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# COVID-19 Pandemic, Stimulus Packages and Stock Returns in Vietnam

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## Abstract

This paper investigates the impacts of COVID-19's new cases and stimulus packages on the daily stock returns of five key economic sectors (Finance, Fast-moving-consumer-goods (FMCG), Healthcare, Oil and Gas, and Telecommunication) in Vietnam – one of the best countries in the world for handling COVID-19. The research team uses the Pool OLS method, with the panel data of 11 342 observations from 107 listed firms in these five sectors in the period January-June 2020. The key findings are (i) all sectors' stock returns are negatively affected by daily new confirmed cases of COVID-19, the hardest hit is on the financial sector, followed by FMCG, healthcare, oil and gas, and telecommunications sectors. Vietnam did not have many affected cases, but low average income makes investors and consumers more careful and hesitate to spend/invest; (ii) in contrast to prior studies, stimulus packages did not accelerate the growth of stock returns in all sectors, with the order from most to least negatively affected: finance, oil and gas, telecommunication, healthcare, and FMCG. The slow implementation made investors skeptical of the growth potential of firms, they assess the stimulus packages as the signs of economic downturn. This fact leads to different recommendations for the Vietnamese Government in combating COVID-19.

**Keywords:** COVID-19, Stimulus Package, Stock Market Reaction, Stock Returns, Vietnam

## 1. Introduction

The COVID-19 pandemic started in December 2019 has catastrophic impacts on global economic development and stock markets (Raheem et al., 2021; Uдах & Francis, 2021, Chowdhury et al., 2021; Narayan et al., 2021; Gherghina et al., 2020; Liu et al., 2020; Ashraf 2020; Baeket al.1, 2020; Rizwan & Ahmad, 2020; Phan & Narayan, 2020). However, few studies focused on comparing its impacts on different sectors, as some sectors become rising stars while others are sinking stones. Most countries have policy responses to the COVID-19 pandemic, including huge stimulus supports programs, but few studies on how effective they are, how the market reacts to these supports. Vietnam is ranked as one of the best countries in the world for handling COVID-19 (Galloway, 2021), and one of 26 countries having positive economic growth in 2020, while the other 167 experience negative growth

(IMF, 2021; Statistics Times, 2021). However, Vietnam's economy is still badly impacted by the COVID-19 pandemic. Therefore, the case of Vietnam is interesting to discover to answer the questions: (1) What are the impacts of COVID-19 on the stock return of five key sectors (finance, fast-moving-consumer-goods (FMCG), healthcare, oil and gas, and telecommunication)? (2) What is the impact of stimulus packages – one of the key pandemic-related policy responses - on the stock market and these sectors; (3) What are policy implications for combating with COVID-19 economically?

## 2. Literature Review

### 2.1 Impact of COVID-19 pandemic nexus on stock return of different sectors

Coronavirus pandemic delays economic activities worldwide (World Bank, 2020). It has created an uncommon risk level, leading investors to suffer substantial losses within a brief time (Zhanget al.l, 2020). Many studies conclude the negative relationship between stock returns and the COVID-19 pandemic regardless of research scope. Examining 64 countries with panel data analysis technique, Ashraf (2020) concludes that stock market returns decline as the number of confirmed cases increases in all countries; and the growth in the number of confirmed cases has a more powerful impact than the growth in the number of deaths. He et al. (2020) supports the idea that COVID-19 had a negative but short-term impact on the stock markets when analyzing daily stock returns in eight developed countries using conventional t-tests and non-parametric Mann–Whitney tests. With the Chinese stock market case, Al-Awadhi et al. (2020) reveals the serious adverse impact of daily growth in the total confirmed cases and the total deaths on stock returns to all companies. Chowdhury et al. (2021) analyze the case of 12 countries to find out the serious negative impact of the pandemic on stock market returns, of which European markets were the worst sufferers. In Vietnam, Anh and Gan (2020) also demonstrate that the daily number of COVID-19 cases harms the Vietnamese stock returns, but the stock market performed oppositely before and during the nationwide lockdown.

