ORIGINAL PAPER

DOI: 10.26794/2587-5671-2024-28-1-30-42
JEL G18, E52, C1, H30, N25

Market Reaction to COVID-19 and Policy Response Across Different Sectors: An Event Study on ASEAN Stock Market

D. Lesmana[a], **R. Yudaruddin**[b]
[a] Research and Development Agency, East Kutai, Indonesia;
[b] Mulawarman University, Samarinda, Indonesia

ABSTRACT

The purpose of the study is to investigate the market reaction to COVID-19 and the policy response in the ASEAN stock market. **The subjects** of this study are companies located in ASEAN countries (Indonesia, Malaysia, Thailand, the Philippines, and Vietnam) as many as 2349 companies. **The basic methodology** of this research uses the event study method using *CAR (Cumulative Abnormal Return)* as a measure of market reaction. We also regressed the effect of firm characteristics (*SIZE, ROA, LEV, CASH, AGE*) on market reaction. According to the **paper's results**, the ASEAN stock market reacted negatively to the announcement of COVID-19 cases and deaths. In this condition, the markets in Malaysia, the Philippines, and Vietnam had the worst reactions to the pandemic outbreak. Moreover, the market negatively reacted to the policy response emphasizing the spread of this disease. We also find that several sectors also provided a negative reaction to COVID-19 and the policy response in the ASEAN stock market. In addition, the company's characteristics significantly influenced the encouragement of market reactions to the pandemic and regulations. Practical implications were provided for policymakers regarding the need to consider market conditions in interventions in the spread of the health crisis. Investors should also consider the characteristics involved in handling the COVID-19 pandemic.
Keywords: COVID-19; market reaction; ASEAN; sector; policy response; event study

For citation: **Lesmana D., Yudaruddin R. Market reaction to COVID-19 and policy response across different sectors: An event study on ASEAN stock market.** ***Finance: Theory and Practice.*** **2024;28(1):30-42. DOI: 10.26794/2587-5671-2024-28-1-30-42**

INTRODUCTION

The COVID-19 pandemic negatively affected the global economy due to the decline observed in the 2018 worldwide GDP development. This shows that the flagging in the financial sector, travel, and commodity supply negatively influenced economic growth.[1] According to several previous reports, the announcement of COVID-19 cases and deaths negatively affected financial markets. This was due to the disappointment and worries of the investors about the uncertainty caused by government policies regarding the prevention of disease distribution [1–7]. In handling this pandemic, government policies have been unable to provide good results for investors. This is because of the inadequate cooperation observed between different countries [8]. According to K.J. Heyden, T. Heyden [3] and J. Klose, P. Tillman [9], continuous arguments on government policies were still observed in organizing and controlling the market during the pandemic. This was in line with [10], where authoritative intervention policies influenced the decreasing stock returns.

Our study was initially motivated by the scarcity of literature reviews on the market reaction to COVID-19 and policy responses in the ASEAN stock market. This is because some previous studies mainly emphasized that the European market is mostly filled with developed countries [3, 9]. Irrespective of this condition, the impact of the pandemic on the financial sector is still different in developed and developing markets. For developed markets, the negative effects focused on the decline in demand, supply, and economic instability. The emerging markets are, however, influenced by trust, expectations, and consumption patterns [11]. Moreover, we also complement the previous study by [12], regarding the emphasis on the cross-country level in ASEAN, compared to the single-level type in China. Therefore, this study aims to evaluate the market reaction to COVID-19 and policy responses across different

[1] OECD. Coronavirus: The world economy at risk. OECD Interim Economic Assessment, March 2020. URL: https://www.oecd.org/berlin/publikationen/Interim-Economic-Assessment-2-March-2020.pdf (accessed on 18.06.2022).

sectors in the ASEAN stock market, which contains Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. In this case, the impact of government policies on several sectors [10] is also examined through previous related studies [13–16]. Furthermore, additional analysis is provided on the impact of firm characteristics on market reaction to COVID-19 and policy response.

The results showed that the market negatively reacted to the initial announcement of COVID-19 cases and deaths. This specifically indicated that the stock markets in Malaysia, the Philippines, and Vietnam had the worst reactions to the pandemic outbreak. Regarding the economic responses, negative reactions were also observed to policy responses in the ASEAN stock market, especially in Malaysia. However, a positive response was found in the Philippine, Thailand, and Vietnamese stock markets. Subsequent analyses of several sectors also showed differences in the market reaction to policy responses. This indicated that almost all sectors negatively reacted to the COVID-19 outbreak, except the health field, where a positive response was found. For the consumer staples, industrial, financial, and information technology sectors, the market also reacted negatively to the policy response. Based on firm characteristics, a significant influence was observed on the market reaction to COVID-19 and policy response.

In this paper, we contribute to the literature in the following ways. Firstly, taking emerging markets in ASEAN as the sample, we complement the previous studies [e.g. 1, 3, 8, 9, 17], which focused on the European region and developed countries. In addition, the ASEAN market is sensitive to macro shocks [18–20]. Secondly, to our best knowledge, we provide the only study to examine the market reacts to COVID-19 and policy response in the ASEAN stock market with different sectors. Thirdly, we extend the debate on whether the market reaction to fiscal policy and monetary policy based on previous studies in developed markets [3, 9]. Fourthly, additional analysis was provided regarding the influence of firm characteristics on market reaction to COVID-19 and policy response. The results obtained are also expected to have important practical implications for policymakers during this pandemic period. The government's accuracy and speed in decision-making processes are subsequently important factors in handling the market. In addition, companies need to consider their characteristics toward the development of a positive signal for investors.

