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STOCK MARKET REACTION TO THE COVID-19: EVENT STUDY METHODOLOGY OF PUBLICLY TRADED HEALTHCARE COMPANIES IN INDONESIA

REAKSI PASAR SAHAM TERHADAP COVID-19: METODOLOGI STUDI PERISTIWA PADA PERUSAHAAN-PERUSAHAAN KESEHATAN YANG DIPERDAGANGKAN SECARA PUBLIK DI INDONESIA

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ABSTRACT

The COVID-19 pandemic caused a stir in the stock market worldwide. Although the healthcare industry was regarded as the better-performing sector during the Pandemic, understanding market behaviour surrounding significant events related to COVID-19 and analysing possible confounding factors to this behaviour will help investors determine stances in future similar circumstances. This study employs event study methodology to find the correlation between variables. Events chosen are the announcement of the first COVID-19 case in Indonesia on March 2nd 2020, the announcement of large-scale distancing measures in the Greater Jakarta area on April 7th 2020, the announcement of health protocol easing on May 17th 2022 and the end of the emergency phase for COVID-19 announcement by WHO, on May 5th 2023 This study aims to picture the 16 healthcare stock market reactions to these events. This study shows that the healthcare stock is not affected by the first, second, third, and fourth event except for MERK on first, second, and third event, and PRIM on first and second event. Older listings age, bigger firm sizes, and pharmaceuticals subindustry showed more resilience during the event study, however no significance obtained.

Keywords: *Cummulative Average Abnormal Returns, Event Study Methodology, Firm Size, Healthcare Providers, Stock Market Reaction.*

ABSTRAK

Pandemi COVID-19 menyebabkan kegemparan di pasar saham di seluruh dunia. Meskipun industri kesehatan dianggap sebagai sektor yang berkinerja lebih baik selama Pandemi, memahami perilaku pasar seputar peristiwa penting terkait COVID-19 dan menganalisis kemungkinan faktor pengganggu terhadap perilaku ini akan membantu investor menentukan sikap dalam situasi serupa di masa depan. Penelitian ini menggunakan metodologi studi peristiwa untuk menemukan korelasi antar variabel. Peristiwa yang dipilih adalah pengumuman kasus COVID-19 pertama di Indonesia pada tanggal 2 Maret 2020, pengumuman langkah-langkah pembatasan jarak berskala besar di wilayah Jabodetabek pada tanggal 7 April 2020, pengumuman pelonggaran protokol kesehatan pada tanggal 17 Mei 2022, dan berakhirnya fase darurat COVID-19 yang diumumkan oleh WHO pada tanggal 5 Mei 2023. Penelitian ini bertujuan untuk menggambarkan reaksi pasar saham kesehatan terhadap peristiwa-peristiwa tersebut. Hasil penelitian ini menunjukkan bahwa saham-saham sektor kesehatan tidak terpengaruh oleh peristiwa pertama, kedua, ketiga, dan keempat kecuali MERK pada peristiwa pertama, kedua, dan ketiga, serta PRIM pada peristiwa pertama dan kedua. Usia perusahaan yang lebih tua, ukuran perusahaan yang lebih besar, dan subindustri farmasi menunjukkan ketahanan yang lebih besar selama studi peristiwa, namun tidak ada signifikansi yang diperoleh.

Kata kunci: *Cummulative Average Abnormal Return*, Metodologi Studi Peristiwa, Ukuran Perusahaan, Penyedia Layanan Kesehatan, Reaksi Pasar Saham.

INTRODUCTION

COVID-19 has affected countries globally since its outbreak in late 2019, including Indonesia. The pandemic significantly impacted the country's social, economic, and political landscape, including changes in the healthcare system, education, and government policies. In December 2019, the first cases of COVID-19 were reported in Wuhan, China. By January 2020, the virus had spread to other countries,

including Indonesia. The first two cases of COVID- 19 in Indonesia were reported on March 2nd 2020, in Jakarta, which marked the beginning of the pandemic in Indonesia. Following this discovery, the Indonesian government implemented various measures to contain the virus spread. On March 16th 2020, President Joko Widodo announced school closures nationwide. On March 23rd 2020, a partial lockdown was imposed in Jakarta and other major cities. However, these policies were ineffective because the number of cases continued to rise. On April 7th, 2020, the Indonesian government declared a state of emergency, including implementing large-scale social distancing measures (PSBB) and closing non-essential businesses. In July 2020, Indonesia experienced a surge in COVID-19 cases, with the highest number of daily cases reported on July 30th, 2020, with 2,381 new cases, which prompted the government to implement stricter measures, including mandatory mask-wearing in public and the establishment of quarantine centres. In early 2021, Indonesia began its vaccination program. As of May 2023, Indonesia has reported over 7.5 million cases of COVID-19, with over 200,000 deaths (Carvalho et al., 2021; Djaafara et al., 2021; Hanggara, 2020; Nusadata, 2021). While Indonesia has made significant progress in controlling the spread of the virus through measures such as vaccinations and social distancing, the pandemic continues to pose a significant challenge to the nation's healthcare system and economy.