However, COVID-19 does not badly impact all sectors. It creates opportunities for some sectors to boost significantly while diminishing many other sectors. In the US, the market volatility in many industries, including consumer products, was related to the panic-inducing news of COVID-19 (Haroon & Rizvi, 2020). In China, the COVID-19 outbreak had a minor impact on health, information technology (IT), and telecommunications stock returns (Liew & Pua, 2020). During the pandemic, IT and pharmaceutical industry stock returns in China significantly performed the best in the market, while stock returns for beverage, air transport, water, and highway transport sectors were worse than the market (Al-Awadhi et al. 1, 2020). On the Turkish stock market, insurance and banking were among the most adversely affected sectors, while food-beverage, wholesale, and retail trade were among the less affected sectors from the outbreak (Ozturk et al., 2020). By March 2020, the stock return of the oil industry was the most volatile (Mazuret al. 1, 2021). Natural gas experienced a positive increase in stock return amid the pandemic, resulting from byproduct produced only through the refining of oil for crude petroleum producers. Due to the steep drop in oil prices in March 2020, crude producers agreed to cut oil output, which automatically decreased natural gas demand. This had a positive impact on natural gas market prices and natural gas producers' projected potential cashflows. In Australia, Alam et al. (2020) find out the positive impact of COVID-19 on the stock return of the Telecommunications and Technology sectors during the pandemic, resulting from the skyrocketing demand for services to work and study from home (Ramelli & Wagner, 2020). However, firms in the sector tend to be similarly affected, due to close resemblance in corporate finance, vulnerable to macroeconomic shocks, and faced by fluctuations in supply and demand (Rizvi & Arshad, 2018; Moskowitz & Grinblatt, 1999).

Although the outbreak of COVID-19 had a more powerful consequence on emerging Asian markets than on emerging markets in Europe (Topcu & Gulal, 2020), little previous research investigates in individual countries. In India, only the FMCG business had seen a good stock return due to their increased need for necessary goods, while other businesses experienced a sharp decline (Rakshit & Basistha, 2020; Chaudharet al. al, 2020). In Vietnam, the most severely impacted sector on Ho Chi Minh City Stock Exchange (HOSE) was the financial sector, followed by the industrial and consumer goods sectors before the lockdown. On Hanoi Stock Exchange

(HNX), pre-lockdown harmed the utility sector the most. Significantly, the lockdown positively influenced all the selected sectors' stock performance (Anh & Gan, 2020).

### *2.2 Impact of stimulus packages on the stock market*

Governments have undertaken various economic responses to limit the economic impacts of the COVID-19 pandemic, of which stimulus packages are mostly utilized. Recessions are not self-correcting, so governments should take actions to reduce their severity (Narayan et al., 2021; Phan & Narayan, 2020; Keynes, 1964).

When assessing the effects of COVID-19 and governments' stimulus package on the stock market of the 25 most-affected countries, Phan and Narayan (2020) received mixed results. In 11 countries, including France, United Kingdom, Spain, Italy, Russia, Israel, Peru, South Korea, Japan, Chile, and Poland, there was a positive reaction to the stock market on the day the stimulus package was announced. The stock markets in the remaining countries showed a negative reaction. A pattern was recognized that the success of the stimulus package in promoting the stock market's positive response sequenced the imposing of lockdown. For the case of 26 emerging stock markets listed by Morgan Stanley Capital International (MSCI), the impact of the outbreak is smaller thanks to the governments' quick response and the generous size of announced stimulus packages (Topcu & Gulal, 2020). Nevertheless, in many developing countries, stimulus packages may be less effective due to weak monetary transmission, small multipliers, slow implementation (Loayza & Pennings, 2020). Harjoto et al. (2020) find that the US stock market experienced positive abnormal returns from the Fed stimulus compared to others. Narayan et al. (2021) found that lockdowns, travel bans, and economic stimulus packages all had a positive effect on the G7 stock markets.

### *2.3 Impact of COVID-19 on five sectors: Healthcare, Telecommunication, Finance, FMCG, Oil and Gas*

The current COVID-19 pandemic is putting enormous pressure on health care systems around the world. Pharmaceutical organizations have become the overwhelming focus in the COVID-19 battle. The healthcare sector in Vietnam has also emerged in the COVID-19 pandemic (World Bank, 2020). Until May 2020, Vietnam was one of the few countries that have successfully slowed down the pandemic with its adaptive health system organization model (Nguyen et al., 2020). Due to the COVID-19 pandemic, Vietnam has a potential face mask market (Huynh, 2020; La et al., 2020). More than 1.13 billion medical masks of all kinds have been exported by Vietnamese companies from the beginning of the year to the end of October 2020 (Customs of Vietnam, 2020).

