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IMPACT OF GOVERNMENT INTERVENTIONS ON THE STOCK MARKET DURING COVID-19: A CASE STUDY IN VIETNAM

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ABSTRACT

The study aims to analyze the reaction of the stock market to the events of government intervention during the Covid-19 pandemic. The author used data from 341 companies listed on the HCM City Stock Exchange, which were divided into 10 sector groups in the period 2019-2021. Using the event research method, the author analyzed the change in stock market returns around the event date. The research brought many interesting results. Firstly, policy distancing, blockdown, restricting exposure, and restricting travel have a negative effect on the stock market. Secondly, the three times the state bank has reduced interest rates, it shows a positive reaction in the stock market. The findings help investors, regulators, and governments understand the short-term impact of interventions.

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1. Introduction

The Covid-19 epidemic, also known as acute respiratory inflammation, is caused by the SARS-CoV-2 virus. It appeared in December 2019, with the first confirmed case on December 31, 2019, in the city of Wuhan in central China's Hubei province. In addition to its severe impact on the global economy, the pandemic has caused a lot of human damage, which has shown us the shakiness of the world economy as it has suffered consecutive supply chain problems and people's demands have been falling sharply over the years. The epidemic has spread and has far-reaching impacts on all aspects of life, especially the long-term consequences for the economy and the markets, including the stock markets (Hongsakulvasu & Liammukda, 2020). Along the way, to cope with the epidemic, the Vietnamese government has taken a series of measures, such as distancing, blocking, restricting exposure, and restricting travel. In addition, policies to exempt or reduce taxes, subsidies, and interest rate reductions have also been implemented, as it is important to maintain positive investor sentiment. Furthermore, the Vietnamese government has also used political intervention measures by importing vaccines and vaccinating the entire population to gain more trust from the public. Many studies have analyzed the economic impact of the pandemic on regional and worldwide levels.

Most studies indicate that the pandemic will have a short-term impact on the global economy, with a longer duration for countries considered epicenters of the pandemic. Many restrictive and intervention measures considered unprecedented have been introduced by many governments. Depending on the epidemic situation and the characteristics of each country, there are different response measures, and the effectiveness of this policy is also different. Policies related to announcement of physical distancing, blockade, contact and travel restrictions (Hung et al., 2021; Anh & Gan, 2020; Huo & Qiu, 2020; Phuong, 2021; Verma et al., 2021; Aldhamari et al., 2022; Azmi, 2022; Scherf et al., 2022). Government support measures through policies to reduce interest rates, taxes and subsidies. As well as events related to Covid-19 vaccine import, procurement and implementation policies (Ang & Rabo, 2020; Rouatbi et al., 2021).

However, the current study of market and sector-specific responses to government interventions linked to a series of events is still relatively new to the Vietnamese stock market. The research will focus on analyzing the impact of government intervention measures during the Covid-19 pandemic expressed through changes in stock prices on the Vietnamese market. The findings will provide insights into the short-term impact of government interventions during a pandemic. From there, create better policies and decisions to avoid serious economic impacts, risk control strategies, improve investment efficiency as well as contribute to developing the economy in a healthy way for all economic sectors. any future pandemic. In addition, through the price reaction trend to government policies for each specific industry group, investors can come up with the right strategy. Following the introduction, part (2) literature review with hypotheses; part (3) data and research methods; part (4) Results and discussion and the last part (5) summary and conclusions.

2. Literature review

2.1. Efficient market theory

Fama (1991) assumes all information related to stock prices is available and freely shared with all market participants. The efficient market hypothesis is divided into three versions: (i) weak form market, stock prices reflect all past information and do not reflect new information that has not been publicly announced; (ii)

semi-strong form market, stock prices reflect the same information as in a weakly efficient market plus newly disclosed information will be immediately priced; (iii) strong form market, all public or internal information is reflected in stock prices. Thus, the occurrence of Covid-19 will be reflected in stock prices regardless of the market performance being evaluated, specifically stock prices.

2.2. Keynesian theory of government intervention

Keynesian theory was published in 1936. According to Keynes, the reason for crisis and unemployment is due to lack of State intervention in the economy. The emergence of the tendency to save leads to a decrease in aggregate demand, which is the cause of crisis and unemployment. To increase aggregate demand, the government needs to issue investment incentive policies, financial tools and fiscal policies, monetary tools and monetary policies, and directional plans in public spending. However, excessive intervention from the State can also cause negative effects, such as crowding out the private sector, public debt crisis, inflation...

2.3. Behavioral finance theory

Behavioral finance theory has its origins in the work of psychologists Kahneman, Tversky and economist Shiller in the 1970s and 1980s. Behavioral finance tries to explain how humans make decisions that may not be rational at times. This contrasts with many traditional theories that argue that investors make rational decisions. In particular, "herd behavior" or "crowd effect" refers to investors buying or selling shares for many other investors. They want to act according to the majority of people around them, or some individual investors lack confidence in making their own judgments. The herding behavior of many investors can lead to significant price increases for stocks in that sector and lead to a stock market bubble. In addition, this behavior has the ability to amplify the impact of a piece of information on stock prices, prolonging boom or crisis periods of the stock market.

When the Covid-19 epidemic broke out suddenly and lasted a long time in many countries. Blockade measures and transaction restrictions were established, disrupting the global supply chain, forecasting a period of difficult business operations for the company. In the early stages of the blockade, herd mentality was one of the reasons leading investors to sell off quality stocks regardless of whether the company was affected by the epidemic or not. The increase in herding behavior by investors during the Covid-19 outbreak may have contributed to stock market volatility, exacerbating fluctuations, leading to market inefficiencies securities (Blasco et al., 2012).