The COVID-19 pandemic caused one of the direst stock market crashes in the history of the world. In March 2020, all financial markets experienced a severe negative return caused by various factors, such as a barricade in business dealings, a negative news sentiment, and other factors (Baker et al., 2020; Bašta & Molnár, 2018; Mazur et al., 2021; Rahmayani & Oktavilia, 2021; Sapkota, 2020). A financial collapse of this scale had never been observed in world history; previous infectious disease outbreaks had never so severely affected the stock market and caused a significant collapse of the world's macro economy, including Indonesia (Rahmayani & Oktavilia, 2021).

Despite the negative sentiments in 2020, in 2021, Indonesia showed greater resilience, despite the new Delta Variant wave in the middle of 2021, the economy was estimated to expand by 3.7%, with acceleration projected to reach 5.2% in 2022 (World Bank, 2021). This success contributed to the successful handling of the COVID-19 Health Emergency, done so by the establishment of 4 pillars of COVID-19 Preparedness by the Ministry of Health, namely; 1) Pharmaceuticals and Medical Equipment Resilience, done through collaborations in the production of Indonesian-produced vaccine, 2) Establishment of accredited curriculum for workshops and training of COVID-19 Fast Response Unit and Zoonosis containment unit 3) Enforcement of Intra Action Review (IAR) COVID-19, a program that aims to monitor the implementation of COVID-19 Response Strategies nationwide, and last 3) Integrate the COVID-10 and Influenzas in the Influenza Like Illness and Severe Acute Respiratory Infection Surveillance. These four pillars are the main strategies the Ministry of Health implements (Rokom, 2023). These strategies are also supported by the multifaceted policy in various aspects to accelerate the handling of COVID- 19 in Indonesia.

One of the vital aspects of COVID-19 handling in Indonesia was the distribution of vaccines. With the successful distribution of over 185 million first doses and 128 million

second doses of vaccine by February 2022, which- place Indonesia as one of the top five countries with the highest vaccination coverage worldwide, Indonesia showed its commitment to prioritize the combat against COVID-19 (Taher, 2022). As the number of cases declining, on May 17th 2022, Indonesia President Joko Widodo, through Cabinet Secretary, announced the easing of the rules of the mask mandate outdoors (Cabinet Secretariat of the Republic of Indonesia, 2022). A series of successful programs and balanced policies implemented by the government led to Indonesia's success in containing the virus, proven by the declining number of cases reported. By December 27th 2022, COVID-19 daily cases reported only 1.7 cases per million people with a weekly positivity rate of 3.35%. The bed occupancy rate was stable at around 4.79%, and the mortality rate was 2,39%. All of the numbers were below the WHO goals cut-off point (Office of Assistant to Deputy Cabinet Secretary for State Documents & Translation, 2022). With COVID-19 handling is continuously improving worldwide, on May 5th 2023, WHO officially announced the end of the global emergency status for COVID-19 amid the slowing death rate from more than 100.0000 people per week in January 2021 to 3.500 people on April 24th 2023. This success in COVID-19 handling could be attributed to widespread vaccination programs by all nations, the availability of better and standardized treatments protocol, and the achievement of population immunity. With the declaration ending the global emergency status, the collaboration and funding efforts will also be shifted towards another focus. However, many countries and organizations have already begun shifting their focus during the months up to years prior, as the COVID-19 pandemic has already receded in different regions. However, as the COVID-19 pandemic officially ended, the disease is now an established entity and still regarded as an ongoing health issue that needs no less attention, which could be used as reflections and lessons learned to prevent another pandemic (WHO, 2023).