LITERATURE REVIEW

The literature on market reactions in various conditions is reportedly increasing among various scholars. Based on these literature reviews, market reactions are associated with war [21–25], loan announcements, corporate governance [26], and audit reports [27]. In the coal industry, environmental policy also affected market reactions negatively [28]. This market subsequently reacted negatively to the announcement of the Soft Drinks Industry Levy (SDIL] in the UK [29]. Meanwhile, [30] showed that corporate social responsibility (CSR] positively influenced Chinese market reactions. According to R.H.L. Aalbers and others [31], this reaction positively and negatively affected pure acquisition and ambidexterity, respectively. D. Schell and coauthors found that a public health crisis negatively affected market reactions subsequently [32].

Besides these reviews, the market's reaction has also been linked to the COVID-19 pandemic. According to B.N. Ashraf [1], the development in the cases and death rates of this disease negatively affected the market reaction. D.K. Pandey et al. [2] also found that the pandemic negatively influenced these short-term reactions in developing countries. Furthermore, the increase in the number of deaths affected the reactions of different markets. According to K.J. Heyden and T. Heyden paper's [3], the announcement of the first death caused a negative market reaction, although no response was found for the proclamation of the initial case. H.H.A. Yong et al. also found that international and multinational exposures negatively and positively affected short- and long-term market reactions, respectively [4]. In the continuous development of COVID-19 cases and deaths, B.N. Ashraf found that country-level uncertainty avoidance strengthened negative reactions, subsequently [6]. Based on Deng T. et al. research [5], the threat policy of stock market performance positively impacted market reactions. M. Scherf et al. [7] also analyzed the impact of the lockdown announcement on the stock market response in OECDS and BRICS countries. This indicated the reaction of the stock market when an increase in Italian

cases aligned with global declination. In this case, the government's lockdown measures to prevent the spread of the virus caused negative market reactions.

During the pandemic period, the recent evaluation of government actions affected financial markets. This leads to the present assessment of the patterns by which the market reacts to government policies during the COVID-19 period, especially in the announcements of fiscal and monetary policies. In their research, K.J. Heyden et al. [3] and J. Klose [9] evaluated the reaction to these policies. According to K.J. Heyden and T. Heyden [3], the fiscal policy did not develop the uncertainty for investors' negative reactions during the pandemic, although the monetary regulation provided strong market credibility. This proved that monetary measures were more effective than fiscal policy during the COVID-19 outbreak. T. Müller and coauthors argued that the government needs to quickly and precisely address the problems of uncertainty as a positive response to the health crisis [17]. This was in line with A. Zaremba et al. [33], where the government's policy response to limiting the spread of the virus caused positive reactions regarding increased stock market volatility. These policies emphasized the information campaigns used to motivate investors to restructure their portfolios. They also focused on event cancellation information, which investors consider signals to anticipate future government tightening policies. Meanwhile, J. Klose and coauthors [9] examined market reactions to European monetary and fiscal policies. In this context, the monetary policy related to asset purchases caused a positive market reaction by reducing government financial pressure. This showed that the fiscal stimulus policies, such as tax deferrals, obtained a market response by increasing stock prices after the announcement. In addition, the fiscal policy is more effective than the monetary measures when the announcement is made on the same day. Based on D. Zhang paper [8], the pandemic developed the country's economy and caused uncertainty for investors, leading to a sharp increase and instability in the global financial markets' risk levels. This indicated the urgent need for a policy response, although inadequate cooperation from countries posed a serious threat to these markets. S. Shanaev et al. [10] also highlighted that government intervention was the main factor in decreasing stock returns during the pandemic.

Several reports subsequently associated the impact of the pandemic on various sectors in the financial markets. According to L. Zhao papers' [13], the market reacted negatively to the mining, agriculture, education, real estate, electric, environment, transportation, and finance sectors in China, during the COVID-19 outbreak. W. Huang et al. also proved that the pandemic negatively influenced the real estate and financial sectors [14]. Moreover, R. Matthews et al. reported a negative impact on the industrial sector [15]. For [16], the COVID-19 outbreak negatively influenced most sectors, except the health field and consumer staples, which were not affected.

DATA AND METHODOLOGY

Various event sources were used in the data collection process. This emphasized the following: (a) a total of 2,349 daily organizational stock-price index data in ASEAN countries, such as Indonesia, Malaysia, Thailand, Philippines, and Vietnam; (b) the initial pandemic cases and deaths for each country, and (c) the government's initial announcement in handling COVID-19, containing fiscal and monetary policies (see *Table 1*).

This study aims to evaluate the reaction to COVID-19 in the ASEAN stock market. In this case, various analyses were carried out on the patterns by which the market reacted in ASEAN regarding the initial announcement of the first case, death, as well as fiscal and monetary policies [3]. To achieve these objectives, the initial announcements about COVID-19 and government policies were used to analyze the market reaction. In calculating this reaction, three measurements were also used, namely the normal as well as the average and cumulative abnormal rates of return [3, 13, 34]. These measurements are presented as follows:

Calculation of the normal rate of return:

$$R_{i,\,t} = \alpha_i + \beta_i R_{i,M_{i,t}}.$$

Calculation of the average abnormal rate of return:

$$AR_{i,t} = R_{i,t} - \left(\alpha_i + \beta_i R_{i,M_{i,t}}\right).$$

Calculation of cumulative abnormal rate of return:

$$CAR_{i(t_1,t_2)} = \sum_{t_2}^{t=t_1} AR_{i,\,t},$$

Table 1

Sample Countries and Event Dates

Country	First Case	First Death	Fiscal Policy Response	Monetary Policy Response
Indonesia	02.03.2020	11.03.2020	20.03.2020	16.03.2020
Malaysia	28.01.2020	17.03.2020	27.02.2020	03.03.2020
Philippine	05.02.2020	10.02.2020	24.03.2020	03.04.2020
Thailand	13.01.2020	24.03.2020	10.03.2020	10.03.2020
Vietnam	30.01.2020	31.01.2020	01.06.2020	01.10.2020