2.4. Government interventions during the Covid-19 pandemic

Cowling et al. (2020) demonstrated the significance of implementing treatments that could alter people's behaviors and ultimately help lower the Covid-19 transmission rate. Numerous studies indicate that non-pharmaceutical therapies were successful in reducing the number of cases that were replicated. According to Koh et al. (2020), lockdowns were among the first measures taken by governments. Most people agree that lockdowns are a useful technique for reducing the rate at which infectious diseases spread. According to Goldstein et al. (2021), nations shouldn't enforce a mindless national lockdown because it may put the poor at a heightened risk of joblessness.

Moreover, Adekunle et al. (2020) contended that the country's underlying circumstances had a significant influence on the impact of border controls. According to Steyn et al. (2021), Australia and New Zealand had the strictest border controls, which were thought to be essential in the early stages of the epidemic

since they helped to postpone it for four weeks and gave the government more time to get ready. On the other hand, African countries saw a spike in new cases due to a lack of necessary support to ensure people's lives (Emeto et al., 2021). According to Li et al. (2022), social distancing was discovered to be the most successful non-pharmaceutical intervention, as it resulted in a notable 25% reduction in the transmission rate.

Market reaction to the announcement of distancing, block down, restricting exposure, and travel

The results of research on the impact of the blockade and extension measures on the stock market are quite varied. The Covid-19 epidemic affects the abnormal returns of stocks, and the level of impact of each period on each stock is also different, especially as the issue of social distancing directives and psychological preparedness has had a positive impact on stock returns in enterprises (Hung et al., 2021). Several studies have found a negative impact of this policy on the stock market (Baig et al., 2021; Ozili & Arun, 2020; Scherf et al., 2021) or no impact (Chen et al., 2020). While the embargo can effectively slow the spread of Covid-19 (Lau et al., 2020) and reduce the number of deaths (Conyon et al., 2020), it also has the potential to inhibit growth economies and lead to a deep recession (Bauer & Weber, 2021). Ozili and Arun (2020) found that the number of closing days was negatively correlated with closing prices, opening prices, the lowest and highest stock prices, and the level of economic activity in general. Studies also discuss how such effects may not be homogeneous in different markets (Haroon & Rizvi, 2020).

Anh and Gan (2020) explore the impact of the outbreak of Covid-19 through the blockade on the daily returns of stocks. The results confirmed the adverse impact of the increasing daily number of Covid-19 cases on stock profits. Huo and Qiu (2020) study how China's stock markets respond to a sudden outbreak of Covid-19 in 2020, especially ahead of the announcement of stopping the pandemic. The results of the study showed a positive Cumulated Abnormal Return (CAR) coefficient during the event. Azmi (2022) studied the impact of the coronavirus outbreak on the functioning situation of hotel stock prices in Europe, which was analysed using the event study method. These two events marked the culmination of an outbreak in Europe when restrictions on travel and movement were imposed. Abnormal average and cumulative profits show signs of positive change in event 4 (May 11th), possibly due to the loosening of locks in many European countries.

Scherf et al. (2022) argue that the restrictions on the blockade have led to different responses in the OECD and BRICS models. The Covid-19 pandemic is an ideal test situation for the effectiveness of the market, as the events that take place are entirely new to financial market participants and largely extraterrestrial. The study also showed clear signs of overreaction: three days after imposing the restrictions, the stock market began to show abnormally positive returns for a few days. Moreover, the markets have reacted to the country's first stringent precautions, but also to the first in the same larger region. In fact, the first rigorous precautions of a region have triggered a stronger response than that of an individual country, possibly due to the impact of predictions.

The group of research hypotheses related to the impact of the announcement of social distancing, blockade, contact, and travel restrictions on market profits are stated as follows:

Hypothesis H1a: Abnormal returns exist with the event of stopping licencing of flights from Vietnam to epidemic areas and vice versa and mandatory medical quarantine of foreign citizens infected or suspected of having the

disease in South Vietnam (Directive 05/CT-TTg dated January 28, 2020).

Hypothesis H2a: Abnormal returns exist with the event of social isolation within 15 days from 0:00 on April 1, 2020 nationwide (Directive 16/CT-TTg dated March 31, 2020).

Hypothesis H3a: Abnormal return exists in the event of social distancing according to Directive 16/CT-TTg 19 for the Southern Provinces (Directive 16/CT-TTg dated July 17, 2021).

2.4.2. Market reaction from government support events through policies to reduce interest rates, taxes, and subsidies

According to Dong et al. (2020), the policy of interest rate decreases has a beneficial effect since it encourages financial activity and is viewed by investors as a driver of economic growth. In addition, fiscal and monetary policy had a significant role in the global stock market recovery. The quantitative easing policies of industrialised countries were found to have a spillover effect on Asian emerging economies, resulting in an average 8% increase (Beirne et al., 2021). Investor confidence was found to be successfully restored by a positive anomalous return for at least 30 days, with a short-term spillover effect to other equities (Su et al. 2001). As a result, a lot of governments decided to take the safer route of indirect interventions, which had proven effective in a lot of affluent nations (Swaine, 2008; Murphy, 2008). Vo and Doan (2021) showed that policies seemed to have a positive impact on market quality. The government should maintain policies until vaccines are widely available to support the quality of the stock market in the near future.