Indonesia's healthcare industry has rapidly grown in the last ten years (Indonesia Country Commercial Guide, 2022; Medina, 2020). As of 2023, 38 publicly listed healthcare companies are traded on the Indonesia Stock Exchange (GoPublic BEI, 2023; Simplywall, 2023). During the pandemic, there were several instances of abnormal returns which were thought to be influenced by the pandemic itself (Mazur et al., 2021; Rahmayani & Oktavilia, 2021; Sapkota, 2020). To the author's knowledge, no research was being conducted on the impacts of the COVID-19 pandemic on the stock prices of these publicly listed healthcare companies. The COVID-19 pandemic has negatively impacted the financial market across all sectors (Baker et al., 2020). Harjoto et al. (2020) stated that the pandemic had a more enormous influence on developing countries' financial markets than developed countries. However, in several instances during the pandemic, the market fluctuates greatly depending on the investor's sentiments in reaction to other news (Ali et al., 2020). A thorough analysis of the pandemic's impact on the stock market is necessary to reflect and learn more about the factors influencing national macroeconomy growth and prepare for other extreme events, such as possible future disease outbreaks (Bai et al., 2021; Fama, 1991; Mittnik et al., 2015; Sapkota, 2020).

Various previous studies have examined the impact of the COVID-19 pandemic on the stock market, both sectorally and by geographic region.

Nugraha et al. (2022) found that the manufacturing and consumer sectors showed better stock performance during the pandemic, with positive abnormal returns, while the agriculture and property sectors experienced a decline, and the mining sector tended to be stable. Similar findings were reinforced by Trisnowati & Muditomo (2021), who noted that eight out of ten stock market index indicators studied showed a fairly strong reaction to the pandemic, especially in sectors such as agriculture, basic and chemical industries, consumer goods, property and real estate, and transportation and infrastructure, while the mining and manufacturing sectors showed weaker reactions.

At the international level, Ji et al. (2024) showed that stock indices in the Asian region experienced larger negative abnormal returns than countries outside Asia, indicating stronger market pressures in the region. Research in Malaysia by Xie & Zhou (2022) revealed that the healthcare stock sector was positively impacted after the lockdown announcement, suggesting that the lockdown policy may provide positive sentiment to certain sectors such as healthcare.

However, not all events show a significant impact on the stock market. Widnyana & Warmana (2022) concluded that although the COVID-19 pandemic depressed the Indonesian capital market in general through a decline in the Jakarta Composite Index (JCI), there were no significant abnormal returns around the two events studied, indicating that investors did not overreact to the announcement. On a broader scale, Baker et al. (2020) showed that in the United States, the stock market reaction to the COVID-19 pandemic was much greater than in previous pandemics. This heightened reaction is mainly due to government-imposed commercial restrictions and voluntary social restrictions in a largely service-oriented economy.

Although various studies have been conducted to examine the impact of the COVID-19 pandemic on the health sector, studies that specifically analyze stock market reactions based on the intrinsic characteristics of companies, such as the age of listing, company size, and subindustries within the health sector, are still relatively limited. Therefore, this study aims to evaluate the stock market response before, during, and after the COVID-19 pandemic, especially to important events such as the announcement of the first case of COVID-19 in Indonesia, the implementation of lockdowns, the relaxation of health protocols, and the announcement of the end of the pandemic status by WHO. In addition, this study also seeks to identify the role of company characteristics in influencing stock price fluctuations during this period, which is expected to provide a more comprehensive understanding of the dynamics of market volatility and help predict future market behavior, especially in the face of similar crises.

Hypothesis development

Announcement of COVID-19 cases in Indonesia's effect on healthcare stock market

The very first case of COVID-19 in Indonesia was reported in Depok on March 2, 2020 (Djaafara et al., 2021; Djalante et al., 2020; Hanggara, 2020; Nusadata, 2021; Rahmayani & Oktavilia, 2021). In three months since the discovery of the first case, the outbreak increased dramatically, causing major damage in many aspects of living, including Indonesia's finance and macroeconomy (Djaafara et al., 2021; Djalante et al., 2020; Hanggara, 2020;

Nusadata, 2021; Rahmayani & Oktavilia, 2021). This can be observed through the decrease in the Jakarta Stock Exchange Composite (JKSE), which averaged IDR5,147.43 from January 2nd, 2020 to October 27th , 2020 (Lei et al., 2019). The highest level of JKSE was IDR6,325.41, and the lowest level reached was IDR3,9347.63 on March 24th 2020 (Lei et al., 2019). This showed the negative impact of the COVID-19 pandemic on the market return during that time period (Lei et al., 2019). Around this time, the Dow Jones Industrial Average (DJIA) also dropped USD18,591.93 on March 23th , 2020 on March 23th , 2020 (Lei et al., 2019). This further cemented the negative impact of the outbreak on investor sentiment, leading to a decrease in stock prices.

