaction. A survey held by Statistics Indonesia (BPS) in 2020 shows that three business sectors have experienced the highest decline in income, namely the accommodation, food, and beverage service sector by 92.47%; other service sector by 90.90%; and the transportation and warehousing service sector by 90.34%.

The pandemic also indirectly affected investor sentiment in the capital market. In the March of 2020, the Jakarta Composite Index (JCI) performance experienced a significant decline in conjunction with the first outbreak of COVID-19 in Indonesia. The dynamics in the equity market were also reflected by changes in stock trading volume. The uncertainty in economic conditions had caused investors to hesitate to make a transaction, causing a decrease in trading volume. This decrease might lead to lower liquidity and higher bid-ask spreads, which could have a negative influence on stock returns.

Efficient market hypothesis (EMH) expresses that normally, stock prices can be affected swiftly by all available information in the market. This will produce normal returns. However, behavioral finance argues that investors are not always rational, making it difficult to predict the market's reaction to an event. As a result of the nature of these investors can produce abnormal returns (Ross, et al., 2019).

One of the analytical methods for analyzing the impact of a case on the capital market is the event study by Ball and Brown (1968). Prior research regarding impact of the lockdown announcement on the stock market using event study method with samples from various countries was conducted by Pandey & Kumari (2021) and Xie, et al (2022). Both studies show a negative impact of lockdown announcements on the stock market. Similar study also conducted by Sun, et al., (2021) that measure the impact of pandemic on the stock market in China. The results show that pandemic has negatively influenced the stock market and that there is a stronger positive correlation between individual investor sentiment and stock returns. Bhattacharjee, et al., (2022) conducted a study which showed the results that trading volume showed varying reactions according to the type and sentiment of news about the company in India. This study provides empirical evidence that various

categories of company-specific corporate news generate market reactions on the day of news release in the Indian market.

Previous research has primarily focused on the overall effects of COVID-19. Even when studies delve into specifics events, their scope often revolves around negative occurrences during the pandemic, such as the declaration of the pandemic, imposition of lockdowns, and layoffs. However, amidst the pandemic, governments have also implemented policies deemed positive. For instance, there have been announcements regarding reopening and financial stimulus packages like Australia's AUD66.4 billion stimulus and AUD130 billion JobKeeper package. In Indonesia, both types of events have transpired. Negative events include the pandemic declaration and lockdowns, while positive events are reopening announcement and the PEN (National Economic Recovery) program. Our aim is to provide a holistic perspective of the impact of COVID-19 related events in Indonesia, encompassing both positive and negative episodes, as each event can significantly influence the trajectory of the Indonesian economy. Furthermore, most of the previous research has only analyzed the effects of the pandemic on certain sub-sectors like hospitality and tourism, without studying it at granular level, that is the industries most affected by pandemic in Indonesia.

The objective of this study is to analyze the impact of events related to COVID-19 on the performance of service industry stocks in Indonesia. The events studied were divided into four events, two negative events; the initial statement on the pandemic and the initial policy on PSBB which marked the start of the lockdown; as well as two positive events; the PEN program which marks the government's concrete efforts in the economic sector and the implementation health protocol policy for the community which marks the reopening of the lockdown. The impact on stock performance is proxied through the CAR and abnormal volume. Besides, non-event factors which include company characteristics were also analyzed to identify their effect on stock performance in relation to the COVID-19 events.

The market is said to be efficient when the actors involved can react quickly and accurately as new information appears and pushes the market towards a new equilibrium (Hartono, 2017). This condition is achieved with the assumption that investors are prudent and logical to monitor all the information circulating in the market. However, not all information can be monitored directly. Investors sometimes do not behave rationally, causing anomalies in the stock market, especially when unusual events such as a pandemic occur, and news related to them circulates a lot.

Rahman, et al (2021) explore the impact of COVID-19 and government policies on the stock returns of 200 companies listed on the Australian capital market. The research was conducted for two negative events (early COVID-19 announcement by WHO and pandemic declaration) and two positive events (AUD66.4 billion stimulus announcement and AUD130 billion JobKeeper package). This study found that there was a negative reaction from the stock market to the pandemic announcement. While the stock market only reacted positively to the JobKeeper package. Floros, et al., (2021) analyze the impact of information complexity from layoff announcements on abnormal returns and abnormal volume on stock prices.

The result shows no evidence of abnormal stock returns when there were layoffs in the US during the pandemic, but stock trading volume increased specifically on the day of the event, the day after the event, and became more unstable afterwards.

In Indonesia, there have been several research with event study method observing the market performance during the pandemic. Astuti & Alfie (2021) examine the existence of significant differences in the cumulative abnormal return (CAR) value before and after the pandemic. The result showed that there were significant differences in CAR before and after the first announcement of the COVID-19 case in Indonesia. Lee & Setiawati (2021) measure the impact of pandemic on the most liquid company stocks in Indonesia within IDX30 category. It showed that there were significant differences between abnormal return and abnormal volume before and after the announcement of the first case of COVID-19. Talumewo, et al., (2021) analyze the impact of the PSBB announcement on the shares of state-owned companies and showed that there was a significant change of abnormal return values before and after the implementation of the PSBB.

Investors' decision making to transact in the stock market is not only influenced by events that are happening in the economy. The company's fundamental factors are also taken into consideration. These factors include company size (market capitalization), leverage ratios, liquidity ratios, and profitability ratios which indirectly affect the return on company shares. According to Rahman et al (2021), investors who hold shares in companies with small market capitalization behave more actively to both positive and negative events during COVID-19 case. CAR also responds positively to the liquidity ratio, which may indicate that investors perceive high liquidity ratios as a signal of anticipation by management in facing liquidity crises.