Source: URL: https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19 (accessed on 18.06.2022).

where $R_{i;\,t}$ = the return rate of stock, *i*, on the trading day, *t*, $R_{i;\,M}i$; *t* = the market return rate of the trading market, α_i and β_i = the regression coefficients of the daily and market return rates, respectively. In this case, the expected normal return of the individual stock, *i*, was calculated when α_i and β_i remained stable during the estimation period. Furthermore, $AR_{i;\,t}$ is the average abnormal return rate of stock, *i*, on the trading day, *t*. This was obtained by subtracting the expected return from the AR (actual return). $CAR_{i(t_1,\,t_2)}$ is also the cumulative abnormal return rate of stock, *i*, in the event window period (t_1, t_2). This estimation was used for each SR (stock return) in the ASEAN market, with the resulting coefficient used to estimate the expected return E(R). As the estimation window, the utilization of the 100 trading days before and after the initial announcement led to the avoidance of the confounding effects. In this case, the window is then defined as *t* [0, 0], where *t* = 0, indicating the date of the event.

To achieve the objectives of this report, several stages were utilized. Firstly, the market reaction to the COVID-19 announcement was used. This was measured by Cumulative Abnormal Return (CAR) and contained the announcement of the initial case, death, as well as the monetary and fiscal policies in 5 ASEAN countries, namely Indonesia, Malaysia, Thailand, Philippines, and Vietnam. Secondly, the method developed by [13] was used to determine industrial market reactions. Thirdly, the procedure of [12] was applied regarding the effects of firm-specific characteristics on the market's reaction to COVID-19 and Policy Response. H. Xiong et al. [12] and S. Kumar [34] were used to analyze the following corporate characteristics:

- SIZE, the log of the firm's market capitalization;
- ROA, the returns on assets;
- CASH, the money on hand and total assets;
- LEV, the total liability on total equity;

AGE, the log of the company's age.

In achieving this goal, the following estimation is presented:

$$CAR_{i,t}[-\tau,+\tau]=\alpha_0+\alpha_1 SIZE_{i,t}+\alpha_2 ROA_{i,t}+$$
$$+\alpha_3 CASH_{i,t}+\alpha_4 LEV_{i,t}+\alpha_5 AGE_{i,t}+\varepsilon_{i,t},$$

where $CAR_{i,\,t}$ [−τ, +τ] measures the CAR for the firm, *i*, at the beginning (−τ) and ending (+τ) of the trading days. This indicated that $CAR_{i,\,t}$ (−1, +1) is the 3 days (−1 to +1) CAR for the firm, *i*, during the days of the COVID-19 Outbreak (first case and death) and Policy Response (Fiscal and Monetary). In addition, $AR_{i,\,t}$ (τ = 0) is the abnormal return for the firm, *i*, during the day of the COVID-19 outbreak (first case and death) and Policy Response (Fiscal and Monetary).

RESULT AND DISCUSSION

Stock Market Reaction to COVID-19 and Policy Response

Based on *Table 2*, the initial case and death of COVID-19 caused a negative market reaction before and after the announcement in all countries. This indicated that the reactions in Malaysia, the Philippines, and Vietnam were highly negative, compared to other countries. These results were in line with [1–3, 8], where the pandemic raised concerns for investors,

leading to negative market reactions to the announced cases and deaths. The government policy responses used in handling the pandemic were also monetary and fiscal regulations, which did not provide good news for investors in the ASEAN stock market. From *Table 2*, this market did not significantly react to the policy during the initial monetary and fiscal announcement period (0.0). Meanwhile, the new market reacted significantly and negatively after the fiscal announcements (0, +1) and (–1, +1). This was in line with [3] and [8], where the government's response to a fiscal policy caused problematic concerns for investors.

Regarding each country, the markets in the Philippines and Thailand reacted significantly and positively to the government's monetary and fiscal announcements. The market in Vietnam also only reacted positively to the monetary announcement. These results were consistent with [17], where the government's policy response was considered positive for investors to handle the spread of COVID-19. Meanwhile, the Malaysian market reacted significantly and negatively to the government's policies before and after the monetary and fiscal announcements. This was in line with [8], where the COVID-19 pandemic negatively affected the capital market. In this case, the inadequate cooperation between countries posed a serious threat to investors when handling this problem.

Stock Market Reaction to COVID-19 and Policy Response in Various Sectors

Subsequent analyses were carried out to determine the industrial market's reaction to the COVID-19 pandemic. This reaction emphasized Communication Services, Consumer Discretionary and Staples, Energy, Financial, Healthcare, Industrial, Information Technology, Materials, Real Estate, and Utilities. Based on *Table 3 and Table 4*, the initial death announcement caused negative market reactions in all sectors within the ASEAN countries. However, the announcement of the initial pandemic case only caused a negative reaction in the Communication Services, Consumer Discretionary and Staples, Energy, Industrial, Information Technology, Materials, and Real Estate sectors. In this context, the industrial and material sectors had the worst impacts before and after the announcement. This was in accordance with the results of W. Huang et al. [14], who found that COVID-19 had a detrimental impact on the real estate and material industries. R. Matthews et al. [15] also found a negative impact on the industrial sector. Then, M. Rinaldi et al. [35] found that COVID-19 has a negative impact on consumer staples.

In the health sector, the market, however, reacted positively to the announcement of the COVID-19 case. This was due to the emergence of early pandemic cases, where many people were hunting for medical devices, such as masks and hand sanitizers, to protect against the spread of the virus. In this case, higher health product demand led to a sharp increase in prices. These results were in line with Z. Dong et al. [16], where most sectors were negatively impacted by COVID-19, except the health field. This was due to the consideration of health goods and service providers as compulsory and essential substitutes.