Telecommunication is an essential sector in the context of COVID-19. Telecommunications infrastructure and its services are crucial to keep individuals and organizations connected and active due to online education, work, entertainment, etc (Khan, 2021). In Vietnam, the sector has been expanding since the early days of COVID-19 (La et al., 2020). The Internet supported families in every aspect of their lives, including educational support and a bridge to exchange goods (Dung & Trang, 2020; Pham & Ho, 2020; Ha & Thuy, 2020; Pham et al., 2020).

COVID-19 has a major effect on the financial market since it triggered a rise in non-performing loans as a result of borrowers' income losses and a high number of depositor withdrawals in a brief period (Goodell, 2020). The decline in economic activity caused by COVID-19 also decreases microfinance institutions' financial efficiency (Zheng & Zhang, 2020), and the crisis and the countercyclical lending role put banking systems under considerable stress (Demirguc-Kunt et al., 2020). In terms of the insurance market, there is also an implication of the pandemic for life insurance companies. In China's insurance market, COVID-19 has lowered commercial insurance premium revenue, monthly year-over-year premium growth rate, insurance density, and insurance depth (Wang et al., 2020). According to the General Statistics Office of Vietnam (GSO), credit growth of the first six months of 2020 has the lowest level (2,45%) compared to the same period from 2016 to 2020. The reduction in income caused a delay in the payment of premiums of valid insurance contracts and unwillingness to buy new insurance packages. The stock market plummeted with total mobilization in the first six months down 37% (the total capital mobilization was estimated at VND94.6 trillion) compared to the same period last year. All credit institutions, including foreign finance companies and banks, play an important role in supporting businesses, people damaged by the pandemic by the means of rescheduling the repayment terms, exempting, reducing interest rates.

From a daily index of consumer panic in 54 countries in the period of January- April 2020, Keane and Neal (2020) showed widespread consumer panic in most countries, especially during March. Both domestic transmission and global transmission of viruses contribute significantly to consumer panic. The FMCG has suffered the least decline in contrast to other sectors (Chaudhary et al., 2020). However, many studies pointed out the bad consequences of the COVID-19 pandemic to the food supply chain in FMCG, as countries close their border to prevent the spread of the coronavirus (Rizou et al., 2020; Hobbs, 2020). FMCG household consumption expenditure in Vietnam recorded sudden growth in the first six months of 2020, due to the impact of social distancing. Amid the health crisis, consumers shopped with larger shopping carts due to stockpiling demand and panic buying, the main driver of the double-digit growth of FMCG (Kantar, 2020). Rumors and fake news about COVID-19 also fueled unneeded community action (Ha et al., 2020).

Pandemics may reduce oil demand, making oil prices decrease (Qin et al., 2020). During the COVID-19 crisis, the oil market became inefficient (Gil-Alana & Monge, 2020) and the COVID-19 pandemic has a statistically significant positive effect on crude oil returns and stock returns in the US (Liu et al., 2020). Researchers should not ignore the oil market when evaluating the pandemics' impact (Qinet al.l, 2020). However, there is little scholarly research on the effects of COVID-19 on the whole oil and gas sector in Vietnam. The oil and gas sector of the Vietnam Oil and Gas Group PVN was experiencing difficulties. The reason is that oil prices while having a powerful influence on oil and gas exploration and production, plummeted due to lower demand and lower gasoline prices. All phases from exploitation, support services, product distribution are significantly affected by the influence of COVID-19 (Duc et al., 2020).

### 3. Data

This study investigates the impacts of the COVID-19 pandemic and the Vietnam government's stimulus packages on the stock returns of 107 listed firms on HOSE and HNX, including 16 firms from the Healthcare sector, 9 firms from the Telecommunications sector, 41 firms from the Financial sector, 30 firms from the FMCG sector, and 11 firms from the Oil and Gas sector. Data of daily stock prices are employed from Datastream and firm-specific characteristics are taken from firms' financial statements posted on vietstock.com. Macroeconomic data was retrieved from the General Statistics Office of Vietnam (GSO) and investing.com. The time interval is from January 30, 2020 to June 30, 2020. January 30 was the first trading day of the Vietnam stock market since the first confirmed COVID-19 case and the first trading day after the Lunar New Year holiday. The start date of stimulus packages was March 4, as Directive 11, the first official document of the government regarding stimulus packages was issued on that day. The daily number of new confirmed cases is archived by the Ministry of Health in Vietnam at <https://ncov.vncdc.gov.vn/>. There is a total of 11 342 observations in the study.