Based on the theory and previous empirical research, this study aims to address two principal objectives delineated in Figure 1. The first objective is to analyze the impact of COVID-19 on the performance of the service sector stock market in Indonesia which will be answered in research hypotheses 1-4. The second objective is to analyze the internal factors of service sector companies that have a significant impact on the company's stock performance which will answer hypotheses 5-8.
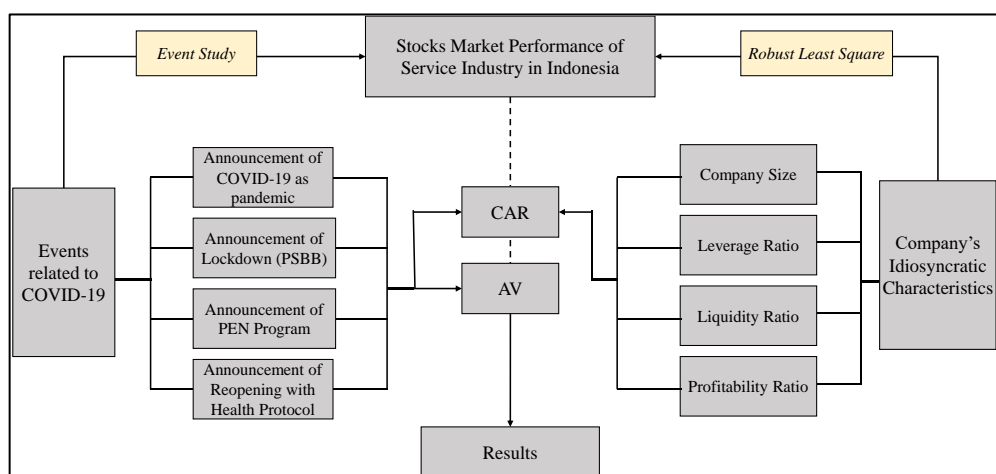
Figure 1. Conceptual Framework

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The research hypotheses in this study are as follows:

H1: Negative events of the start of the COVID-19 pandemic have a negative (positive) effect on CAR and abnormal volume in the service sector in Indonesia.

H2: Negative event of the announcement of the PSBB lockdown has a negative (positive) effect on the CAR and abnormal volume in the service sector in Indonesia.

H3: The positive events of the National Economic Recovery (PEN) policy have a positive (negative) effect on CAR and abnormal volume in the service sector in Indonesia.

H4: The positive event of reopening the implementation of health procedures (reopening) has a positive (negative) effect on CAR and abnormal volume in the service sector in Indonesia.

H5: Company size has a positive (negative) influence on the CAR of the service sector stock market in Indonesia.

H6: The Leverage Ratio has a positive (negative) influence on the CAR of the service sector stock market in Indonesia.

H7: The Liquidity Ratio has a positive (negative) influence on the CAR of the service sector stock market in Indonesia.

H8: Profitability ratios have a positive (negative) influence on the CAR of the service sector stock market in Indonesia.

RESEARCH METHOD

There are two main objectives in this research and each objective is answered by two different research methods. Firstly, it aims to assess the effect of COVID-19 on Indonesia's service sector stock market, investigated via event study analysis. This entails an examination of external factors, specifically events associated with the COVID-19 pandemic, on the performance of the service sector stock market, analyzed through Cumulative Abnormal Returns (CAR) and Average Volume (AV). Secondly, it seeks to evaluate the influence of internal company factors on the performance of service sector company CAR, employing robust least squares (RLS) regression.

The case observed in this study was the COVID-19 event, specifically four event points as follows: the initial announcement of COVID-19 as pandemic on March 11, 2020; News of the Large-Scale Social Restrictions (PSBB) policy implementation on March 31, 2020; Declaration for the National Economic Recovery (PEN) program on 11 May 2020; and announcement of policy regarding reopening economic activity with health protocol on June 19, 2020. Estimation period ranges from 250 days (roughly one year of stock trading) to 50 days prior to each event. The event window used in this study is limited to seven days before and after the event, bringing a total of 15 days, as shown in Figure 1. Xie, et al. (2022) argue the direct effect of government policy on the stock market can be seen in shorter event windows, while in the longer event window, the momentum effect of the policy can be observed. Considering the policy events to be studied, abnormal returns and volume will be analyzed in several observation periods, namely from [-7, +7] to [-3, +3]. The use of this observation period also refers to Rahman, et al. (2021). There was no uniformity in previous studies regarding the selection of event window

ranges. However, a shorter span can reduce the possibility of confounding events thereby increasing the reliability of the event study Bhattacharjee (2022).
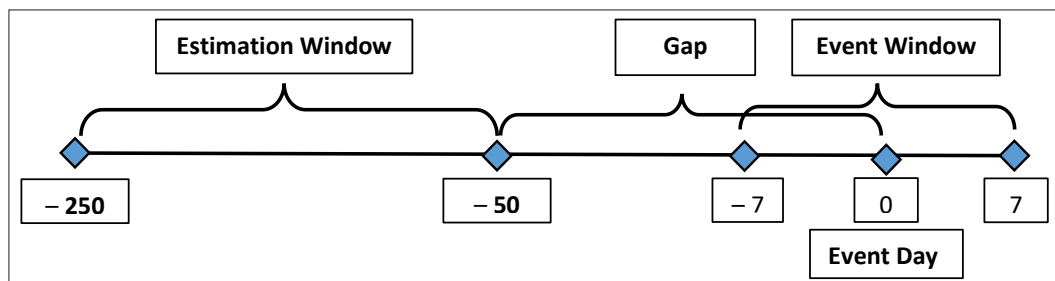
Figure 2. Set up of The Event Study