In overcoming the pandemic, both fiscal and monetary policies were also not positive signals for investors. This was presented in *Table 3 and Table 4*, where the markets in the consumer staples, industrial, and information technology sectors reacted negatively to the announcement of fiscal policy. In this case, the financial market also reacted negatively to the monetary policy. This was because a policy emphasizing low interest rates generated investors' anxiety about the company's performance in the financial sector, especially the increasing systemic fiscal risk. These results were consistent with [14], where COVID-19 influenced market and funding liquidities, as well as default risks in the financial sector. Meanwhile, the markets in the consumer staple, information technology, and utility sectors reacted positively to the announcement of monetary policy. This was in line with J.E. Tetteh and others [36], where the government's policy response (fiscal and monetary) aided organizational sustainability during the pandemic. K.J. Heyden et al. [3] also showed that monetary policy was the government's step in handling the market.

Influence of Firm Characteristics on the Market Reaction to COVID-19 and Policy Response

Subsequent analysis was carried out regarding the influence of firm-specific characteristics on the market reaction to COVID-19 and Policy Response (*Table 5* and *Table 6*). In this process, SIZE/ROA and SIZE/AGE had significant positive values on market

Table 2

Stock Market Reaction to COVID-19 and Policy Response

Event window	All Countries (2349 Companies)		Indonesia (38 Companies)		Malaysia (720 Companies)		Philippine (183 Companies)		Thailand (642 Companies)		Vietnam (366 Companies)	
	CAR	t value	CAR	t value	CAR	t value	CAR	t value	CAR	t value	CAR	t value
First Case of COVID-19												
(−1, 0)	−0.00528***	−3.5454	−0.00344	−0.9782	−0.01636***	−4.8931	−0.00460	−1.4467	0.00378*	1.8143	−0.00195	−0.5271
(0, 0)	−0.00824***	−7.0337	0.0015	0.5048	−0.01878***	−7.5103	−0.00583***	−2.8134	−0.00168	−1.4287	−0.01188***	−3.2656
(0, +1)	−0.00716***	−3.9405	0.00780*	1.8485	−0.01191***	−3.3224	−0.00856**	−2.3082	−0.00152	−0.6955	−0.02495***	−3.8921
(−1, +1)	−0.00421**	−2.2695	0.00285	0.6908	−0.00949**	−2.3770	−0.00733*	−1.7263	0.00394*	2.1685	−0.00150**	−2.3706
First Death of COVID-19												
(−1, 0)	−0.03458***	−15.4555	−0.00591	−1.6136	−0.08493***	−15.5642	−0.01568***	−2.9297	−0.01791***	−4.9566	−0.0085***	−3.9498
(0, 0)	−0.01577***	−9.8647	−0.01395***	−4.9556	−0.02441***	−5.9362	−0.01237***	−2.5556	−0.01375***	−5.5179	−0.00622***	−3.5721
(0, +1)	−0.03214***	−15.0065	−0.02413***	−5.4419	−0.06323***	−12.7266	−0.01418**	−2.4651	−0.02611***	−6.9344	−0.00013	−0.0628
(−1, +1)	−0.05095***	−19.3110	−0.01610***	−3.2570	−0.12375***	−19.8212	−0.01749***	−2.8522	−0.03026***	−8.0866	−0.0024	−0.9865
Fiscal Policy Response												
(−1, 0)	−0.00290	−1.6445	−0.00454	−0.9782	−0.01663***	−6.0655	0.01228	1.5776	0.00827**	2.4101	−0.00117	−0.2961
(0, 0)	−0.00258	−1.9822	−0.00261	−0.7843	−0.0155***	−8.3473	0.01636***	3.3084	0.00434	1.3907	0.00120	0.6666
(0, +1)	−0.00816***	−4.7487	−0.00112	−0.2767	−0.04073***	14.7284	0.03794***	4.8984	0.00584*	1.6632	−0.00015	−0.0655
(−1, +1)	−0.00849***	−3.9247	−0.00305	−0.5362	−0.04186***	−12.6868	0.03385****	3.5240	0.00976**	2.3273	−0.00253	−0.6176
Monetary Policy Response												
(−1, 0)	0.00130	0.7593	−0.00319	−0.6315	−0.00513*	−1.6979	0.00763	1.2281	0.00826**	2.4060	0.00399**	2.1178
(0, 0)	0.00166	1.2159	0.00357	1.0051	−0.00338	−1.5942	0.01040*	1.7546	0.00426	1.3637	0.00036	0.2359
(0, +1)	−0.00020	−0.1140	0.00111	0.2257	−0.01271***	−4.2219	0.01372*	1.7425	0.00578*	1.6483	0.00535**	2.2631
(−1, +1)	−0.00055	−0.2673	−0.00565	−0.9198	−0.01446***	−4.2601	0.01096	1.2797	0.00978**	2.3317	0.00899***	3.4747

Source: Author calculation.