H1: The announcement of the first COVID-19 case in Indonesia negatively impacted the healthcare stock market

PSBB in Greater Jakarta area effect on healthcare stock market

The government implemented large-scale social restrictions (PSBB) was exerted as an effort to control the virus spread (Hanggara, 2020; Nusadata, 2021). These restrictions significantly impacted businesses, including publicly listed healthcare companies (Mugiarni & Wulandari, 2021; Utomo & Hanggraeni, 2021). The implementation of Lockdown/ PSBB in Jakarta, the capital city of Indonesia, began on April 7th, 2020 (Hanggara, 2020). These restrictions included the closure of non-essential businesses, limitations on public transportation, and the requirement for citizens to work from home (Hanggara, 2020; Nusadata, 2021). The restrictions were later expanded to other cities and regions in Indonesia (Hanggara, 2020; Nusadata, 2021). The implementation of these restrictions had a significant impact on the stock prices of publicly listed healthcare companies in Indonesia (Mugiarni & Wulandari, 2021; Utomo & Hanggraeni, 2021). It found that the implementation of PSBB had a significant negative impact on the stock prices of healthcare companies listed on the Indonesia Stock Exchange (IDX), and the healthcare sector was one of the most affected sectors by the pandemic (Mugiarni & Wulandari, 2021; Utomo & Hanggraeni, 2021). The study also found that the impact of the restrictions on stock prices was greater for smaller healthcare companies than larger ones (Mugiarni & Wulandari, 2021; Utomo & Hanggraeni, 2021). However, it is important to note that the impact of PSBB on stock prices is not isolated only to the healthcare sector, but across all sectors (Mugiarni & Wulandari, 2021; Utomo & Hanggraeni, 2021).

H2: The implementation of the first large-scale social restrictions (PSBB in Greater Jakarta area) by the government negatively impacted the healthcare stock market in Indonesia

Implementation of relaxation-of-mask-mandate-in-outdoors effect on healthcare stock market

As COVID-19 cases started to decrease, countries quickly responded and implemented their own calculated timeline on gradual reopening or multiple phases of lifting the restrictions. For example, the United Kingdom implemented four phases road map, whereas Canada opted to implement a 5-time points timeline. The United States' responses were according to its several states policy, where Alaska adopted a multi-phase consisting of 4- time points. Alabama and Arizona have not officially announced the phases but employ a similar method. A previous study by Elshqirat (2022) found that in Qatar, the easing of COVID-19 restrictions affects

the stock market positively, but different in each sector. Another study by Scherf et al. (2022) concluded that how the stock market reacts to easing restrictions has different responses depending on the time frame, in OECD and BRICS countries. On March 28th-May 20th 2020, the restrictions easing caused a positive effect on the stock market, whereas on January 22nd–March 27th 2020, it caused a negative effect.

H3: The implementation of the easing of the health protocols, specifically the relaxation of the mask mandate outdoors by the government, positively impacted the healthcare stock market in Indonesia

WHO announcement on the end of COVID-19 global health emergency effect on healthcare stock market

As the easing positively impacted the stock market in several countries under several circumstances, the announcement made on May 5th 2023, by the WHO director-general is expected to bring a positive trend to the stock market worldwide. As the market response to this announcement is still under close review and analysis, the announcement remarks only the end of the emergency phase. However, it can not diminish the fact that COVID-19 is still transmitted among the population.

H4: The WHO announcement of the end of the COVID-19 Global Health Emergency positively impacted the healthcare stock market in Indonesia

Listings age effect on healthcare stock market

Previous study conducted by Zhang et al. (2022) on Chinese Cultural Companies showed that longer listing period companies had significantly lower negative impact than young companies. However this findings is not inline with study conducted by Xie & Zhou (2022) which conclude that older firms were more affected by COVID-19, attributed to several factors: 1) more process in doing business 2) entrenched routines, and 3) social embeddedness. Because of this contrary findings, writer aim to determine the specific relation between the listings age and healthcare stock market reaction in Indonesia.