At the event point implementation of PSBB policy, there are two negative event dates included in the estimation window and could potentially cause bias in the estimation results. To overcome itu, a dummy variable was added to the estimation model, where Dt=1 for March 11 2020 and March 31 2020 and Dt=0 for other dates. In many applications there are variables that cannot be defined on a scale and are qualitative in nature can be quantified by constructing variables that take values artificially, for example, 1 and 0 where "1" usually indicates the presence of the attribute and "0" usually indicates the absence of the attribute (Yip and Tsang, 2007).

The affected stock market in this study is as stated in a survey conducted by the BPS, three business sectors most affected by pandemic, especially those engaged in the service sector. Thus, the share price of companies in the service sector that are listed on the Indonesian stock exchange is used as a research observation. The event study method was carried out on cumulative abnormal return (CAR) and abnormal volume.

Cumulative abnormal return (CAR)

The event study method is carried out by analyzing the cumulative abnormal return at the time of the COVID-19 period. Abnormal return is the difference between actual return and expected return. Expected return is calculated using the Fama French three factor model (FF3FM) and the market model as a robustness test. The FF3FM can capture variations of risk in the stock market more accurately by adding two company-specific fundamental factors in the model; size index and book-to-market index to yield more precise expected return. The FF3FM refers to Sun et al (2021) which is formulated as follows:

$$ER_{it} = \alpha i + \gamma(MKT)t + \delta(SMB)t + \eta(HML)t + e_{it} \qquad [1]$$

where MKT, SMB and HML are the three factors considered in this model; the market risk premium, small minus big (the difference between large and small company returns), and high minus low (difference in return growth stock and value stock). Based on this equation, the abnormal return can be calculated using the following formula:

$$AR_{it} = R_{it} - (\acute{\alpha}i + \acute{\upsilon}[MKT]t + \acute{o}[SMB]t + \acute{\eta}[HML]t) \qquad [2]$$

Then, the value of AR_{it} either through the calculation of the market model or the Fama-French three factor model is accumulated according to the number of

event window days. The CAR calculation is based on the following formulation, where k is the number of days (t) included in the event window:

$$CAR = \sum_{k=0}^{t} [\![AR]\!]_t \qquad [3]$$

After obtaining CAR value for each event, the value will be tested for significance using a cross-sectional t-test (Rahman, et al., 2021). Furthermore, results using the market model are used to check the robustness of the CAR from the calculation of the FF3FM.

Abnormal volumes

The dynamics of stock trading and investor decisions can also be seen from changes in stock trading volume. Therefore, it is necessary to analyze the unusual trading volume that occurs during pandemic-related events. In accordance with Floros, et al., (2021), abnormal volume is calculated as follows:

$$AV_{it} = V_{it} - \tilde{V}_i \qquad [4]$$

Where AV_{it} is the abnormal volume ratio for company i at time t, V_{it} is the number of shares of company i traded on day t divided by the number of outstanding shares in the event window, and $\tilde{V}_i$ is the average trading volume during the estimation period.

Robust Least Square

Robust Least Square (RLS) in this study is used to measure the impact of internal company factors on the dependent variable, CAR. The CAR used in this regression is not the same as the CAR which significance was tested in the event study. This regression is expected to capture the role of each company's internal variables on CAR value. In this case, CAR analyzed is the value obtained from the accumulation of the company's abnormal return variable in the estimation window range [-7, 7].

The company's internal variables data was obtained from the financial statements of each company. Based on previous research by Rahman, et al. (2021), the independent variables used are company size, leverage ratios, liquidity ratios and profitability ratios. The regression model in this study is as follows:

$$CAR_i = \beta_0 + \beta_1 SIZE_i + \beta_2 LEVERAGE_i + \beta_3 LIQUIDITY_i + \beta_4 PROFITABILITY_i + \varepsilon_i \qquad [5]$$

Where, CAR_i is cumulative abnormal return company-i; $SIZE_i$ is log of total assets company-i; $LEVERAGE_i$ is company-i total debt as a percentage of total asset; $LIQUIDITY_i$ is company-i cash and short-term investment scaled by total assets; $PROFITABILITY_i$ is company-i net income as a percentage of total asset; β_0 is intercept; β_1, β_2, β_3, β_4 are coefficient each variable; and ε_i: error term.

Data and Data Sources

The main variable of this research is the service sector's stock market in Indonesia. The data used to represent these variables is stock price data and trading volume of service sector companies. The data source is the IDX website and the yahoo finance historical data portal. The company's stock price data can then be processed to obtain data on returns, abnormal returns, cumulative abnormal returns, and abnormal volume. The data can then be used in the event study analysis and

RLS regression. Then, for the RLS regression analysis, the independent variables are firm size, leverage ratios, liquidity ratios and profitability ratios.

RESULT AND DISCUSSION

This study uses daily and annual data. Market, SBI, and stocks return are daily frequency, which includes the estimation period and the window period for each event and form 326 observations on each return variable. Meanwhile, company size, leverage, liquidity, and profitability ratio are data taken from the year-end financial reports of 36 sample companies in the study.