Table 3

Stock Market Reaction to COVID-19 and Policy Response in Various Sectors

Event window	Communication Services [92 Companies)		Consumer Discretionary [294 Companies)		Consumer Staples [238 Companies)		Energy [97 Companies)		Financial [231 Companies)		Healthcare [64 Companies)	
	CAR	t value	CAR	t value	CAR	t value	CAR	t value	CAR	t value	CAR	t value
First Case of COVID-19												
(−1, 0)	−0.00341	−0.6327	−0.00593*	−1.7735	−0.00730**	−2.2886	−0.01889***	−3.2215	0.00283	0.8668	0.00905*	1.7273
(0, 0)	−0.00688*	−1.6839	−0.00932***	−3.5441	−0.00480**	−2.0048	−.016566***	−2.6913	−0.00074	−0.3106	0.01266**	2.5546
(0, +1)	−0.00227	−0.3892	−0.00978**	−1.9996	0.00145	0.3444	−0.01476	−1.4338	−0.00211	−0.6401	0.02677*	1.9612
(−1, +1)	0.00119	0.1690	−0.00639	−1.3530	−0.00104	−0.2525	−0.01708*	−1.8943	0.00146	0.7204	0.02316*	1.6977
First Death of COVID-19												
(−1, 0)	−0.01857**	−1.9884	−0.04944***	−6.5483	−0.01892***	−3.3423	−0.03494***	−2.8663	−0.02052***	−4.6313	−0.04018***	−3.2615
(0, 0)	−0.01884***	−2.7043	−0.02787***	−4.9933	−0.00909**	−2.4387	−0.00185	−0.2676	−0.01337***	−4.0606	−0.02098**	−2.3003
(0, +1)	−0.03909***	−3.6397	−0.04550***	−6.1256	−0.01573***	−3.2509	−0.03597***	−3.3854	−0.02263***	−4.6166	−0.02864**	−2.3407
(−1, +1)	−0.03882***	−3.2128	−0.06710***	−7.1527	−0.02556***	−4.2384	−0.06907***	−4.3098	−0.02977***	−4.9701	−0.04783***	−3.1235
Fiscal Policy Response												
(−1, 0)	0.01540*	1.7221	−0.00735	−1.1664	−0.00722	−1.6206	−0.00187	−0.2236	−0.00293	−0.6220	−0.00671	−0.9156
(0, 0)	0.00608	1.0067	−0.00577	−1.2907	−0.00073	0.8145	0.00379	0.6286	0.00381	1.2012	0.00438	0.9297
(0, +1)	0.00620	0.6824	−0.00892	−1.5069	−0.00803*	−1.9026	−0.00172	−0.1838	0.00621	1.3465	−0.00391	−0.4316
(−1, +1)	0.01552	1.3605	−0.01050	−1.3808	−0.01452***	−2.6210	−0.00739	−0.6825	−0.00054	−0.0852	−0.01500	−1.2942
Monetary Policy Response												
(−1, 0)	0.01157	1.5133	0.00247	0.4194	−0.00057	−0.1398	−0.00542	−0.6418	−0.00819*	−1.9165	−0.01608	−1.0443
(0, 0)	0.00751	1.0582	0.00345	0.6866	0.00536*	1.8129	0.00607	1.1438	−0.00287	−0.8962	0.00324	0.7271
(0, +1)	0.00782	0.7955	−0.00013	−0.0204	0.00243	0.5446	0.01247	1.3796	−0.01122***	−2.6858	0.00332	0.4542
(−1, +1)	0.01188	1.1544	−0.00111	−0.1530	−0.00350	−0.6304	0.00096	0.0839	−0.01653***	−2.8941	−0.01601	−0.9855

Source: Author calculation.

Table 4

Stock Market Reaction to COVID-19 and Policy Response in Various Sectors [continued)

Event window	Industrials [490 Companies)		Information Technology [154 Companies)		Materials [305 Companies)		Real Estate [310 Companies)		Utilities [74 Companies)	
	CAR	t value	CAR	t value	CAR	t value	CAR	t value	CAR	t value
First Case of COVID-19										
(−1, 0)	−0.00708**	−2.4158	−0.00241	−0.2218	−0.01439***	−3.0981	0.00237	0.6205	−0.00721	−0.4985
(0, 0)	−0.00985***	−4.5750	−0.01058**	−2.0784	−0.01599***	−3.3611	−0.00533**	−2.3603	−0.01206	−0.7553
(0, +1)	−0.01216***	−3.4706	−0.00037	−0.0570	−0.01325**	−2.3121	−0.00648*	−1.9350	−0.02468	−0.8705
(−1, +1)	−0.00939***	−3.1395	0.00778	0.6518	−0.01164**	−2.0930	0.00123	0.4042	−0.01983	−0.7415
First Death of COVID-19										
(−1, 0)	−0.03591***	−6.6715	−0.5337***	−4.9762	−0.0326***	−5.8006	−0.04188***	−6.4643	−0.01421**	−2.1750
(0, 0)	−0.01579***	−4.0307	−0.00797	−0.8772	−0.0168***	−3.9059	−0.01887***	−5.0595	−0.00557	−1.2794
(0, +1)	−0.03538***	−6.9400	−0.0418***	−4.3919	−0.0360***	−6.8694	−0.02819***	−4.4812	−0.00648	−1.0777
(−1, +1)	−0.05550***	−9.1239	−0.0872***	−7.3119	−0.0518***	−7.7732	−0.05193***	−7.2002	−0.01512**	−2.1009
Fiscal Policy Response										
(−1, 0)	−0.00520	−1.1861	−0.01107*	−1.7283	0.00394	0.7194	−0.00299	−0.7849	0.01212**	2.2598
(0, 0)	−0.00910***	−2.7726	−0.01231**	−2.1818	0.00034	0.0818	−0.00110	−0.4084	0.00396	1.1018
(0, +1)	−0.01734***	−4.6245	−0.03359***	−4.0719	−0.00711	−1.3151	−0.00077	−0.2196	−0.00218	−0.3434
(−1, +1)	−0.01343***	−2.6784	−0.03235***	−3.7491	−0.00351	−0.5250	−0.00266	−0.6248	0.00597	0.7751
Monetary Policy Response										
(−1, 0)	−0.00160	−0.4159	0.01258*	1.8638	0.00561	1.0675	0.00339	0.7903	0.01276**	2.0815
(0, 0)	−0.00262	−0.8004	0.00403	0.6612	0.00339	0.8251	0.00054	0.1569	0.00328	0.7636
(0, +1)	−0.00522	−1.3557	0.00126	0.1777	0.00390	0.7359	−0.00160	−0.3253	0.01488**	2.2780
(−1, +1)	−0.00420	−1.0348	0.00982	1.2211	0.00612	0.9582	0.00124	0.2205	0.02436***	3.2112

Source: Author calculation.