Wei and Han (2021) used the event study methodology to estimate the impact of the Covid-19 pandemic on the transmission of monetary policy to financial markets. The results show that the onset of the pandemic has undermined the transmission of monetary policy to the financial markets to a greater extent. Harjoto et al. (2021) examined the effects of Covid-19 on a nation's macro and corporate levels in two instances: (1) the Federal Reserve Bank's statement on April 9, 2020, and (2) the WHO's announcement on March 11, 2020. The findings demonstrate that emerging nations' stock markets are more negatively impacted by Covid-19 than established nations' stock markets are. Furthermore, we discovered that small businesses are more negatively impacted by Covid-19 than big businesses.

The group of research hypotheses related to government support measures through policies to reduce interest rates, taxes, and subsidies are stated as follows:

Hypothesis H1b: Abnormal returns exist in the event of preferential refinancing interest rates, rediscount interest rates, and overnight lending interest rates (Decision 418/QD-NHNN dated March 16, 2020).

Hypothesis H2b: Abnormal returns exist with the second adjustment event of refinancing interest rates, rediscount interest rates, and overnight lending interest rates (Decision 918/QD-NHNN dated May 12, 2020).

Hypothesis H3b: Abnormal returns exist with the third adjustment event of refinancing interest rates, rediscount interest rates, and overnight lending interest rates (Decision 1728/QD-NHNN dated September 30, 2020).

Hypothesis H4b: Abnormal returns exist with the event of businesses and people affected by the Covid-19 epidemic (Decree 92/2021/ND-CP dated October 27, 2021).

3. Data and methodology

3.1. Data collection

Stock market

The research data were selected for the period from 2019 to 2021, with the VN-Index index

representing the stock market collected on Vietstock's website (http://vietstock.vn), and the closing price of the stock listed on Ho Chi Minh City Stock Exchange comprises 341 companies divided into 10 sectors, including: industry, finance, essential consumer goods, consumer goods, energy, healthcare, information technology and telecommunications, materials, real estate, and utilities[1].

Government interventions

By examining the stock returns initially offered by Dolley (1933), the technique looks at how the stock price responded to the news. While Dyckman et al. (1984) identified a number of issues with daily return analysis, including biassed estimating and nonsynchronous trading, Brown and Warner (1985) came to the conclusion that these issues are readily fixed in conventional event research and hence not very significant. The event date can be understood as the date of the official research event being announced, signed, or implemented. If the policy release date falls on a holiday, the next trading day will be chosen as the event date. In this study, the day of the event is the day when government intervention policies are issued.

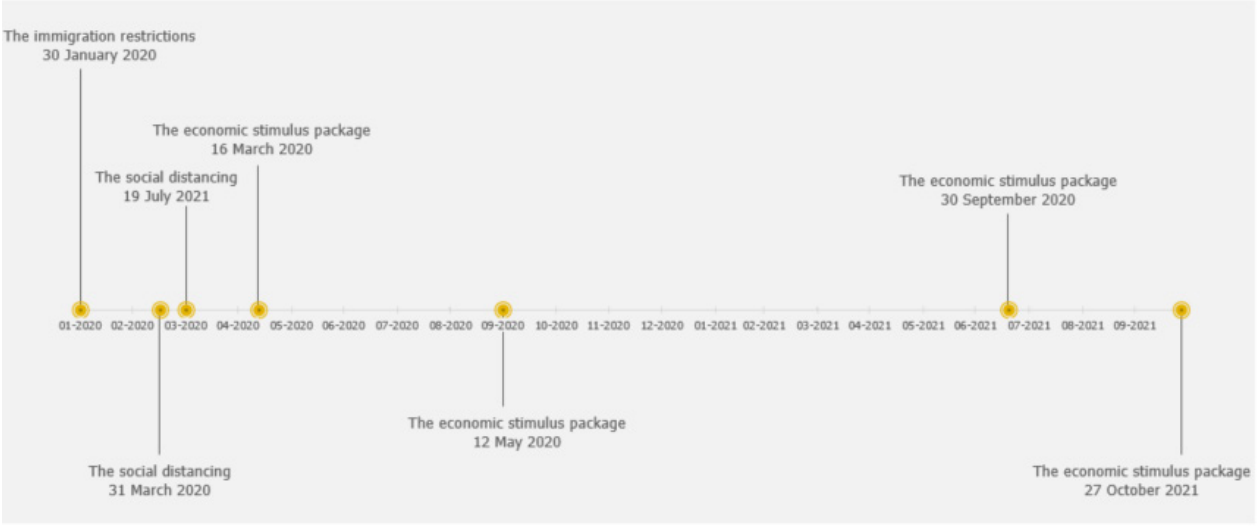


Figure. 1: The timeline of two Vietnamese government interventions for the analysis

3.2. Methodology

The origins of the event study may be derived from the work of Dolley (1933) to investigate stock price fluctuations following company announcements involving share splits. This is the most concrete and clear evidence to examine the effectiveness of the market (Fama, 1991). According to MacKinlay (1997), the event study process is divided into seven steps: (1) Identify the date of the event; (2) selection of the company; (3) identification of normal and abnormal returns; (4) identification of the estimate window and event window; (5) certification process; (6) experimental results; and (7) explanation of results and conclusions.

Timeline

Glascock et al. (1987) suggested that an "event window" should be used—that is, a period of time before, on, and after the day of the event. In this study, the three digits are

[1] According to global industry classification standards developed by MSCI and S&P Dow Jones Indexes.

specified as follows: (i) The number of events selected is 11 days, ranging from day -5 (before the date of publication of the information, 5 days) to day +5 (after the date on which the information was published, 5 days), including day 0 (the day of the event).