Table 1. Descriptive Statistics

Variable	Obs.	Mean	Median	Max	Min.	SD
Market Return (%)	326	-0,070	0,000	10,191	-6,578	1,395
Return SBI (%)	326	-0,046	-0,186	45,473	-30,697	2,636
Stocks Return (%)	326	-0,047	0,000	35,714	-34,259	4,648
Airline Subsector	326	0,028	0,000	32,000	-17,327	3,727
Road Transportation Subsector	326	-0,042	0,000	34,188	-22,059	3,756
Logistic and Delivery Subsector	326	0,038	0,000	34,463	-25,000	4,988
Consumer Cyclical Subsector	326	-1,01	0,000	35,714	-34,259	4,829
Travel Agent Subsector	326	-0,196	0,000	34,615	-25,000	5,231
Size (log)	36	27,424	26,999	31,757	24,654	1,618
Leverage (%)	36	0,429	0,367	1,144	0,006	0,264
Liquidity (%)	36	0,090	0,054	0,497	0,002	0,101
Profitability (%)	36	0,026	0,014	0,319	-0,162	0,009

Market, SBI, and stocks return are then estimated using the FF3FM to determine the value of abnormal returns. Table 2 shows average CAR for each of the four events and service subsectors. The analysis is divided into panel A for all four events, panel B for negative events, and panel C for positive events.

Table 2. Average Cumulative Abnormal Return

Average Cumulative Abnormal Return (%)					
Event Window	[-3, 3]	[-4, 4]	[-5, 5]	[-6, 6]	[-7, 7]
Panel A					
All Event	0,339	0,101	0,338	-0,042	-0,802
	(2,178*)	(2,223*)	(2,257*)	(2,391*)	(4,394***)
Travel Agent Subsector	4,431	0,312	4,056	-5,88	-9,381
	(-2,849*)	(3,356*)	(3,273*)	(2,169)	(1,550)
Consumer Cyclical Subsector	2,074	-4,823	2,232	-7,494	-9,294
	(9,100***)	(22,308***)	(16,306***)	(3,627**)	(5,128***)
Logistic and Delivery Subsector	6,562	1,898	9,066	2,036	2,646
	(5,902***)	(12,04***)	(8.207***)	(3,951**)	(5,279***)
Airline Subsector	2,011	0,829	3,794	-5,545	-7,615
	(14,527***)	(16,118***)	(14,238***)	(7,945***)	(7,581**)
Road Transportation Subsector	-2,396	-8,342	-0,481	-11,806	-13,081
	(22,818***)	(27,521***)	(35,029***)	(13,681***)	(12,018***)
Panel B					
All Negative Event	-0,703	-1,930	-0,941	-2,623	-5,019
	(-2,456**)	(-1,907*)	(-2,198**)	(-1,446)	(-1,954*)

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Average Cumulative Abnormal Return (%)					
Event Window	[-3, 3]	[-4, 4]	[-5, 5]	[-6, 6]	[-7, 7]
Travel Agent Subsector	-3,467	-13,477	-15,863	-24,761	-27,443
	(-2,165*)	(-3,054**)	(-2,439*)	(-2,434*)	(-1,914)
Consumer Cyclical Subsector	-6,643	-17,166	-13,991	-11,535	-11,483
	(-1,414)	(-2,913***)	(-1,845*)	(-0,854)	(-0,976)
Logistic and Delivery Subsector	-2,498	-12,081	-9,673	-5,521	-3,125
	(-2,364**)	(-3,464***)	(-3,319***)	(-2,845**)	(-2,811**)
Airline Subsector	-10,466	-15,755	-15,508	-14,172	-16,181
	(-3,691**)	(-4,069**)	(-3,752**)	(-3,597**)	(3,52**)
Road Transportation Subsector	-12,686	-23,967	-22,453	-21,926	-22,805
	(-4,787***)	(-5,617***)	(-4,308***)	(-3,262***)	(-3,365***)
First Negative Event	-4,214	-5,658	-5,818	-6,120	-10,132
	(-2,080**)	(1,256)	(-1,039)	(-0,034)	(0,818)
	(-0,461)	(-0,435)	(-1,096)	(-1,908)	(-1,216)
Consumer Cyclical Subsector	-10,254	-25,923	-20,705	-15,244	-16,293
	(1,929*)	(2,441**)	(1,760*)	(2,071*)	(3,895***)
Logistic and Delivery Subsector	-14,081	-30,018	-25,807	-19,864	-18,68
	(-4,968***)	(0,239)	(0,206)	(1,870*)	(2,963**)
Airline Subsector	-35,653	-55,389	-52,063	-49,869	-49,918
	(-1,999)	(-1,987)	(-1,987)	(-1,992)	(-1,991)
Road Transportation Subsector	-27,554	-46,951	-41,099	-37,822	-42,302
	(3,877**)	(3,884**)	(3,149**)	(2,125*)	(1,938)
Second Negative Event	4,234	1,044	0,447	-0,908	-0,951
	(5,713***)	(6,329***)	(6,215***)	(3,742***)	(4,764***)
Travel Agent Subsector	18,76	13,563	7,172	1,392	-6,083
	(0,317)	(-0,295)	(-0,373)	(-0,052)	(-0,327)
Consumer Cyclical Subsector	-3,032	-8,41	-7,275	-7,827	-6,673
	(-0,292)	(0,914)	(0,965)	(1,996*)	(2,094*)
Logistic and Delivery Subsector	9,083	5,856	6,46	8,821	12,428
	(3,813***)	(3,853***)	(4,271***)	(3,167**)	(3,623***)
Airline Subsector	14,719	23,877	21,046	21,524	17,556
	(1,974)	(1,944)	(1,903)	(1,912)	(1,657)
Road Transportation Subsector	2,181	-0,984	-3,806	-6,03	-3,308
	(-3,452**)	(-1,981*)	(-1,205)	(0,794)	(-0,309)
Panel C					
All Positive Event	12,057	11,098	22,587	2,082	0,146
	(4,649***)	(7,387***)	(1,167)	(-3,050***)	(-4,501***)
Travel Agent Subsector	12,331	14,103	23,977	13,001	8,68
	(0,926)	(1,275)	(0,523)	(0,340)	(0,119)
Consumer Cyclical Subsector	10,793	7,519	18,455	-3,453	-7,105
	(1,891*)	(4,625***)	(0,221)	(-3,140***)	(-4,253*)
Logistic and Delivery Subsector	15,623	15,877	27,806	9,595	8,419
	(1,943*)	(2804**)	(0,215)	(-1,671)	(-2,623**)
Airline Subsector	14,488	17,415	23,098	3,081	0,949
	(5,754***)	(5,994***)	(4,114**)	(1,019)	(0,111)
Road Transportation Subsector	7,893	7,283	21,491	-1,687	-3,357
	(-4,787***)	(-5,617***)	(-4,308***)	(-3,262***)	(-3,365***)