Table 5

Influence of Firm-Specific Characteristics on the Market Reaction to COVID-19

Variables	Cumulative abnormal returns (CAR)							
	First Case of COVID-19				First Death of COVID-19			
	(−1, 0)	(0, 0)	(0, +1)	(−1, +1)	(−1, 0)	(0, 0)	(0, +1)	(−1, +1)
SIZE	−0.00021	0.0011*	0.00037	−0.00093	0.00228**	0.00130	0.00197*	0.00294**
	(−0.28)	(1.84)	(0.40)	(−0.98)	(2.00)	(1.53)	(1.76)	(2.26)
CASH	2.29e-10	6.01e-11	−1.26e-10	4.33e-11	5.48e-11	1.46e-10	4.49e-10	3.58e-10
	(1.18)	(0.40)	(−0.53)	(0.18)	(0.20)	(0.70)	(1.65)	(1.13)
LEV	−1.73e-06	−1.44e-06	−1.07e-06	−1.36e-06	−1.92e-06	−3.09e-06	−8.31e-06**	−7.14e-06*
	(−0.73)	(−0.77)	(−0.37)	(−0.46)	(−0.56)	(−1.21)	(−2.48)	(−1.83)
ROA	0.00013*	0.00001	−7.32e-06	0.00011	−9.67e-07	−0.00005	−0.00008	−0.00002
	(1.93)	(0.33)	(−0.08)	(1.26)	(−0.01)	(−0.75)	(−0.85)	(−0.25)
AGE	0.00299	0.00162	0.00045	0.00182	0.00187	0.00558*	0.00577	0.00206
	(1.09)	(0.76)	(0.14)	(0.53)	(0.48)	(1.89)	(1.49)	(0.46)
Constant	−0.01136***	−0.02787*	0.01141	0.02792	−0.14958***	−0.07779***	−0.12253***	−0.19431***
	(−0.56)	(−1.77)	(0.46)	(1.11)	(−5.12)	(−3.55)	(−4,27)	(−5.82)
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2349	2349	2349	2349	2349	2349	2349	2349
Prob > F	0.0001	0.0000	0.0001	0.0089	0.0000	0.0019	0.0000	0.0000
R Square	0.0220	0.0308	0.0214	0.0155	0.1060	0.0177	0.0589	0.1607

Source: Author calculation.

Note: CAR is cumulative abnormal returns. SIZE is the log of the market capitalization of the firm. ROA is returns on assets. CASH is cash on hand and on total asset. LEV is total liability on total equity. AGE is the log of age of the company. *, **, and *** indicate significant values at 10%, 5%, and 1% respectively.

Table 6

Influence of Firm-Specific Characteristics on the Market Reaction to Policy Response

Variables	Cumulative abnormal returns (CAR)							
	Fiscal Policy Response				Monetary Policy Response			
	(−1, 0)	(0, 0)	(0, +1)	(−1, +1)	(−1, 0)	(0, 0)	(0, +1)	(−1, +1)
SIZE	0.00028	−0.00053	−0.00146*	−0.00063	−0.00007	−0.00084	−0.00058	−0.00018
	(0.31)	(−0.79)	(−1.68)	(−0.57)	(−0.09)	(−1.17)	(−0.62)	(0.17)
CASH	2.21e-10	−8.25e-11	2.10e-10	5.14e-10*	2.59e-10	−2.60e-10	5.73e-10**	5.71e-10**
	(0.96)	(−0.49)	(0.98)	(1.87)	(1.16)	(1.46)	(2.48)	(2.11)
LEV	8.93e-07	−4.17e-06**	−8.75e-06***	−3.69e-06	5.11e-06*	−1.67e-06	−0.00001***	−4.24e-06
	(0.32)	(−2.01)	(−3.31)	(−1.09)	(1.85)	(−0.76)	(−3.89)	(−1.27)
ROA	−7.73e-06	−0.00006	0.00005	0.00011	−0.00001	−0.00013**	−0.00010	0.000026
	(−0.09)	(−0.99)	(0.71)	(1.09)	(−0.13)	(−2.09)	(−1.18)	(0.26)
AGE	0.00391	0.00212	0.00946***	0.01125***	−0.00036	0.00089	0.00398	0.00272
	(1.20)	(0.89)	(3.11)	(2.89)	(−0.11)	(0.35)	(1.22)	(0.71)
Constant	−0.04186	−0.00461	−0.04110*	−0.0783***	−0.02221	0.01247	−0.01221	−0.04690
	(−1.72)	(−0.26)	(−1.81)	(−2.70)	(−0.94)	(0.66)	(−0.50)	(−1.64)
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2349	2349	2349	2349	2349	2349	2349	2349
Prob > F	0.0004	0.0000	0.0000	0.0000	0.0386	0.0101	0.0000	0.0001
R Square	0.0199	0.0307	0.0950	0.0620	0.0132	0.0022	0.0260	0.0223

Source: Author calculation.