### 4. Methodology

The outbreak does not impact the stock return performance at a specific point of time but for months (Narayan et al.l, 2021; Al-Awadhet al.al, 2020; Ashraf, 2020; Anh & Gan, 2020). The different panel-data regression methods (FEM/REM/Pooled OLS) are checked to find out which one is the most appropriate to analyze the differences in impacts at a sectoral level regarding an event exist because the impact of omitted variables is controlled (Al-Awadhet al. al, 2020; Ashraf, 2020; Anh & Gan, 2020). Following are two regression models applied in this study.

$$Return_{i,t} = \beta_0 + \beta_1 COVID19_t + \beta_2 ROE_i + \beta_3 DE_i + \beta_4 ER_t + \beta_5 MS + \beta_6 CPI + \varepsilon_{0i,t} \quad (1)$$

$$Return_{i,t} = \beta_7 + \beta_8 COVID19_t + \beta_9 ROE_i + \beta_{10} DE_i + \beta_{11} ER_t + \beta_{12} MS + \beta_{13} CPI + \gamma_0 D\_AFSP + \varepsilon_{1i,t} \quad (2)$$

Where:

$Return_{i,t}$  is the stock return of firm  $i$  on day  $t$  calculated by the formula  $Return_{i,t} = \ln(SP_{i,t} - SP_{i,t-1})$ , where  $SP_{i,t}$  is the closing price of firm  $i$ 's stock on day  $t$  and  $SP_{i,t-1}$  is the closing price of firm  $i$ 's stock on day  $t-1$ .

$COVID19_t$  is the daily new case of COVID-19 on day  $t$ .

$ROE_i$  is the quarterly return on equity of firm  $i$ .

$DE_i$  is the quarterly debt to equity of firm  $i$ .

$ER_t$  is Vietnam's Exchange Rate against USD on day  $t$ .

$MS$  is the monthly money supply.

$CPI$  is the monthly consumer price index.

$D\_AFSP$  is the dummy variable for the stimulus packages which equals 1 after March 4, and 0 otherwise.

This paper has two sets of hypotheses. The first set investigates whether the daily new cases of COVID-19 have an impact on the stock return performance of each of the five sectors, which are Healthcare, Telecommunication, Finance, FMCG, and Oil and Gas. The second set involves evaluating the efficiency of stimulus packages to the sectoral stock returns. After testing those two sets of hypotheses for each sector, the impact on the five sectors in both cases is ranked to conclude the impact level among them.

Table 1: Key independent variables and hypotheses in the models

Variables	Hypothesis	References
Daily new cases of COVID-19 (COVID19)	H1: The daily new cases of COVID-19 positively impacted on the stock return of the Healthcare sector	Sharet al. al, 2020; Al-Awaet al.t al, 2020; Maet al.t al, 2020; Cet al.t al, 2009
	H2: The daily new cases of COVID-19 positively impacted on the stock return of the Telecommunication sector	Alam et al, 2020; Ramelli & Wagner, 2020
	H3: The daily new cases of COVID-19 negatively impacted on the stock return of the Financial sector	Chaudhary R et al, 2020; Öztürk et al, 2020; Wang et al, 2020; Anh & Gan, 2020
	H4: The daily new cases of COVID-19 negatively impacted on the stock return of the FMCG sector	Rizoet al.al, 2020; Hobbs, 2020; Mazet al. al, 2020; Chaudhaet al. al, 2020; Haroon & Rizvi, 2020
	H5: The daily new cases of COVID-19 negatively impacted on the stock return of the Oil and Gas sector	Mazur et al, 2020; Qin et al, 2020; Gil-Alana & Monge, 2020
Stimulus packages amid COVID-19 pandemic (D_AFSF)	H6: The stimulus packages positively impacted on the stock return of the Healthcare sector	Narayan et al, 2021; Topcu & Gulal, 2020; Harjoto et al, 2020; Loayza & Pennings, 2020;
	H7: The stimulus packages positively impacted on the stock return of the Telecommunication sector	Phan & Narayan, 2020; Liu et al, 2018
	H8: The stimulus packages positively impacted on the stock return of the Financial sector	
	H9: The stimulus packages positively impacted on the stock return of the FMCG sector	
	H10: The stimulus packages positively impacted on the stock return of the Oil and Gas sector	