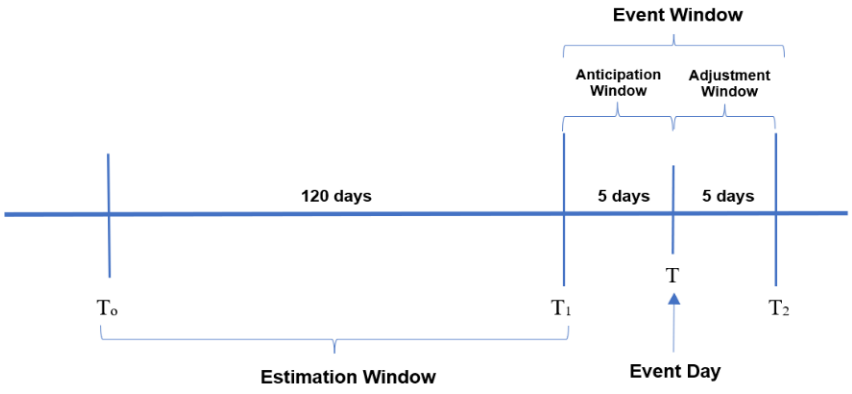


Figure 2. Illustration of the event window timeline used in the paper

Estimation of expected return

MacKinlay (1997) presented two estimate models: the simple market model and the constant average profit model. For both models, the condition is that the variables have a standard and independent distribution. However, Henson and Mazzocchi (2002) suggested that the use of a market model, due to a smaller number of mismatches, eliminates a partial mismatch of the market profit, thus increasing reliability. So, in experimental research, there's been a lot of market model choice. The market model uses an estimate window in front of the event window to determine the relationship between a company's stock and the market price index through regressive analysis. Based on the regression factor, the return will be predicted, used to calculate the abnormal return, and described by the following formula:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ represents the return for each company i on day t, which belongs to the estimation window, while the expected return is established as follows:

$$E(R_{i,t}) = \widehat{\alpha}_i + \widehat{\beta}_i R_{m,t} \quad (2)$$

The $R_{m,t}$ represents the market portfolio's return, and the linear specification of the model arises from the assumed joint normality of returns. The market model also assumes that $\varepsilon_{i,t}$ changes related to the return on the market portfolio iare removed as follows:

$$E[\varepsilon_{i,t}] = 0 \quad (3)$$

Estimation of abnormal return

Abnormal return (AR): The difference between actual and expected profits:

$$AR_{i,t} = R_{i,t} - (\widehat{\alpha}_i + \widehat{\beta}_i R_{m,t}) \quad (4)$$

In which: $AR_{i,t}$ is the unusual profit of the stock i on the day t, $R_{i,t}$ the actual profit of stock i at the day t, $E(R_{i,t})$ the expected profit of share i on day t.

Average Abnormal return (AAR): An event that can affect many companies at different times. In this case, the average abnormal profit (AAR) of N companies at the time of t is measured according to the following formula:

$$AAR_{i,t} = \Sigma \frac{AR_{i,t}}{N} \quad (5)$$

Cumulative extraordinary return (CAR): The effect of the event can last for a period of time, to measure the impact of an event over a period defined as the event window from t_1 to t_2, which can add up separate extraordinary profit values, the so-called accrued extraordinary profit (CAR) is determined by the following formula:

$$CAR_{(t_1,t_2)} = \sum_{t_2}^{t_1} AR_{i,t} \quad (6)$$

Cumulative Average Abnormal return (CAAR): The accumulated average return (CAR) shows the total impact of the event on the individual N group of companies in the event window from t_1 to t_2 determined by the following formula.

$$CAAR_{(t_1,t_2)} = \sum_{t_2}^{t_1} AAR_{i,t} \quad (7)$$

Test procedure

Parametric testing, represented as a T-test with a profit assumption calculated on the date of compliance under the standard distribution rule, is used as a good and effective tool in event testing (Heinkel & Kraus, 1988; Bernard, 1987; Jain, 1986; Brown & Warner, 1985; Collins & Dent, 1984). Determine the existence of an abnormal average return according to the formula:

$$t = \frac{AAR_t}{\hat{\sigma}_{AAR_t}/\sqrt{N}} \quad (8)$$

In which:

$$\mathrm{AAR}_t = \frac{1}{N}\sum_{\mathrm{i}=1}^{\mathrm{N}} \mathrm{AR}_{\mathrm{I,t}} \quad (9)$$

$$\hat{\sigma}^2_{AAR_t} = \frac{1}{N-1}\sum_{i=1}^{N}\left(AR_{it} - \frac{1}{N}\sum_{j=1}^{N} AR_{jt}\right)^2 \quad (10)$$

Determine the existence of an abnormal average cumulative return:

$$t_{CAAR} = \frac{CAAR_{t_1,t_2}}{\hat{\sigma}_{CAAR_{t_1,t_2}}/\sqrt{N}} \quad (11)$$

In which:

$$\hat{\sigma}^2_{CAAR_{t_1,t_2}} = \frac{1}{N-1}\sum_{i=1}^{N}\left(CAR_{i,t_1,t_2} - \frac{1}{N}\sum_{j=1}^{N} CAR_{j,t_1,t_2}\right)^2 \quad (12)$$

With: N is the number of observations; d is the degrees of freedom; $CAR_i(t_1,t_2)$ is the cumulative abnormal return of the observation in the timeframe $[t_1,t_2]$; $CAAR(t_1,t_2)$ is the accumulative average abnamental return in the period $[t_1,t_2]$.