H5: The older the listings age the more resilience the companies to the COVID-19 related events volatility

Firm size effect on healthcare stock market

Various variables could determine firm size: sales, assets, employees, benefits, and several other parameters. Among all, assets and sales are the most widely used (Cortés et al., 2021). In terms of total assets, a study from Rahman & Bahari (2023) showed that a company with an enormous asset tends to have a negative effect, as the larger company size will possess a higher risk for the investor as it will affect the number of funds released by the company. Also, the higher the company's assets, the greater the chances for inefficiency and ineffectiveness, resulting in less than-optimal earnings. Another study by Fan (2021) concluded that companies with more capital-intensive operations, higher leverage, and more significant balances in cash were considered more prone to plunge in daily return in relation to COVID- 19 pandemic. On the contrary, positive interactions were found between companies with larger market capitalization, profitability and cash liquidity and the growth of COVID-19 cases in the US. However, the trend also showed that the riskier and more leveraged firms showed higher cumulative abnormal returns, resulting from the positive sentiment of vaccination and higher interest in riskier

investments as the COVID-19 pandemic evolved.

H6: The larger the firm size, the less resilience the companies to the COVID-19-related events volatility

Subindustries effect on healthcare stock market

An abnormal rise in pharmaceutical stocks was observed during the discovery of the COVID-19 vaccine and antivirals (Faidah et al., 2022). Other than that, the pandemic resulted in the habit of purchasing vitamins and other health supplements and products (Faidah et al., 2022). This newfound habit caused a rise in the stock prices of healthcare companies (Faidah et al., 2022). As an example, PT. Indofarma Tbk. (INAF) shot up from 12% to 799% since December 8th 2020 (Faidah et al., 2022).

H7: Pharmaceuticals Subindustries are more positively impacted by the Events

RESEARCH METHODS

This research uses a quantitative approach with a natural experiment-based event study method, which is a natural experiment method used to observe the impact of unexpected events on the variables under study (Paldam, 2021). This method was chosen because it is able to estimate stock price volatility influenced by external events such as lockdown announcements, mergers, earnings announcements, and other important events (Corrado, 2011). In this context, the events in focus are the announcement of the first case of COVID-19, the implementation of lockdown policies, the relaxation of health protocols by the Indonesian government, and the announcement of the end of the pandemic status by WHO.

The population in this study includes all health sector companies that have made initial public offerings (IPOs) on the Indonesia Stock Exchange (IDX). The sampling technique used is non-probability sampling, where not all members of the population have the same opportunity to be selected (Garg, 2016). Specifically, this study applies theoretical purposive sampling, which is a sampling technique based on the identification of certain groups that are considered relevant and can provide contrast or comparison to support deeper analysis (Campbell et al., 2020).

Based on the predetermined criteria, 16 health sector companies were selected as research samples. The sample selection criteria include:

1. Healthcare companies that launched its IPO before April 1st 2019. The selection of the cutoff date period was based on the calculation of the estimation window period that has to be met in order to provide stable trading data that could be analyzed to reflect the results of COVID-19 Lockdowns on the stock performances.
2. The company chosen did not experience prominent events during the researcher's estimation window period.
3. The company is not excluded from the IDX during the study period.
4. Companies included issue audited financial statements ending on December 31st.
5. Companies included providing financial statements in rupiah.

The data used in this study is secondary data in the form of quantitative data. Data is collected through observation of the company's financial statements obtained from the Yahoo Finance website for the 2019-2020 period. In addition, a literature review was conducted to obtain the theoretical basis, analysis methods, and formulas used in data processing. The literature used includes scientific journal

articles, reference books, grey literature, and other independent sources.

The analysis process is carried out using the event study method, which includes setting the event window, cut-off date, estimation window, and appropriate estimation model. This method allows researchers to measure the effect of major events related to the COVID-19 pandemic on the share prices of companies in the health sector. Abnormal return calculations and fluctuation analysis are conducted based on commonly used approaches in capital market research, by comparing data before, during, and after the event in question.

RESULTS AND DISCUSSIONS

Descriptive Analysis

The data used in this study is data from 16 healthcare companies taken as samples with the consideration that only these 16 companies issued the required data during the research period and continuously presented the required data.

Table 1. Descriptive statistics of the full sample

Abbre-viation	Companies	Age	Asset Scale (Bill Rp)	Subindustries
DVLA	Darya-Varia Laboratoria Tbk.	25 years 3 months 25 days	1,40	Pharma
HEAL	Medikaloka Hermina Tbk.	1 year 9 months 16 days	6,36	Hospital Services
INAF	Indofarma Tbk.	18 years 10 months 15 days	1,71	Pharma
KAEF	Kimia Farma Tbk.	18 years 7 month 28 days	15,71	Pharma
KLBF	Kalbe Farma Tbk.	28 years 7 months 3 days	22,56	Pharma
MERK	Merck Tbk.	38 years 7 month 9 days	0,93	Pharma
MIKA	Mitra Keluarga Karyasehat Tbk.	4 years 11 months 8 days	6,38	Hospital Services
PEHA	Phapros Tbk.	1 year 2 months 6 days	1,92	Pharma
PRDA	Prodia Widyahusada Tbk.	3 years 2 months 25 days	2,23	Hospital Services
PRIM	Royal Prima Tbk.	1 year 6 months 17 days	0,95	Hospital Services
PYFA	Pyridam Farma Tbk	19 years 1 month 16 days	0,23	Pharma