Source: Authors' compilation

Data processed are analyzed by the following steps: (1) use descriptive statistics analysis to report quantitative data's characteristics; (2) examine Pearson correlation; and (3) conduct regression analysis. Depending on  $\beta_0$  and  $\beta_7$ , there will have different panel model requirements. Hausman test is performed to choose the more appropriate estimator for the models, between fixed and random effect estimators (Hausman, 1978). In the case where the fixed effects model is adopted,  $\beta_0$  and  $\beta_7$  are treated as regression parameters. In the case where the random-effects model is adopted,  $\beta_0$  and  $\beta_7$  are treated as components of the random disturbance. Moreover, F-test and BreuchePagan test are performed to check the existence of firm-specific effects. The null hypothesis of the two tests is that  $\beta_0$  and  $\beta_7$  are equal for all the firms tested. If the null hypothesis is rejected, which is the case where it is assumed that there is an equal individual firm effect across all firms tested, then the pooled OLS is consistent

and efficient. After choosing the optimal model for the study, the model is tested by implementing a multi-collinearity test based on the Variance Inflation Factor (VIF); autocorrelation test in panel data (Wooldridge, 2010), and the heteroskedasticity test (White, 1980).

## 5. Discussion Results

### 5.1 Descriptive statistics

The result from table 2 show that the outliers are eliminated, and the variables are descriptively qualified for analysis.

Table 2: Summary of descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<b>Return</b>					
Healthcare	1696	-0.000 321 50	0.032 295 50	-0.105 360 50	0.095 535 20
Telecommunication	954	-0.000 540 70	0.029 712 40	-0.105 360 50	0.095 310 20
FMCG	3180	-0.000 578 90	0.033 251 10	-0.105 384 10	0.096 404 90
Finance	4346	-0.000 639 20	0.035 209	-0.182 321 60	0.182 321 60
Oil and Gas	1166	-0.001 690 30	0.034 909 50	-0.105 360 50	0.095 55
<b>ROE</b>					
Healthcare	1696	0.042 061 20	0.033 634 90	-0.0005	0.1776
Telecommunication	954	0.033 884 90	0.032 021 70	-0.0039	0.1314
FMCG	3180	0.028 385 20	0.049 472 40	-0.1294	0.2014
Finance	4346	0.572 755 90	4.467 738	-16.39	14.49
Oil and Gas	1166	0.020 903 60	0.047 142	-0.0791	0.1894
<b>DE</b>					
Healthcare	1696	0.523 959 20	0.490 093 40	0.135 657	2.040 278
Telecommunication	954	1.297 28	1.065 645	0.351 059 80	4.533 378
FMCG	3180	0.849 241 70	0.547 157 60	0.1289	2.3999
Finance	4346	4.447 517	5.662 253	0.0059	18.735 54
Oil and Gas	1166	0.994 087 20	0.449 355 60	0.108 104 10	1.615 819
COVID19	11 342	3.160 377	6.569 424	0	41
ER	11 342	23 324.72	127.821 10	23 173.5	23 642.5
MS	11 342	1.09e+07	158 018.5	1.07e+07	1.11e+07
CPI	11 342	104 332.5	2 704.402	101 970	109 300
D_AFSP	11 342	0.226 415 10	0.418 529 30	0	1

Source: Authors' compilation

The average daily case of COVID-19 is about three cases per day with the highest number of confirmed cases per day is 41 cases. Among the five sectors, the average stock return of the Healthcare sector remains to be the most potential one with around -0.000 321 50, followed by Telecommunication (-0.000 540 70), FMCG (-0.000 578 90), Finance (-0.000 639 20), and Oil and Gas (-0.001 690 30).

### 5.2 Testing the correlation, appropriate regression model and the errors.

The result of Pearson correlation analysis of five sectors on all eight independent variables shows that: the daily number of new cases is negatively related to the stock return performance of all five sectors. A negative relation also exists between the stimulus packages and the stock return in all five sectors.

Most independent variables exhibit a relationship with others, which may cause a multi-collinear phenomenon. Specifically, there is a high level of correlation among the three macroeconomics variables at a confidence level of 99%. The COVID19 and D\_AFSP variables also correlate to most of the other variables.