4. Results and discussion

4.1. Descriptive statistics

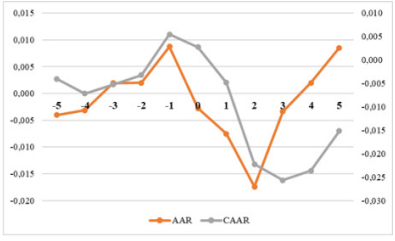
The statistics describe the profitability of the market index (VNIndex) according to the estimated 120 days [-125; 5] before the date of the event and the 11-day event window [-5; +5] at nine event milestones corresponding to three groups of policy interventions: (i) immigration restrictions and social distancing; (ii) economic stimulus packages in Table 1.

Table 1. The summary statistics of the Vietnam Stock Exchange

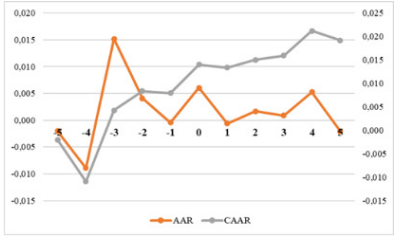
Estimation Window [-125; -6]				**Event Window [-5; +5]**			
Mean	**Standard Deviation**	**Minimum**	**Maximum**	**Mean**	**Standard Deviation**	**Minimum**	**Maximum**
Group 1: Immigration restrictions and social distancing							
The immigration restrictions (30 January 2020)							
-0,00025	0,00578	-0,01827	0,01665	-0,00276	0,01417	-0,03268	0,01354
The social distancing (31 March 2020)							
-0,00336	0,01261	-0,06482	0,01665	0,01048	0,02787	-0,04978	0,04860

Estimation Window [-125; -6]				Event Window [-5; +5]			
Mean	**Standard Deviation**	**Minimum**	**Maximum**	**Mean**	**Standard Deviation**	**Minimum**	**Maximum**
The social distancing (19 July 2021)							
0,00102	0,04568	-0,32273	0,34048	-0,00517	0,02169	-0,04390	0,02367
Group 2: Economic stimulus packages							
The economic stimulus package (16 March 2020)							
-0,00076	0,00753	-0,03268	0,01665	-0,02642	0,02477	-0,06482	0,00252
The economic stimulus package (12 May 2020)							
-0,00246	0,01592	-0,06482	0,04860	0,00944	0,01025	-0,00647	0,02383
The economic stimulus package (30 September 2020)							
0,00239	0,01388	-0,05451	0,04860	0,00135	0,00568	-0,00938	0,00976
The economic stimulus package (27 October 2021)							
0,00105	0,01164	-0,04390	0,02461	0,00314	0,00856	-0,00650	0,02231

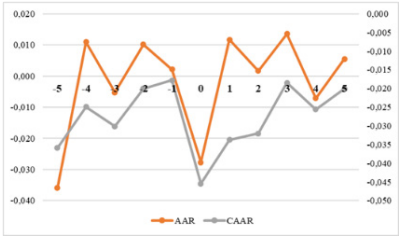
The immigration restrictions 30 January 2020, Figure 3a shows that the ARR begins to decrease from the day the event occurred, and the reversal increases from the third day after the date of the event. The social distancing 31 March 2020, the cumulative abnormal returns of the stock market rose steadily from 3rd to 5th, still showing a positive trend. The social distancing 19 July 2021, the fear of increased pressure on the stock market caused the AAR to decline sharply on January 1 and January 0. Despite this, positive news about the vaccine has the potential to support the investor psychology of this phase, explaining the ARR's reversal starting on day +1.



The immigration restrictions 30 January 2020



The social distancing 31 March 2020

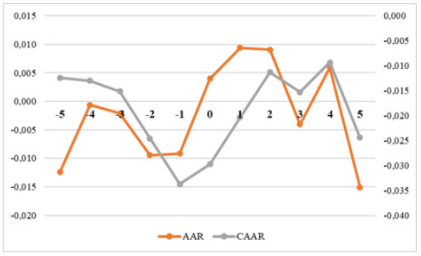


The social distancing 19 July 2021

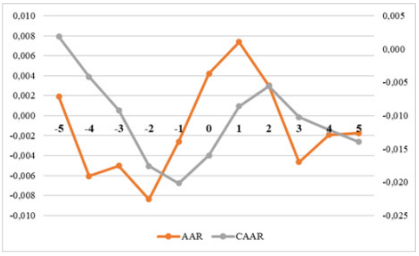
Figure 3a. Abnormal average return (AAR) and cumulative average abnormal returns (CAAR) of the entire market for immigration restrictions and social distancing

The economic stimulus package 16 March 16, 2020, the positive impact of the interest rate reduction in the first phase has helped to reverse the trend of abnormal profit reduction and the reversed accumulation of abnormally accumulated profits on day -1, rising from day 0, +1, and +2. The economic stimulus package 12 May 12, 2020, it continues to show that the abnormal returns of the stock market started reversing from -1, increasing from 0, +1, +2, from the date of the event and 2 days after the second interest rate reduction. The economic

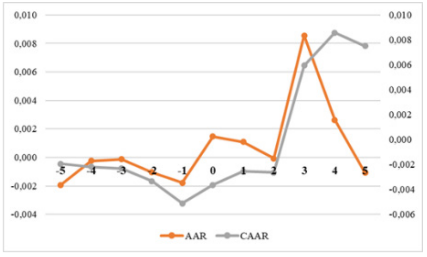
stimulus package (30 September 2020), the third rate drop showed a short-term effect of lowering interest rates on the stock market when the reversal point remained -1 and increased in subsequent days. A positive response is very similar to interest rate reductions 1 and 2. The economic stimulus package (October 27, 2021), the cumulative abnormal return increased steadily from the 5th to the 4th. The positive but negative accumulative negative profit of the stock market showed that from the 5th to the 20th of October 2021, there was an effect that turned the market (Figure 3b).