Average Cumulative Abnormal Return (%)					
Event Window	[-3, 3]	[-4, 4]	[-5, 5]	[-6, 6]	[-7, 7]
First Positive Event	19,691	25,601	25,491	-6,426	13,173
	(5,662***)	(6,419***)	(4,767***)	(13,056***)	(14,575***)
Travel Agent Subsector	18,835	32,611	31,221	19,143	10,923
	(-0,371)	(-0,171)	(-0,1500)	(-0,128)	(-0,003)
Consumer Cyclical Subsector	15,988	19,365	19,16	-14,635	-23,459
	(0,085)	(0,334)	(-3,022***)	(-2,496**)	(-1,694)
Logistic and Delivery Subsector	23,621	29,16	29,401	-2,69	-10,487
	(3,085**)	(3,681***)	(3,097**)	(7,007**)	(7,425*)
Airline Subsector	28,682	40,399	37,505	7,964	1,461
	(1,966)	(1,921)	(1,768)	(1,527)	(1,425)
Road Transportation Subsector	15,787	22,057	22,942	-11,592	-13,261
	(-3,452**)	(-1,981*)	(-1,205)	(0,794)	(-0,309)
Second Positive Event	4,423	3,404	19,683	10,59	12,879
	(-20,326***)	(-25,103***)	(-29,352***)	(-29,774***)	(-2,787***)
Travel Agent Subsector	5,825	-4,404	16,734	6,857	6,437
	(1,216)	(1,053)	(-1,009)	(0,294)	(-1,554)
Consumer Cyclical Subsector	5,598	-4,326	7,75	7,728	9,247
	(-6,763***)	(-8,261***)	(-4,900***)	(4,884***)	(-1,759*)
Logistic and Delivery Subsector	7,626	2,594	26,212	21,881	27,325
	(-6,939***)	(6,840***)	(-7,432***)	(-7,546***)	(-7,225*)
Airline Subsector	0,294	-5,568	8,691	-1,802	0,436
	(-1,939)	(-1,473)	(1,859)	(1,994)	(-1,987)
Road Transportation Subsector	-0,001	-7,491	20,039	8,218	6,545
	(-2,128*)	(-1,585)	(0,202)	(0,256)	(0,149)
*statistical significance at the 10%, ** significant at the 5%, and *** significant at the 1% level.					

In all event section shows negative and significant average CAR for all windows indicating that overall shares of companies in service industry fall significantly due to the pandemic even though the authority has issued PEN and reopened economic activity. Panel B shows significant negative average CAR for both and each negative event per subsector. The average CAR in window [−7.7] for the first and second negative events is −27.8% and −0.9% respectively. Panel C's average CAR is significantly positive but in the longer window. For [− 5.5] and [− 7.7] average CAR value is 19.7% and 12.8% respectively. Meanwhile, the logistics and delivery sub-sectors showed quite high average CAR in the event window [− 7.7], that is 27.%.

In general, the magnitude of the average CAR is higher in longer event windows, as shown by average CAR in the [−7, 7] event window were also mostly statistically significant. Furthermore, CAR is then estimated using a market model and then grouped based on portfolio characteristics according to the factors used in the Fama-French three-factor model and shows the same results as shown in table 3 below.

Table 3. Average Cumulative Abnormal Return based on Share Portfolio Characteristics