To evaluate whether FEM, REM, or Pooled OLS is more appropriate for both models mentioned, the authors run the Hausman test. The further results were checked through F-test for fixed effects with a P-value higher than 0.05, and the Lagrange multiplier test for random effects with P-value equal to 1.00 in all five sectors. As a result, Pooled OLS is the optimal model for this study.

The multi-collinearity test is also implemented to inspect this error among independent variables. Both models from all five sectors have no multi-collinearity with the VIF value smaller than 10. There is also no autocorrelation in all sectors with a P-value above 0.05. However, the results of the heteroskedasticity test point out the occurrence of heteroskedasticity in the model with a P-value equal to .000 in all sectors. In this case, the Feasible generalized least squares method (FGLS) helps to fix the heteroscedasticity defects. The reason is that the method will estimate the model based on the OLS method (even in the case of autocorrelation and heteroscedasticity). The errors drawn from the model will be used to estimate the variance-covariance matrix of the error of the model.

### 5.3 Regression result and analysis

Table 3 shows the result of the first regression model. Daily new cases of COVID-19 have a negative impact on the stock return performance of all sectors.

Table 3: Impacts of the daily case of COVID-19 on sectors.

	Healthcare	Telecommunication	Finance	FMCG	Oil and Gas
COVID19	-0.000 386*** (-3.49)	-0.000 321** (-2.23)	-0.000 759*** (-10.31)	-0.000 585*** (-6.61)	-0.000 376*** (-2.59)
ROE	-0.008 89 (-0.34)	-0.005 50 (-0.15)	-0.000 001 81 (-0.02)	-0.004 32 (-0.39)	-0.005 89 (-0.25)
DE	-0.000 249 (-0.14)	0.001 09 (0.86)	0.000 016 80 (0.23)	0.000 241 (0.23)	-0.000 409 (-0.21)
ER	0.000 018*** (2.62)	0.000 017 40** (1.97)	0.000 022*** (5.03)	0.000 029*** (5.32)	0.000 017 10* (1.93)
MS	1.05e-08* (1.85)	1.70e-08** (2.00)	2.03e-08*** (5.43)	1.34e-08*** (2.90)	1.20e-08 (1.55)
CPI	-0.000 000 507 (-1.34)	-0.000 000 483 (-0.96)	-0.000 001*** (-2.98)	-0.000 000 422 (-1.39)	-0.000 000 381 (-0.76)
_cons	-0.471*** (-2.74)	-0.540** (-2.33)	-0.668*** (-5.84)	-0.771*** (-5.58)	-0.490** (-2.15)

Note(s): The numbers in parentheses are standard errors. \*, \*\*, \*\*\* indicate significance levels at 10%, 5%, 1%

Source: Authors' compilation



The results confirm that stock returns are negatively affected by the pandemic, which is similar to the result of Anh & Gan (2020). In detail, the Telecommunications sector is hit the least adversely at a 95% confidence level, which is also supported by Al-Awadet et al. (2020), Liew and Pua (2020). Telecommunications are expanding in Vietnam as analyzing above. During the pandemic, the internet became the main factor connecting people for work, school, etc. Additionally, the digital transformation trend also contributes to the explosion of the Telecommunications sector. Different from the prior studies, the sample includes Oil and Gas sector, and the results show that that the sector is less severe than the Healthcare, and FMCG sectors. The long-term expectation of investors for the Oil and Gas sector is the main force for this phenomenon. It is the belief in the recovery of oil price when businesses around the world will return to the normal production cycle and the effectiveness in price adjustments of the government, especially when the Vietnam government performs very well in controlling the disease. Meanwhile, even though there is a significant rise during the pandemic in the Healthcare sector (the sharp increase in the consumption of masks, antiseptic disinfectant liquid, etc.) and FMCG sector (panic buying), it is believed to be a short-term effect of the pandemic. Stockpiling goods leads to storing without consumption, which easily drops the sales number in the following months. The phenomenon, thus, does not benefit the businesses too much. The financial sector remains the most vulnerable sector, which is explained by the considerable stress of the crisis and the countercyclical lending role that credit institutions suffer. In table 4, after supplementing the stimulus packages into the model, the study solves the second set of hypotheses.