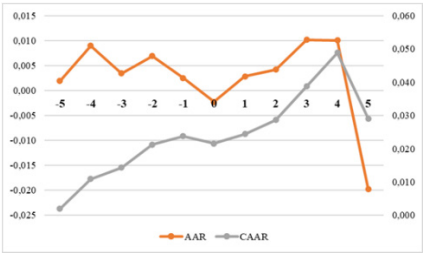
The economic stimulus package
16 March 2020



The economic stimulus package
12 May 2020



The economic stimulus package
30 September 2020



The economic stimulus package
27 October 2021

Figure 3b. Abnormal average return (AAR) and cumulative average abnormal returns (CAAR) of the entire market for economic stimulus packages

4.2. Event study analysis

Immigration restrictions and social distancing

The first regional restriction had a greater effect than the first national restriction, according to Ozili & Arun (2020). Specifically, the policy of expansion, compulsory isolation, and suspension of licencing of all flights from the affected region, especially China to Vietnam, under Directive No. 05/CT-TTg dated January 28, 2020, has a significant negative impact on the stock market when up to 6/10 sectors recorded negative abnormal profits, with the consumer goods sector group having the most negative response. Table 2 shows that the stock market responded positively to CAAR at -2.06% at the significance of 1%. Although stock returns on the market were relatively normal on the day of the event, except for the health sector stock group, Given the abnormal returns accumulated during the period between the event and five days after the event, stock returns across the stock market fell significantly by 2.06%. Among them, the consumer goods, essential consumer products, energy, industry, real estate, and utilities sectors also showed abnormal profits decreasing significantly at high reliable levels. Positive responsiveness in the healthcare sector alone increased by 3.96 percent to a significant 10%.

Table 2. Data of the influence of immigration restrictions on 30 January 2020

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0,0)	Adjustment window (0,5)	Event window (−5,+5)
All	0,27	-0,28	-2,06***	-1,51***
Consumer goods	0,25	-1,98***	-5,15***	-2,92***
Consumer staples	1,36	-0,33	-4,57***	-2,88
Energy	1,38	-0,13	-5,05***	-3,55
Financial	1,28*	-0,12	0,34	1,74
Healthcare	2,45***	1,78*	3,96*	4,62***
Industrial	0,75	-0,15	-3,54***	-2,64***
Technology and IT	-0,23	0,59	1,95	1,13
Basic material	2,42	0,44	-3,06	-1,08
Properties and real estate	0,98	-0,29	-3,78***	-2,52**
Utility	0,72	-0,03	-2,90***	-2,15

Note(s): *"*", "**", "***" signify 10%, 5% and 1% level of significance, respectively.*

According to Anh and Gan (2020), the Vietnamese stock market before and during the closure across the country operated in different ways. Although the pre-Covid-19 blockade period had a significant negative impact on Vietnam's stock returns, the period after the blockade had a positive and significant impact on the stock activity of the entire market and various business sectors in Vietnam. The results of Table 3 show that the more the policy of blockade and social distancing helps the epidemic be well controlled, the more positive the stock market reaction. Specifically, during the country-wide social blockade, there was a significant positive response of +0.61% on the date of publication of Directive No. 16/CT-TTg on March 31, 2020. 6/10 sectors responded positively; the financial sector responded most positively with an abnormal profit of +2,02%, followed by a number of other sectors also responding positively, like raw materials (+79%), information technology and telecommunications (+04%), essential consumer goods (+99%), and real estate (+62%). Furthermore, after five days of unusually high accumulated profits, the entire stock market showed a positive response of +1.12%. Raw materials increased the strongest with +4,07%, followed by financial +2.59% and essential consumer goods +1.34%.

Table 3. Data of the influence of social distancing on 31 March 2020

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0, 0)	Adjustment window (0,5)	Event window (−5,+5)
All	1,40***	0,61***	1,12***	1,92***
Consumer goods	2,22*	-0,10	-1,58	0,74
Consumer staples	2,13***	0,99***	1,34*	2,48**
Energy	1,83***	0,50	1,08	2,41
Financial	5,09***	2,02***	2,59***	5,66***

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0, 0)	Adjustment window (0,5)	Event window (−5,+5)
Healthcare	0,77	0,66	1,36	1,47
Industrial	2,19***	0,35*	0,59	2,43**
Technology and IT	-1,34	1,04***	-3,20	-5,58***
Basic material	4,45**	1,79*	4,07**	6,73**
Properties and real estate	2,21***	0,62*	0,64	2,23**
Utility	1,66	-0,59	0,16	2,41**

Note(s): *"*", "**", "***" signify 10%, 5% and 1% level of significance, respectively.*

However, the announcement of social dispersion in 19 southern provinces on July 17, 2020, showed significant negative reactions. Markets overreacted on July 19, 2021, to concerns about the uncontrolled spread of the epidemic, with 8/10 sectors responding negatively and again the finance sector being the most negative. Specifically, the entire market responded negatively with abnormal returns of -2.77%; the strongest decline could be recorded in finance (-5.69%), information technology and telecommunications (-4.3%), energy (-3.7%), real estate (-3.28%), essential consumer goods (2.62%), and industry (-2.61%), except healthcare (+2.32%) and raw materials, which did not react. The following days, the stock market remained -0.23% but showed a rising trend to return to abnormal profits. Healthcare continued to rise at +2.38% after five days of events.