Abbre-viation	Companies	Age	Asset Scale (Bill Rp)	Subindustries
SAME	Sarana Meditama Metropolitan Tbk	7 years 1 months 21 days	1,89	Hospital Services
SIDO	Industri Jamu dan Farmasi Sido Tbk	6 years 2 months 14 days	3,85	Pharma
SILO	Siloam International Hospitals Tbk	6 years 5 months 20 days	8,43	Hospital Services
SRAJ	Sejahteraraya Anugrahjaya Tbk.	8 years 10 months 21 days	3,11	Hospital Services
TSPC	Tempo Scan Pacific Tbk.	25 years 8 months 15 days	9,10	Pharma

*The variable of firm age measures the years between the date of company's IPO and 2020 March 2nd

*The Asset scale retrived from 2020 financial report from each stocks.

Source: Data processing

This study analyses 16 healthcare stocks, as shown in Table. 1. Four predetermined events around the announcements of important news during the COVID-19 pandemic by the Indonesian government were chosen. Event 1 was March 2nd, 2020; Event 2 was April 7th, 2020; Event 3 was May 17th , 2022; and Event 4 was May 5th , 2023. This study uses the estimation window 150 to 30 days before the events.

Stock Return

The regression equation is used to calculate the average expected return during the 2020 period. The results of the regression and the market index return and the actual return are obtained by the expected return equation.

Table 2. Company expected return equation

d	α	β	E(Rij)					
DVLA	0.0003	0.2321	E(Rij)	=	0.0003	+	0.2321	RMj
HEAL	0.0010	0.4193	E(Rij)	=	0.0010	+	0.4193	RMj
INAF	-0.0010	1.2831	E(Rij)	=	-0.0010	+	1.2831	RMj
KAEF	-0.0003	1.2467	E(Rij)	=	-0.0003	+	1.2467	RMj
KLBF	0.0005	0.8975	E(Rij)	=	0.0005	+	0.8975	RMj
MERK	0.0003	0.7690	E(Rij)	=	0.0003	+	0.7690	RMj
MIKA	0.0008	0.5009	E(Rij)	=	0.0008	+	0.5009	RMj
PEHA	-0.0007	0.8131	E(Rij)	=	-0.0007	+	0.8131	RMj
PRDA	0.0013	0.3625	E(Rij)	=	0.0013	+	0.3625	RMj
PRIM	-0.0008	0.2665	E(Rij)	=	-0.0008	+	0.2665	RMj
PYFA	0.0021	0.3610	E(Rij)	=	0.0021	+	0.3610	RMj
SAME	0.0002	0.7314	E(Rij)	=	0.0002	+	0.7314	RMj
SIDO	0.0876	6.8518	E(Rij)	=	0.0876	+	6.8518	RMj
SILO	0.0017	0.5616	E(Rij)	=	0.0017	+	0.5616	RMj
SRAJ	0.0898	6.7123	E(Rij)	=	0.0898	+	6.7123	RMj

TSPC	0.0004	0.4806	E(Rij)	=	0.0004	+	0.4806 RMj

Source: Data processing

From table 2, it can be seen the relationship between Return (Actual Return) and market return, namely, where there is a positive (+) or negative (-) relationship, if the β coefficient is positive. it means that every time there is a 1% increase in market return, the expected return also increases by the existing number. While if the coefficient is negative, it means that every time there is a 1% increase in market return, the expected return decreases by the existing number, complete results can be seen in the appendix.

Abnormal Return

The residual regression is the abnormal return that is tested for normality before being analyzed further for hypothesis testing. The results of the normality test are as follows:

Table 3. Residual normality test results (abnormal return)

Companies	p Uji Jarque-Bera
DVLA	0.000
HEAL	0.000
INAF	0.000
KAEF	0.000
KLBF	0.000
MERK	0.000
MIKA	0.000
PEHA	0.000
PRDA	0.000
PRIM	0.000
PYFA	0.000
SAME	0.000
SIDO	0.000
SILO	0.000
SRAJ	0.000
TSPC	0.000

Source: Data processing

Based on the table above, it can be seen that the entire distribution of abnormal returns of research data is not normal. Therefore, the hypothesis test H1 to H7 will be carried out using the non-parametric Wilcoxon Test.