Table 4: Impacts of the daily case of COVID-19 and support packages on sectors.

	Healthcare	Telecommunication	Finance	FMCG	Oil and Gas
COVID19	-0.000 35*** (-3.16)	-0.000 288** (-1.98)	-0.000 700*** (-9.44)	-0.000 553*** (-6.18)	-0.000 332** (-2.27)
D_AFSP	-0.006 17** (2.27)	-0.006 66* (1.89)	-0.010 80*** (5.98)	-0.005 73*** (2.63)	-0.008 97** (2.52)
ROE	-0.008 33 (-0.32)	-0.000 569 (-0.02)	-0.000 000 572 (-0.00)	-0.003 66 (-0.33)	-0.004 51 (-0.19)
DE	-0.000 243 (-0.14)	0.001 08 (0.86)	0.000 016 20 (0.22)	0.000 244 (0.23)	-0.000 390 (-0.20)
ER	0.000 024*** (3.32)	0.000 024 90*** (2.60)	0.000 034*** (7.04)	0.000 035*** (5.92)	0.000 027*** (2.79)
MS	2.61e-08*** (2.93)	3.43e-08*** (2.75)	4.80e-08*** (8.11)	2.81e-08*** (3.89)	3.52e-08*** (2.94)
CPI	-0.000 001** (-2.22)	-0.000 000 953* (-1.70)	-0.000 002*** (-5.39)	-0.000 000 80** (-2.43)	-0.000 001 02* (-1.82)
_cons	-0.753*** (-3.56)	-0.857*** (-3.03)	-1.166*** (-8.29)	-1.033*** (-6.06)	-0.904*** (-3.23)

Note(s): The numbers in parentheses are standard errors. \*, \*\*, \*\*\* indicate significance levels at 10%, 5%, 1%

Source: Authors' compilation

On the contrary with the positive effects of stimulus packages on the stock markets of many countries (Phan & Narayan, 2020), the stimulus packages in Vietnam left a negative influence on all five sectors. It can be implied that in emerging countries, due to weak monetary transmission and small fiscal multipliers (Loayza & Pennings, 2020), investors are skeptical about the efficiency of the stimulus packages' disbursement. In particular, the Financial sector is again the most negatively affected, followed by the Oil and Gas sector, the Telecommunications sector, and the Healthcare sector. The FMCG is the least affected of the five sectors. A possible reason is that the stimulus packages target non-financial business sectors such as agriculture, textiles, footwear, automotive, aviation, electronics, food processing, and tourism sectors. It is then implied that the pandemic would affect non-financial businesses less than financial firms and the stock market, in return, indicates this valuation (Anh & Gan, 2020). Besides, Directive 11 assigned relevant agencies to ensure the supply of goods to meet consumer demand and consolidate the domestic market, therefore, it is a good perspective to invest in the FMCG sector.

Table 5: Summary of regression results

Variables	Sector	Coefficient (p-value)	Expected signal	Actual signal	Significant level	Hypothesis testing result
<b>COVID-19 daily new cases</b>	Finance	-0.000 759	-	-	1%	Support
	FMCG	-0.000 585	-	-	1%	Support
	Healthcare	-0.000 386	+	-	1%	Not support
	Oil and Gas	-0.000 376	-	-	1%	Support
	Telecommunic ation	-0.000 321	+	-	5%	Not support
<b>Stimulus Packages</b>	Finance	-0.010 80	+	-	1%	Not support
	Oil and Gas	-0.008 97	+	-	5%	Not support
	Telecommunic ation	-0.006 66	+	-	10%	Not support
	Healthcare	-0.006 17	+	-	5%	Not support
	FMCG	-0.005 73	+	-	1%	Not support

Source: Authors' compilation

From the result of panel-data regression models, this study shows that the daily new confirmed COVID-19 cases negatively impacted stock returns of all five examined sectors, the order from most affected to least affected is: Finance, FMCG, Healthcare, Oil and Gas and Telecommunication.