SIZE

Window	[-3, 3]	[-4, 4]	[-5, 5]	[-6, 6]	[-7, 7]
Panel A: All Event					
Biggest	-2,395	-2,791	-2,745	-3,010	-4,893
	(1,504)	(0,823)	(0,649)	(3,668*)	(4,397*)
Smallest	-0,588	-1,392	-2,025	-1,747	-2,874
	(3,617**)	(2,731*)	(2,085*)	(2,949**)	(3,382**)
Panel B: All Negative Event					
Biggest	2,761	-5,998	-6,185	-5,332	-9,536
	(2,914*)	(3,203**)	(-1,883*)	(-0,966)	(-1,075)
Smallest	-5,577	-13,259	-18,768	-16,601	-15,978
	(-1,734*)	(-4,444***)	(-4,073***)	(-3,111***)	(-2,802**)
Panel C: All Positive Event					
Biggest	6,166	5,403	4,903	-7,341	-0,249
	(2,131**)	(3,246***)	(0,630)	(-1,604)	(0,201)
Smallest	3,354	2,687	2,581	6,628	4,656
	(4,402***)	(6,277***)	(1,931*)	(-0,708)	(-1,317)
RETURN ON EQUITY					
Window	[-3, 3]	[-4, 4]	[-5, 5]	[-6, 6]	[-7, 7]
Panel A: All Event					
Most Profitable	3,197	0,071	-4,213	-3,865	-6,29
	(30,758***)	(35,683***)	(29,363***)	(7,218***)	(5,575***)
Least Profitable	3,693	-1,455	-4,514	-5,375	-5,912
	(10,553***)	(22,269***)	(25,666***)	(10, 794***)	(11,643***)
Panel B: All Negative Event					
Most Profitable	-10,174	-17,579	-17,759	-15,477	-16,128
	(-4,795***)	(-5,041***)	(-4,398***)	(-3,311***)	(-3,175***)
Least Profitable	-3,271	-12,615	-11,769	-12,417	-11,167
	(-3,265***)	(-4,942***)	(-4,580***)	(-4,031***)	(-3,987***)
Panel C: All Positive Event					
Most Profitable	16,568	17,721	26,187	7,746	3,558
	(5,473***)	(7,547***)	(4,107***)	(0,840)	(0,181)
Least Profitable	10,657	9,705	20,798	1,666	-0,658
	(3,397***)	(4,298***)	(0,477)	(-2,787**)	(-3,931***)
PRICE-TO-BOOK VALUE					
Window	[-3, 3]	[-4, 4]	[-5, 5]	[-6, 6]	[-7, 7]
Panel A: All Event					
Growth	2,064	-3,291	3,994	-4,409	-4,347
	(31,328***)	(47,143***)	(45,644***)	(10,783***)	(11,281***)
Value	2,877	-1,255	5,933	-1,975	-2,355
	(28,284***)	(31,579***)	(25,720***)	(6,620***)	(5,695***)
Panel B: All Negative Event					
Growth	-10,584	-19,668	-16,711	-12,57	-10,871
	(-5,576***)	(-5,801***)	(-4,799***)	(-3,235***)	(-3,353***)
Value	-9,003	-17,524	-15,691	-12,991	-12,033
	(-4,501***)	(-5,351***)	(-4,214***)	(-3,541***)	(-3,289***)
Panel C: All Positive Event					
Growth	14,713	13,085	24,699	3,751	2,176
	(2,746**)	(7,293***)	(2,485**)	(-2,503***)	(-5,011***)
Value	14,759	15,013	27,557	9,041	7,321
	(5,728***)	(5,590***)	(1,835*)	(-0,757)	(-1,342)

*statistical significance at the 10%, ** significant at the 5%, and *** significant at the 1% level.

Stock market performance analysis is also examined based on trading volume. The abnormal volume ratio is estimated using the mean-adjusted model, then tested for its significance using a cross-sectional t-test. Table 4 and Table 5 show the main findings for each of the four different events and service industry subsectors.

Table 4. Abnormal Volume

Days	Abnormal Volume (%)			
	1st Negative Event (Announcement Pandemic of COVID-19)	2nd Negative Event (Lockdown PSBB)	1st Positive Event (Announcement Stimulus PEN)	2nd Negative Event (Reopening with Health Protocol)
-7	-0,673	-1,319	-1,521	-1,320
	(-2,667**)	(-3,601***)	(-5,171***)	(-4,437***)
-6	-0,551	-1,693	-1,769	-0,875
	(-1,836*)	(-5,029***)	(-5,758***)	(-2,868***)
-5	-0,632	-1,352	-1,600	-0,532
	(-2,188**)	(-3,581***)	(-5,313***)	(-1,683)
-4	-0,569	-1,482	-1,463	-0,903
	(-1,692*)	(-4,281***)	(-4,442***)	(-2,986***)
-3	-0,897	-1,041	-1,414	-1,030
	(-3,112***)	(-2,936***)	(-4,053***)	(-3,570***)
-2	-0,993	-0,826	-1,408	-0,858
	(-3,941***)	(-2,209**)	(-4,551***)	(-3,088***)
-1	-0,934	-0,800	-1,461	-1,193
	(-3,259***)	(-2,438**)	(-4,524***)	(-3,858***)
0	-0,635	-1,464	-1,420	-0,913
	(-1,95*)	(-4,247***)	(-4,173***)	(-2,702**)
1	-0,963	-1,492	-1,288	-0,954
	(-3,258***)	(-4,354***)	(-3,945***)	(-2,683**)
2	-0,978	-1,364	-1,351	-0,944
	(-3,016***)	(-3,273***)	(-4,798***)	(-2,875***)
3	-1,727	-0,728	-1,543	-0,905
	(-4,951***)	(-2,034**)	(-5,131***)	(-2,756***)
4	-2,168	-0,982	-1,401	-0,817
	(-4,913***)	(-2,388**)	(-4,244***)	(-2,451**)
5	-1,164	-1,267	-1,436	-0,844
	(-4,118***)	(-3,859***)	(-4,796***)	(-2,299**)
6	-1,146	-1,088	-1,543	-0,471
	(-3,322***)	(-2,931***)	(-5,045***)	(-1,287)
7	-1,534	-1,332	-1,582	-0,878
	(-4,661***)	(-3,815***)	(-5,313***)	(-2,737***)

*statistical significance at the 10%, ** significant at the 5%, and *** significant at the 1% level.