Table 4. Data of the influence of social distancing on 19 July 2021

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0, 0)	Adjustment window (0,5)	Event window (−5,+5)
All	-4,55***	-2,77***	-0,23	-2,01***
Consumer goods	-1,44	-1,98***	-0,91	-0,36
Consumer staples	-2,23**	-2,62***	0,47	0,85
Energy	-2,80**	-3,70***	-1,24	-0,34
Financial	-6,04***	-5,69***	-1,91*	-2,25
Healthcare	3,33***	2,32**	2,38***	3,39***
Industrial	-1,76***	-2,61***	0,47	1,32
Technology and IT	-9,33***	-4,30***	-1,32	-6,35
Basic material	0,95	-1,70	-1,58	1,08
Properties and real estate	-2,52***	-3,28***	1,26	2,03
Utility	-0,97	-1,99***	-0,52	0,50

Note(s): *"*", "**", "***" signify 10%, 5% and 1% level of significance, respectively.*

The common point of the first and second publications is that both of them show that the effectiveness of the policy of secession keeps the stock market steady and that there are signs of accumulating abnormal profits since the publication date of the secession. Phan &

Narayan (2020) have found evidence to support the theory of the positive impact of closure on the stock market. In a context where investors have experienced the psychology of fear caused by the pandemic leading to market volatility (Chen et al., 2020).

Economic stimulus packages

As far as monetary policy is concerned, the three rate cuts by the state banks showed a positive reaction in the stock market. An abnormal profit right on the announcement date of the interest rate reduction, or five days after the release date, results in a positive impact on the stock market.

Table 5 shows that the stock markets responded positively to abnormal returns of +0.4% on the day of the first interest-rate reduction event; the two energy (+2.45%) and industry (+0.79%) sectors also grew significantly on the date of the event; others also showed that the unusual returns increased on the event day, although there was no statistical significance. After the date of the event, the accumulated abnormal profit after the 5-day event increased by 0.93% compared to the event date. The industry showed a strong positive impact with a cumulative abnormal profit of +2.5%, respectively, with a high reliability, which has shown a noticeable positive impact after the event. It can be seen that the first rate reduction has given a positive signal to the stock market, with the most reactive sector being industry, followed notably by the financial sector.

Table 5. Data of the influence of economic stimulus package on 16 March 2020

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0,0)	Adjustment window (0,5)	Event window (−5,+5)
All	-2,97***	0,40**	0,93*	-2,44***
Consumer goods	-4,48***	0,50	1,65	-3,34*
Consumer staples	-1,26	0,25	1,71	0,20
Energy	-1,63	2,45***	2,48	-1,60
Financial	-0,74	-0,68	1,41	1,35
Healthcare	-5,44	0,92	-2,11	-8,47
Industrial	-1,01	0,79**	2,50***	0,70
Technology and IT	-7,47*	-0,78	-4,33	-11,02
Basic material	-2,57	0,35	3,41	0,49
Properties and real estate	-0,36	0,44	2,57	1,76
Utility	-1,68	-0,42	0,61	-0,65

Note(s): *"*", "**", "***" signify 10%, 5% and 1% level of significance, respectively.*

Similarly, table 6 shows that on the day of the event, the stock market responded positively to abnormal returns of +0.42%; the consumer and essential consumer goods sectors also showed a positive response of +1.32% and +1.68%; and the other sectors also had abnormally higher returns compared to the days prior to the event, although there was no statistical significance. An abnormal cumulative profit after 5 days of the stock market event continued (+0.62%), and consumer goods continued positive (+1.95%). It is noteworthy that the industry still has a positive reaction of +0.99%, but a significant 10% lower than the first rate reduction.

Table 6. Results of the impact of economic stimulus package on 12 May 2020

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0,0)	Adjustment window (0,5)	Event window (−5,+5)
All	-1,60***	0,42***	0,62*	-1,39***
Consumer goods	-0,83	1,32***	1,95**	-0,20
Consumer staples	1,85	1,68***	1,29	1,46
Energy	-0,43	0,41	1,43	0,58
Financial	0,23	0,20	0,10	0,13
Healthcare	-1,93**	-0,55	-0,05	-1,43
Industrial	-2,09***	-0,02	0,99*	-1,08
Technology and IT	-7,92***	-1,56	1,19	-5,16**
Basic material	0,84	0,32	0,48	0,99
Properties and real estate	-2,25**	0,44	1,72	-0,97
Utility	-1,99**	0,48	-0,16	-2,63**

Note(s): *"*", "**", "***" signify 10%, 5% and 1% level of significance, respectively.*

On the day of the third rate drop, the stock market responded positively to an abnormal return of +0.15%, as shown in Table 7. Consumer goods (+0.93%) and real estate (+0.78%) also showed a positive response on the day of the event. Information technology and telecommunications alone showed abnormal returns, reacting negatively (-0.49%). The accumulated unusual profits over the five days of the event showed a positive impact of +1.26%. The financial sector gave the most positive feedback when the accumulating unusional profits reached a high level of +2.99%, followed by real estate (+2.82%), consumer goods (+1.63%), and information technology and telecommunications, which continued the declining trend of -2.88%.