Hypothesis Test

Hypothesis tests H1 to H4 are tests of differences in abnormal returns from event 1 to event 4. The results of the Wilcoxon test on all research samples from event 1 to event 4 are as follows:

Table 4. Results of the abnormal return difference test on events 1 to 4

	Wilcoxon Test P Value			
Company	**event 1**	**event 2**	**event 3**	**event 4**
DVLA	0.3619	0.2676	0.6207	0.4843
HEAL	0.9884	0.6551	0.6767	0.9900
INAF	0.0833	0.2607	0.1380	0.4315
KAEF	0.3836	0.6241	0.1070	0.6875
KLBF	0.9863	0.7220	0.1771	0.8494

MERK	**0.0077**	**0.0059**	**0.0151**	0.4774
MIKA	0.4197	0.7315	0.9345	0.5255
PEHA	0.5444	0.7712	0.2351	0.2047
PRDA	0.2728	0.3083	0.2924	0.4529
PRIM	**0.0239**	**0.0371**	0.5715	0.5427
PYFA	0.1600	0.2032	0.4612	0.0548
SAME	0.9651	0.8215	0.2185	0.1798
SIDO	0.1005	0.0566	0.9517	0.9543
SILO	0.5033	0.8760	0.2601	0.3963
SRAJ	0.3870	0.3268	0.2121	0.5172
TSPC	0.6637	0.7334	0.3345	0.0725
CAR	**0.9768**	**0.6366**	**0.6385**	**0.2323**

Source: Data processing

The table 4 above shows that almost all healthcare companies do not have a significant difference in abnormal returns before and after event 1, event 2, event 3 or event 4 as indicated by the Wilcoxon test p value> 0.05.

Only MERK has a significant difference in abnormal returns before and after event 1, event 2, and event 3 as indicated by the Wilcoxon test p value <0.05. Likewise, PRIM has a significant difference in abnormal returns before and after event 1, and event 2 as indicated by the Wilcoxon test p value <0.05. Overall, the cumulative abnormal return (CAR) does not have a significant difference either before and after event 1, event 2, event 3 or event 4. This is indicated by the Wilcoxon test p value> 0.05.

These of findings were thought to be caused by the fact that a lot of factors came into play when it comes to stock prices. A global health emergency like the COVID-19 pandemic may pose a threat to the global macro economy scenario, however, a lot of other confounding factors might also influence the financial markets, as stated before. A review of the pandemic's effects on the Indonesian stock market shows a few important factors. Due to the virus's uncertainty and anxiety, the market first witnessed early volatility in accordance with other worldwide markets. However, it immediately recovered despite initial worries and showed a strong comeback.

The Indonesian government rapidly implemented several measures to help the economy throughout the pandemic. These included regulatory adjustments to guarantee the stability of financial markets, monetary easing programs, and fiscal stimulus packages. These preventive measures increased investor confidence and avoided substantial market disruptions. The Indonesian stock market's various sectors showed impressive resiliency during the outbreak. Due to the rise in demand for medical supplies, digital services, and critical consumer products, the healthcare, technology, and consumer goods sectors all witnessed steady development. By efficiently offsetting falls in other sectors, these industries help keep the market stable overall. Fundamental economic metrics, including GDP growth, inflation rates, and unemployment rates shows additional proof of the Indonesian stock market's resiliency throughout the epidemic. The Indonesian economy has shown indications of recovery despite the negative impacts of the health crisis, demonstrating the strength of the fundamentals underpinning the stock market (Djalante et al., 2020; Faidah et al., 2022; Mugiarni & Wulandari, 2021;

Utomo & Hanggraeni, 2021; Widnyana & Warmana, 2022).

Subsample analysis

There were contradictory beliefs regarding the relationship between the company's age and resilience against unprecedented events. While Zhang et al. (2022) believe that company ages are moving in the same direction as a company's growth rate, Xie & Zhou (2022) concluded that a company's older age negatively impacts company performance. Zhang et al. (2022) concluded that older companies tend to have an abundance of operating experience, hence support strong adaptability and ability to maintain their internal processes, making it more resilience in the hostile market environment, while Xie & Zhou (2022) concluded that older company inertia, more inefficient processes, routine and embeddedness in the community causing its fall during a hard time.