Table 5 Abnormal Volume per Service Industry Sub-Sector

Event Day	Abnormal Volume: First Negative Event (%)				
	Road Transportation	Airline	Logistic and Delivery	Consumer Cyclical	Travel Agent
-2	-0,730	-1,435	-0,848	-1,098	-0,982
	(-1,528)	(-1,831)	(-2,495**)	(-2,068*)	(-3,297*)
-1	-0,956	-1,108	-0,425	-1,346	-0,182
	(-1,433)	(-2,083)	(-1,250)	(-2,364**)	(-0,193)
0	-0,482	-0,269	-0,045	-1,050	-1,000
	(-0,799)	(-0,671)	(-0,081)	(-1,587)	(-2,991*)
1	-0,679	-1,518	-0,080	-1,362	-1,634
	(-0,878)	(-2,072)	(-0,128)	(-2,927**)	(-2,138)
2	-1,434	-0,904	-0,550	-1,048	-1,068
	(-2,115*)	(-2,903*)	(-1,065)	(-1,556)	(-3,339*)

Event Day	Abnormal Volume: Second Negative Event (%)				
	Road Transportation	Airline	Logistic and Delivery	Consumer Cyclical	Travel Agent
-2	-0,924	0,130	0,190	-1,571	-0,909
	(-1,574)	(0,219)	(0,181)	(-2,873**)	(-2,224)
-1	-0,621	0,276	-1,171	-0,840	-0,916
	(-1,056)	(0,489)	(-1,861*)	(-1,298)	(-1,643)
0	-0,927	-1,186	-1,627	-1,620	-1,551
	(-1,511)	(-4,435**)	(-2,189*)	(-2,65**)	(-0,915)
1	-1,252	-0,674	-1,814	-1,689	-0,840
	(-2,146*)	(-2,895*)	(-2,075*)	(-2,836**)	(-1,229)
2	-1,513	-0,526	-0,972	-1,667	-1,563
	(-2,238*)	(-1,876)	(-1,676)	(-2,665**)	(-2,336)

Event Day	Abnormal Volume: First Positive Event (%)				
	Road Transportation	Airline	Logistic and Delivery	Consumer Cyclical	Travel Agent
-2	-1,596	-0,723	-0,299	-2,176	-1,205
	(-2,329*)	(-0,901)	(-0,983)	(-3,674***)	(-3,419*)
-1	-1,516	-0,305	-0,844	-2,341	0,047
	(-2,313*)	(-1,204)	(-2,181*)	(-3,764***)	(0,283)
0	-1,374	0,456	-1,295	-2,042	-0,647
	(-1,837)	(0,479)	(-2,768**)	(-3,132***)	(-3,073*)
1	-0,925	0,413	-1,076	-2,220	0,308
	(-1,196)	(0,729)	(-2,890**)	(-3,757***)	(0,930)
2	-1,138	-0,898	-1,202	-1,923	0,186
	(-2,249*)	(-0,924)	(-3,927***)	(-3,568***)	(0,191)

Event Day	Abnormal Volume: Second Negative Event (%)				
	Road Transportation	Airline	Logistic and Delivery	Consumer Cyclical	Travel Agent
-2	-0,763	0,923	-0,453	-1,525	-0,713
	(-1,563)	(0,689)	(-1,341)	(-3,056***)	(-1,606)
-1	-1,006	0,341	-1,562	-1,455	-0,686
	(-1,401)	(0,327)	(-2,601**)	(-2,675**)	(-4,383**)
0	-1,105	0,671	-0,077	-1,800	-0,192
	(-1,596)	(0,643)	(-0,131)	(-3,107***)	(-0,597)
1	-1,352	0,753	-0,328	-1,587	-0,572

	(-1,823)	(0,652)	(-0,587)	(-2,393**)	(-5,582**)
2	-0,729	0,054	-0,125	-1,776	-0,666
	(-1,044)	(0,061)	(-0,215)	(-3,028***)	(-7,288**)

*statistical significance at the 10%, ** significant at the 5%, and *** significant at the 1% level.

Overall, abnormal volume has a negative significant value for all four events in each day of the event window. For each sub-sector, the abnormal volume also shows significant negative values, especially in shorter event windows [-2, 2]. In the second positive event, the airline's abnormal volume is positive but not significant. The highest volume decreases of -2.168% occurred on the fourth day after announcement of COVID-19 as a pandemic. In the announcement of reopening economic activity, abnormal volume is lower than other events.

The analysis is continued to see the company's idiosyncratic factors that affect CAR during pandemic. The CAR of the event window [-7, +7] is used as the dependent variable, considering investor reaction requires a relatively longer span to respond to an event. The CAR regressed with each independent variable before being regressed simultaneously. Table 6 shows the results divided into three panels based on all events, all negative events, and all positive events.