Note: CAR is cumulative abnormal returns. SIZE is the log of the market capitalization of the firm. ROA is returns on assets. CASH is cash on hand and on total asset. LEV is total liability on total equity. AGE is the log of age of the company. *, **, and *** indicate significant values at 10%, 5%, and 1% respectively.

reaction during the announcement of the initial case and death, respectively. Meanwhile, LEV had a significant negative market reaction during the initial death. This indicated that companies with a larger scale, high leverage, and good performance capabilities promoted greater market reactions to COVID-19. Based on the results, SIZE and ROA had significant negative effects on the market reaction to fiscal and monetary policies, respectively. Both CASH and AGE also had significant positive values on the market's reaction to fiscal and monetary policies. However, LEV had an inconsistent value that was significantly negative on the market reaction to these policies. This confirmed that the higher and lower leverage levels positively and negatively affected CAR before and after the announcement of the government's policy, respectively. It also showed that the company with a smaller scale, higher CASH, and AGE, as well as lower leverage and profitability levels, stimulated greater CAR value against the policy response of COVID-19.

CONCLUSION

This study aimed to evaluate the reaction to COVID-19 and the policy response across various sectors in the ASEAN stock market. The involved ASEAN countries included Indonesia, Malaysia, Philippines, Thailand, and Vietnam. The role of company characteristics on the market reaction to COVID-19 and policy response was also evaluated. Furthermore, a Cumulative Abnormal Return (CAR) was used to measure this reaction, using a sample of 2 349 companies in the ASEAN stock market. Based on the results, the market significantly and negatively reacted to the pandemic during the announcements of the initial cases and deaths in the ASEAN countries. In this case, the markets in Malaysia, the Philippines, and Vietnam had the worst reactions compared to other countries. The market reaction also reacted negatively to the government's fiscal and monetary policies in handling the spread of the COVID-19 virus. This indicated that almost all the involved sectors were negatively impacted by the pandemic. In this case, even the government's policies were not provided with the positive sectoral values needed to overcome the pandemic. Furthermore, the firm characteristic of cumulative abnormal returns to COVID-19 and policy response was analyzed, where organizational features significantly influenced market reactions.

Based on these results, the pandemic negatively influenced developing countries' investors, with the government's policy still not being a positive signal for them to handle the pressure of the health crisis. These served as guidelines for policymakers in handling the market under pandemic pressure. It also showed that companies should consider their characteristics when confronting this health crisis to ensure a positive reaction from investors. Therefore, subsequent future analyses should be conducted on the market reaction in each sector within developed countries.

REFERENCES

1. Ashraf B.N. Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance*. 2020;54:101249. DOI: 10.1016/j.ribaf.2020.101249
2. Pandey D.K., Kumari V. Do dividend announcements override the pandemic impacts? Evidence from the BSE 500 constituent firms. *Asia Pacific Management Review*. 2022;27(3);210–219. DOI: 10.1016/j.apmrv.2021.09.002
3. Heyden K.J., Heyden T. Market reactions to the arrival and containment of COVID-19: An event study. *Finance Research Letters*. 2021;38:101745. DOI: 10.1016/j.frl.2020.101745
4. Yong H.H.A., Laing E. Stock market reaction to COVID-19: Evidence from U.S. firms' international exposure. *International Review of Financial Analysis*. 2021;76:101656. DOI: 10.1016/j.irfa.2020.101656
5. Deng T., Xu T., Lee Y.J. Policy responses to COVID-19 and stock market reactions — An international evidence. *Journal of Economics and Business*. 2022;119:106043. DOI: 10.1016/j.jeconbus.2021.106043
6. Ashraf B.N. Stock markets' reaction to COVID-19: Moderating role of national culture. *Finance Research Letters*. 2021;41:101857. DOI: 10.1016/j.frl.2020.101857
7. Scherf M., Matschke X., Rieger M.O. Stock market reactions to COVID-19 lockdown: A global analysis. *Finance Research Letters*. 2022;45:102245. DOI: 10.1016/j.frl.2021.102245