Table 5. Result of testing on abnormal return in confounding factors subgroup

				> Overall		
Listing Age	**Count**	**Median**	**Median**	**Mean Rank**	**Mean Score**	**p-value**
≤ 10 years	9	5.10E-09	4	6.888889	-0.31754	0.138362
> 10 years	7	7.08E-09	4	10.57143	0.408271	
All	16	6.17E-09	8	8.5	0	
Firm Size	**Count**	**Median**	**Median**	**Mean Rank**	**Mean Score**	**p-value**
Under Median	10	4.68E-09	3	6.8	-0.27184	0.073506
Above Median	6	7.71E-09	5	11.33333	0.453071	
All	16	6.17E-09	8	8.5	-2.78E-17	
Sub Industry	Count	Median	Median	Mean Rank	Mean Score	p-value
Hospital Services	7	6.26E-09	4	8.142857	-0.08166	0.832339
Pharma	9	6.08E-09	4	8.777778	0.063516	
All	16	6.17E-09	8	8.5	1.39E-17	

Source: Data processing

As a final remark, our analysis showed that older listings age showed a tendency to be resilient towards the COVID-19 pandemic and the subsequent market volatility. However, these findings were not significant (p-value>0,05).

For this study, firm size is categorized into two based on the median value of firm size (below or above median). After quantification, we obtained the grouping of these firms based on their median for analysis. Both groups of companies, both below and above the median, have insignificant differences in abnormal returns (p-value>0,05). In conventional finance theory, larger companies are frequently assumed to have more resources, financial stability, and market power, which might result in superior performance during economic downturns. It is a widespread belief that larger companies can handle crises like the COVID-19 outbreak better and produce higher stock returns.

Contrary to original predictions, the investigation found no connection between firm size and abnormal returns during the COVID-19 pandemic. Compared to smaller organizations, larger firms did not regularly outperform or show better stock market performance. The study contends that the stock market's performance during a crisis is more significantly influenced by variables other than firm size as mentioned above; industry dynamics,

financial stability, flexibility, market mood, investor behavior, and management strategy (Baek et al., 2020; Efrianti, 2018; Fama & French, 2012; Keim, 1983; Lambey, 2021).

This study classified all companies included as data into two different subindustries: health services and pharmaceuticals. The correlation of each subindustry to the abnormal returns during the COVID-19 pandemic can be observed in Table 4.5. Especially during a health emergency like the COVID- 19 pandemic, it is sometimes assumed that these subindustries would show a positive performance result of healthcare equities. Expectations often center on rising demand for pharmaceuticals and healthcare services, which should result in higher stock returns. The findings in this study shows that both groups of companies, has insignificant differences in abnormal return. This result is contradictory with another study by Syed (2022) which acclaimed the pharmaceutical industry as top performing stock with capital gain in the COVID-19 pandemic in the US. If we dive into its stock performance, most of the stocks from the pharmaceutical group showed positive results in event

2. The positive result may be explained by the high demand for pharmaceuticals product that brought positive profit growth resulting in better resilience during the pandemic, which translated into better stock return (Anur et al., 2022). This implies that the stock market performance of the healthcare industry is not significantly influenced by variables other than those of these subindustries, such as market sentiment, investor behaviour, regulatory environment and government policies, company-specific factors, and global supply chain and international factors so it can be said that this research is contrary to several previous studies (Baek et al., 2020; Choi, 2020; Medina, 2020; Oncu, 2021).

CONCLUSION AND SUGGESTION

This study aims to observe the impact of the COVID-19 pandemic on the health sector stock market in Indonesia through the cumulative abnormal return (CAR) indicator. Based on the results of the analysis, various important announcements related to the pandemic such as the finding of the first case, the implementation of PSBB, the relaxation of the outdoor mask policy, and the announcement of the end of the pandemic by WHO did not show a significant effect on the CAR of health sector stocks. In addition, companies with a longer listing age, larger size, and those engaged in the pharmaceutical sub-industry appear to be more resilient to turmoil, although the results are not statistically significant.

For future research, it is recommended that researchers link the performance of healthcare stocks to macroeconomic variables such as economic growth, inflation, interest rates, and fiscal policy. Investor behavior and sentiment are also important to examine in order to understand market dynamics during the crisis. Research focusing on the impact of government policies as well as the causal relationship between the stock market and policy implementation would enrich the analysis. In addition, it is important to consider the long-term impact of the pandemic on structural changes, consumer behavior, and technological advancements that affect future investment and policy decisions.

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