Table 6. Determinants of Cumulative Abnormal Return Value

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Panel A: All Events					
Constant	184,95	-52,659	-35,940	-46,703	173,94
	1,479	(-2,417**)	(0,208)	(-4,117***)	(1,960*)
Size	-8,219	-	-	-	-8,286
	(-1,725*)				(-2,399**)
Leverage	-	0,249	-	-	0,127
		(0,685)			(0,340)
Liquidity	-	-	0,393	-	0,376
			(0,208)		(0,417)
Profitability	-	-	-	-0,967	-0,950
				(-1,249)	(-0,907)
R squared	0,082	0,023	0,021	0,085	0,159
Panel B: All Negative Events					
Constant	47,282	-35,846	-24,721	-39,476	123,35
	(1,087)	(-3,291)	(-3,455***)	(-3,677***)	(2,131**)
Size	-2,789	-	-	-	-6,267
	(-1,683*)				(-2,783***)
Leverage	-	0,158	-	-	0,080
		(0,868)			(0,328)
Liquidity	-	-	-0,388	-	0,073
			(-0,845)		(0,124)
Profitability	-	-	-	-0,837	-0,972
				(-1,142)	(-1,424)
R squared	0,022	0,019	0,019	0,077	0,203
Panel C: All Positive Events					
Constant	43,503	3,019	-2,539	3,286	11,101
	(1,032)	(0,439)	(-0,633)	(0,741)	(0,379)
Size	-1,504	-	-	-	-0,517

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
	(-0,937)				(-0,454)
Leverage	-	-0,037	-	-	0,015
		(-0,325)			(0,125)
Liquidity	-	-	0,490	-	0,478
			(1,902*)		(1,609*)
Profitability	-	-	-	0,269	0,083
				(0,891)	(0,242)
R squared	0,033	0,002	0,078	0,018	0,083

*statistical significance at the 10%, ** significant at the 5%, and *** significant at the 1% level.

Based on table 6 first section, firm size has a negative significant effect on CAR. The same result for company size is also seen in Panel B but with a smaller value. In panel C, the liquidity variable shows a positive effect on CAR. Meanwhile, the leverage and liquidity ratios have a positive effect and profitability has a negative effect, although these three variables are not significant.

In previous studies, most of the research only analyzed the negative effects of the COVID-19 on the economy. However, this research proves that the government's mitigation policies during pandemic also had a favorable impact on stock market performance. It shows in table 2 panel C, there are positive and significant average CAR in both two positive events, the PEN program and the reopening, although in general this positive value is still smaller than the decrease in CAR for all pandemic-related events. Besides, there is a negative average CAR for the first positive event. This may arise because the PEN declaration has not been very influential in minimizing risks related to the pandemic and building investor confidence. The PEN program which is a form of quantitative policy requires a longer time for the multiplier effect to react on the economy compared to the qualitative policy form (second positive event). Only a small number of companies that received the PEN program were sampled in this study, so even though CAR was positive, the effect of the policy could only be seen over a long period of time.

The logistics and delivery sub-sectors show an intriguing result. The average CAR for the logistics and delivery sub-sector is consistently positive in almost all event windows except for the announcement of the COVID-19 pandemic, compared to other sub-sectors where negative average CAR is dominant. This is in line with the circumstance of increasing online transactions during the pandemic period. When socio-economic interactions are limited, people practically switch to doing business online which then increases the activity of sending goods by logistics and delivery companies. The magnitude of the average CAR is generally higher and mostly statistically significant in longer event windows than in shorter event windows. This result is in line with Rahman, et. al (2021). Evidently, investors need more time to respond to announcements regarding developments in COVID-19.

Accordingly, both companies with low PBV (value stock) and high PBV (growth stock) show a significant average CAR for all events and negative events. However, as shown in table 3, companies with low PBV have a larger average negative CAR than those with high PBV. This shows that low PBV companies are more exposed to the risk of the COVID-19 related events because they are burdened with unproductive capital, and it is more difficult to adjust their capital compared to high PBV companies.

Table 4 reveal that even though there is a positive CAR, the abnormal volume of service industry shares in Indonesia is mostly negative. This means that the stock trading volume is lower than the average, thus indicating a decrease in trading volume for a sample of service company shares when a COVID-19 related event occurs. All events related to COVID-19 unfortunately trigger uncertainty in economic conditions, making investors unsure of the future, so they tended to hold back and trading volume decreases.

Company idiosyncratic factors that have a significant effect on CAR when COVID-19 occurs are company size and liquidity ratio. Company size have a negative significant effect on both all and negative events. This negative coefficient indicates an opposite connection between firm size and abnormal returns during COVID-19. Investors who hold shares of smaller firms will show a more intense respond to both positive and negative cases in a COVID-19 situation. This is in line with the result in table 3, which states that companies with small (large) sizes tend to have higher (lower) CAR than large companies. These results are in accordance with previous research conducted by Rahman et al (2021) and Kruger (2015). Meanwhile, the liquidity ratio has a significant positive effect on all positive events. Investors who invest in small companies with low profitability ratios tend to overreact to positive announcements regarding COVID-19 from the government. The amount of cash and large short-term investments owned by the company may be considered as a form of anticipation in facing economic uncertainty, so that stock market players who invest in these companies are more reactive. Leverage and profitability ratios generally show a positive effect on CAR but not significant. This result is in line with Rahman, et. al (2021).

CONCLUSION

This research empirically concludes that both negative and positive events related to the COVID-19 pandemic, which projected in the form of official announcements from the government, have had a significant impact on the performance of service industry stocks in Indonesia. Overall, the COVID-19 event has a negative effect on CAR. The magnitude of the average CAR is generally higher in longer event windows. This result is in line with Rahman, et. al (2021). Nonetheless, the abnormal volume in each of the four events were significantly negative indicating a decrease in the volume of trading in service company shares when all events related to COVID-19 occurred, which is different from previous research by Floros et al (2021). Finally, company size and liquidity ratio have a significant effect on CAR during COVID-19 occur. Company size has a negative and significant effect on both all events and negative events. Meanwhile, the liquidity ratio has a significant positive effect on positive events. Leverage and profitability ratios generally show a positive effect on CAR but not significant. This result is in line with Rahman, et. al (2021).

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