8. Zhang D., Hu M., Ji Q. Financial markets under the global pandemic of COVID-19. *Finance Research Letters*. 2020;36:101528. DOI: 10.1016/j.frl.2020.101528
9. Klose J., Tillmann P. COVID-19 and financial markets: A panel analysis for European countries. *Jahrbücher für Nationalökonomie und Statistik*. 2021;241(3);297–347. DOI: 10.1515/jbnst-2020–0063
10. Shanaev S., Shuraeva A., Ghimire B. The financial pandemic: COVID-19 and policy interventions on rational and irrational markets. *SSRN Electronic Journal*. 2020. DOI: 10.2139/ssrn.3589557
11. Zhao L., Rasoulinezhad E., Sarker T., Taghizadeh-Hesary F. Effects of COVID-19 on global financial markets: Evidence from qualitative research for developed and developing economies. *The European Journal of Development Research*. 2023;35(1):148–166. DOI: 10.1057/s41287–021–00494-x
12. Xiong H., Wu Z., Hou F., Zhang J. Which firm-specific characteristics affect the market reaction of Chinese listed companies to the COVID-19 pandemic? *Emerging Markets Finance and Trade*. 2020;56(10):2231–2242. DOI: 10.1080/1540496X.2020.1787151
13. He P., Sun Y., Zhang Y., Li T. COVID-19's impact on stock prices across different sectors — an event study based on the Chinese stock market. *Emerging Markets Finance and Trade.* 2020;56(10);2198–2212. DOI: 10.1080/1540496X.2020.1785865
14. Huang W., Lan C., Xu Y., Zhang Z., Zeng H. Does COVID-19 matter for systemic financial risks? Evidence from China's financial and real estate sectors. *Pacific-Basin Finance Journal.* 2022;74:101819. DOI: 10.1016/j.pacfin.2022.101819
15. Matthews R., Rutherford B.N., Edmonson D., Matthews L. Uncertainty in industrial markets: The COVID-19 pandemic. *Industrial Marketing Management.* 2022;102:364–376. DOI: 10.1016/j.indmarman.2022.02.006
16. Dong Z., Li Y., Zhuang X., Wang J. Impacts of COVID-19 on global stock sectors: Evidence from time-varying connectedness and asymmetric nexus analysis. *The North American Journal of Economics and Finance.* 2022;62:101753. DOI: 10.1016/j.najef.2022.101753
17. Müller T., Schulten T., Drahokoupil J. Job retention schemes in Europe during the COVID-19 pandemic — different shapes and sizes and the role of collective bargaining. *Transfer: European Review of Labour and Research*. 2022;28(2):247–265. DOI: 10.1177/10242589221089808
18. Yudaruddin R., Fitriansyah, Lesmana L., Bintoro R.F.A., Purnomo A.H., Nugroho B.A., Santi E.N. Does invasion Russia-Ukraine affect to global financial market? Evidence from consumers' staples sectors. *Journal of Open Innovation: Technology, Market, and Complexity*. 2023;9(3):100086. DOI: 10.1016/j.joitmc.2023.100086
19. Lesmana D., Yudaruddin R. The impact of the Russia-Ukraine invasion on market reaction across various industries: An event study on the ASEAN market. *Afro-Asian Journal of Finance and Accounting*. DOI: 10.1504/AAJFA.2023.10057770
20. Yudaruddin R., Lesmana D. Banking sector's reaction during the Russian invasion of Ukraine: Who reacted the most? *Journal of Economic Studies.* 2023. DOI: 10.1108/JES-04–2023–0206
21. Basnet A., Blomkvist M., Galariotis E. The role of ESG in the decision to stay or leave the market of an invading country: The case of Russia. *Economics Letters*. 2022;216:110636. DOI: 10.1016/j.econlet.2022.110636
22. Tosun O.K., Eshraghi A. Corporate decisions in times of war: Evidence from the Russia-Ukraine conflict. *Finance Research Letters*. 2022;48:102920. DOI: 10.1016/j.frl.2022.102920
23. Choudhry T. World War II events and the Dow Jones industrial index. *Journal of Banking and Finance*. 2010;34(5):1022–1031. DOI: 10.1016/j.jbankfin.2009.11.004
24. Hudson R., Urquhart A. War and stock markets: The effect of World War Two on the British stock market. *International Review of Financial Analysis*. 2015;40:166–177. DOI: 10.1016/j.irfa.2015.05.015
25. Schneider G., Troeger V.E. War and the world economy: Stock market reactions to international conflicts. *The Journal of Conflict Resolution*. 2006;50(5):623–645. DOI: 10.1177/0022002706290430
26. Tampakoudis I., Noulas A., Kiosses N. The market reaction to syndicated loan announcements before and during the COVID-19 pandemic and the role of corporate governance. *Research in International Business and Finance*. 2022;60:101602. DOI: 10.1016/j.ribaf.2021.101602

27. Ittonen K. Market reactions to qualified audit reports: Research approaches. *Accounting Research Journal*. 2012;25(1):8–24. DOI: 10.1108/10309611211244483
28. Nerger G. L., Huynh T. L. D., Wang M. Which industries benefited from Trump environmental policy news? Evidence from industrial stock market reactions. *Research in International Business and Finance*. 2021;57:101418. DOI: 10.1016/j.ribaf.2021.101418
29. Law C., Cornelsen L., Adams J., Penney T., Rutter H., White M., Smith R. An analysis of the stock market reaction to the announcements of the UK Soft Drinks Industry Levy. *Economics and Human Biology*. 2020;38:100834. DOI: 10.1016/j.ehb.2019.100834
30. Yi Y., Zhang Z., Yan Y. Kindness is rewarded! The impact of corporate social responsibility on Chinese market reactions to the COVID-19 pandemic. *Economics Letters*. 2021;208:110066. DOI: 10.1016/j.econlet.2021.110066
31. Aalbers R. H.L., McCarthy K.J., Heimeriks K. H. Market reactions to acquisition announcements: The importance of signaling 'why' and 'where'. *Long Range Planning*. 2021;54(6):102105. DOI: 10.1016/j.lrp.2021.102105
32. Schell D., Wang M., Huynh L. D. This time is indeed different: A study on global market reactions to public health crisis. *Journal of Behavioral and Experimental Finance*. 2020;27:100349. DOI: 10.1016/j.jbef.2020.100349
33. Zaremba A., Kizys R., Aharon D. Y., Demir E. Infected markets: Novel coronavirus, government interventions, and stock return volatility around the globe. *Finance Research Letters*. 2020;35:101597. DOI: 10.1016/j.frl.2020.101597
34. Kumar S. New evidence on stock market reaction to dividend announcements in India. *Research in International Business and Finance*. 2017;39(Pt.A):327–337. DOI: 10.1016/j.ribaf.2016.09.009
35. Irwansyah, Rinaldi M., Yusuf A. M., Ramadhani M. H.Z.K., Sudirman S. R., Yudaruddin R. The effect of COVID-19 on consumer goods sector performance: The role of firm characteristics. *Journal of Risk and Financial Management*. 2023;16(11):483. DOI: 10.3390/jrfm16110483
36. Tetteh J. E., Amoah A., Ofori-Boateng K., Hughes G. Stock market response to COVID-19 pandemic: A comparative evidence from two emerging markets. *Scientific African*. 2022;17: e01300. DOI:10.1016/j.sciaf.2022.e01300

ABOUT THE AUTHORS

Dadang Lesmana — Researcher, Research and Development Agency, East Kutai, Indonesia
https://orcid.org/0000-0002-6489-0466
Corresponding author:
dadanglesmana89@gmail.com

Rizky Yudaruddin — Lecturer, Faculty of Economics and Business, Mulawarman University's Samarinda, Indonesia
https://orcid.org/0000-0002-0850-9747
rizky.yudaruddin@feb.unmul.ac.id

Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

The article was submitted on 27.09.2022; revised on 17.10.2022 and accepted for publication on 26.10.2022. The authors read and approved the final version of the manuscript.