Table 7. Data of the influence of economic stimulus package on 30 September 2020

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0,0)	Adjustment window (0,5)	Event window (−5,+5)
All	-0,36	0,15	1,26***	0,75*
Consumer goods	1,48**	0,93**	1,63***	2,18**
Consumer staples	-0,59	-0,39	-0,90	-1,11
Energy	1,33	-0,52	1,15	3,00
Financial	0,83	0,08	2,99**	3,74***
Healthcare	-0,81	0,25	-0,69	-1,75**
Industrial	-0,61	0,06	1,21**	0,54
Technology and IT	-2,18	-0,49***	-2,28***	-3,97**
Basic material	-1,69	-0,67	-1,89	-2,90
Properties and real estate	-0,27	0,78**	2,82***	1,77
Utility	-0,08	-0,09	0,32	0,33

Note(s): *"*", "**", "***" signify 10%, 5% and 1% level of significance, respectively.*

Thus, the policy of reducing interest rates demonstrates the government's determination and effort to resolve the economic crisis. It can stimulate greater growth and profitability by reducing capital costs and improving financial conditions, helping to boost investor confidence. Mishkin (2009) argues that monetary policy is more effective in times of crisis than in normal times and that the stock market is seen as an important transmission route that quickly reflects the effectiveness of monetary policies. As for representative fiscal policy, Decree No. 92/2021/ND-CP, dated October 27, 2021, has a positive influence on the stock market evidence within the 11-day event frame around the date of significantly accumulated unusually profitable events. The two sectors most positively affected are real estate and industry. The results matched the study of Vo & Doan (2021) and Li et al. (2022), when government-supported event information seemed to have a positive impact on market quality. Investors expect stock market growth after the pandemic crisis.

Table 8. Data of the influence of economic stimulus package on 27 October 2021

Sector name	Cumulative average abnormal returns (CAAR) (%)			
	Anticipation window (−5,0)	Event day (0,0)	Adjustment window (0,5)	Event window (−5,+5)
All	2,16***	-0,22	0,53	2,91***
Consumer goods	1,11	0,54	1,05	1,62
Consumer staples	0,49	-0,36	0,89	1,74
Energy	1,85	-0,36	-3,88**	-1,67
Financial	-2,78***	-1,53***	0,29	-0,96
Healthcare	0,65	-0,42	-0,58	0,49
Industrial	1,71*	-0,51**	1,63**	3,86***
Technology and IT	-3,48	-1,07	-3,06**	-5,47*
Basic material	1,06	-0,45	2,08	3,58
Properties and real estate	3,06***	0,87*	4,96***	7,16***
Utility	1,42*	0,40	0,80	1,83

Note(s): *"*", "**", "***" signify 10%, 5% and 1% level of significance, respectively.*

5. Summary and conclusions

This paper uses the event study methodology to analyse the reaction of Vietnamese stock markets to information related to government intervention in the Covid-19 pandemic through a review of market profit changes around the date of the event. The results showed that the policy of detachment, compulsory isolation, and suspension of licencing for all flights from the affected zone had a significant negative impact on the stock market. The blockade and social disengagement also showed that the stock markets reacted more positively. However, the first extension (signed on March 16, 2020) had more positive accumulative abnormal returns. The markets reacted negatively in the second round on the day of the event, but the abnormal cumulative profit improved shortly thereafter. Secondly, on economic policy with the "double goal" of economic growth and macroeconomic stability. As far as monetary policy is concerned, the three implementations of interest-rate reductions by the state bank all showed a positive reaction on the stock market.

In addition, for fiscal policy, there are also positive influences from day-to-day events with abnormal positive accumulation. Among them, the two most affected sectors are real estate and industry.

The findings of the study have practical value as a reference source for investors, analysts as well as regulatory agencies in understanding the impact of government interventions on stock market, especially the trend of its influence on each industry group. For investors, making an investment decision requires consideration of macroeconomic information, industry information, corporate information, etc. Depending on each stage of the market, each investor should have a strategy that matches their financial capabilities, experience, risk taste and investment style. With short-term investment decisions, investors can make stock purchases when the government announces interventions to control the hard disease epidemic that are effective in preventing outbreaks and spreading diseases such as: interest rate cuts, and subsidy policies... Investors choose to sell when there is information about uncontrollable outbreaks and spread of disease, visa restrictions, tightening of borders, uncontrol in disease prevention. For policymakers, in a world of turbulence, the breakdown, the disruption of global supply chains, the rise in production costs, as well as the sharp increase in quantitative easing aid packages in many countries. Policy makers need to study and issue sets of policies to balance the currency and capital markets by running flexible monetary and fiscal policies... Besides, the policy group for protecting public health, and social security, ining productive capacity also needs attention. In addition, policymakers need to focus on the issue of refining the principles and regulatory framework to drive the stock market to develop in a deep, broad way towards transparency, synchronization, guaranteeing legitimate rights and interests for investors and in line with international standards.

Despite the effort to perfect the research to provide value, the contributions of experimental evidence are valuable references. However, research uses multiple events that affect stock prices at the same time, making it difficult to determine which events have a stronger impact. The scope of the study is to study only the event-related price fluctuations, without mentioning how the individual characteristics and specificities of the company influence the change in the price of the stock according to the event. The long duration of events and the impact of other events reduces the applicability of the event study methodology and therefore, the reliability of this study's results. In subsequent studies, in addition to examining the impact of government intervention policies, how factors of corporate characteristics: market capitalization, profitability (ROE, ROA), debt balances or corporate governance structure, etc. have influenced the profitability of the stock market. Furthermore, future studies may look at combined and long term interventions. This can also help policymakers create effective intervention portfolios in the event of a pandemic.

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