Hypotheses H3, H4, H5 are supported. As with empirical evidence from other countries, in Vietnam, all credit institutions, including foreign finance companies and banks play an important role in supporting businesses, people damaged by the pandemic by the means of rescheduling the repayment terms, exempting, reducing of interest rates etc. Banks during the pandemic also suffer from profit loss due to role to support businesses. The reduced income also drops the willingness for any kinds of investment, but forces people save more for daily consumption. The stockpiling behavior under uncertainty is the main factor for the sudden growth in sales of FMCG. However, when people have moderated their consumption along with positive news about disease prevention, the demand for FMCG will return back to normal. The phenomenon, in fact, causes the sudden stress for the supply chain rather than bring any benefit for FMCG businesses. The Oil and Gas is a particular sector because it is affected by the oil price trend in the world. Since the oil price decrease due to low demand for transportation and the oil market became inefficient during the pandemic, the stock returns of the sector are affected negatively.

However, the stock returns of two sectors of healthcare and telecommunication are also badly affected, opposite to previous studies (H1 and H2 are not supported). It can be explained from the fact that: Vietnam has not many affected cases (By June 2020, Vietnam only had 355 cases/97.3 million of population, no death, 76 days having no new cases (PV, 2020). However, Vietnam's average income is still low (USD 2715 per annum (World Bank, 2020). Therefore, both investors and consumers are very careful and hesitate to spend/invest, and they focus more on keeping their investment/consumption focusing on necessities. The healthcare businesses are on high demand during the pandemic, however, those companies in Vietnam are still weak in terms of investment in expansion, R&D and, at the same time, suffer from the fierce competition with foreign companies. Although consumptions of masks, antiseptic disinfectant liquid etc. increase suddenly, the phenomenon is short-term and not enough to compensate the difficulties healthcare businesses undergo.

The stimulus packages in Vietnam had negative influences on stock returns of all sectors, which are opposite to previous studies (hypotheses from H6 to H10 are not supported). The order of sectors from most to least negatively affected is Finance, Oil and Gas, Telecommunication, Healthcare, FMCG.

Vietnam is one of the best countries in handling the COVID-19 pandemic (Galloway, 2021; et al. et al, 2020; et al. et al, 2020; Tet al. et al, 2020). The government of Vietnam has several stimulus monetary and fiscal packages since the outbreak of COVID-19, with a total of 6 packages and an amount of approximately US\$ 23 billion (UN Vietnam, 2020). However, the implementation of these packages by June 2020 was still very slow, due to the

complicated rules and procedures for defining the target groups and disbursement (UN Vietnam, 2020; Tien Long, 2020, Loayza & Pennings, 2020). Also, stimulus packages in emerging countries may be less effective than those in developed nations, and sometimes even caused adverse impacts such as higher inflation, higher government debt, less confidence of the investors in debt sustainability (Wolf, 2020). Therefore, investors in the Vietnam stock market remain skeptical of the growth potential of firms during the pandemic and the efficiency of the stimulus packages' disbursement. Besides, this negative signal shows investors' reaction in assessing the stimulus packages as the signs of an economic downturn.

## 6. Policy implications

To overcome the COVID-19 pandemic better and ensure more efficiency of the stimulus packages, some policy implications for Vietnam are proposed.

Government of Vietnam has proactively reacted to the COVID-19 from beginning such as: strong national propaganda of the COVID-19 to all citizen, clear guidelines of the emergency responses, medical measures, blockade of the schools, travel bans, social distancing, and nationwide lockdown, financial supports, and other measures) to restrain the spread of the virus to protect stock markets (Galloway, 2021). These measures should be kept constantly and strictly to maintain the good results of preventing and combating COVID-19, to bring more confidence to consumers and investors and boost economic growth. In addition, to ensure the efficiency and effectiveness of stimulus packages, Government should enhance the implementation faster and choose the most appropriate target groups, showing signals of stimulus packages as the great efforts for economic growth.

For the investors, the empirical results prove that different sectors will have a different severity of COVID-19 impact. Thus, investors should diversify investment portfolios across both financial and non-financial sectors to reduce the risk of being affected by market volatility in future similar global-scale pandemics. Besides, since the market in pandemics can be extremely volatile, investors should remain calm, take a long view, and make investment decisions based on the firm's overall value rather than focus on day-to-day fluctuations.

## 7. Limitation

This study is subjected to potential limitations. Only five sectors of the Vietnam stock market are investigated. This study's findings do not reflect the whole impact of the COVID-19 pandemic and stimulus packages on other sectoral stock returns. The time frame is ended on June 30, 2020. Future researchers may extend the scope to more sectors, more duration with other emerging countries to observe the general patterns of sectoral stock returns during pandemics.

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