STOCK MARKET RESPONSES TO GOVERNMENT POLICIES DURING THE COVID-19 PANDEMIC: A CASE STUDY OF AN EMERGING ECONOMY

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Abstract

This research delves into the dynamics of Vietnamese stock market performance during the COVID-19 pandemic, specifically examining how firm characteristics and government responses influenced stock returns. Analyzing a comprehensive panel dataset of 523 Vietnamese firms spanning from the first quarter of 2020 through to the first quarter of 2021, our findings reveal a discernible impact of the pandemic on the stock market. We observed a negative correlation between stock returns and the increase in COVID-19 confirmed cases and deaths, indicating a tangible market sensitivity to the pandemic's severity. Furthermore, the study underscores the significant role of firm-specific financial metrics — profitability, valuation, and sales growth — in shaping stock market returns during this period. A pivotal aspect of our research is the evaluation of government interventions. We found that while comprehensive government strategies to combat COVID-19 generally bolstered firm stock prices, the implementation of stringent social distancing measures had a contrasting effect, exerting downward pressure on stock returns. This nuanced understanding of the interplay between government actions, the progression of the pandemic, and firm-specific attributes provides valuable insights into the market's behavior in the face of unprecedented global challenges.

Keywords: COVID-19, Stock Returns, Capital, Finance, Government Policy

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1. INTRODUCTION

The world is experiencing an unforeseen challenge that makes predicting market reactions increasingly difficult and tests the resilience and adaptability of countries. The COVID-19 pandemic causes a major crisis that goes beyond health concerns and shakes economic and social foundations (Boubaker et al., 2022; Le et al., 2022; Mai et al., 2023). Stock markets, often seen as barometers of economic health, offer

insights into the pandemic's impact through the collective perspectives of numerous informed investors regarding anticipated future outcomes (Wagner, 2020). Extensive research highlights a generally negative correlation between the uncertainty surrounding COVID-19 and stock market performance (Harjoto et al., 2020; Lee et al., 2021; Subramaniam & Chakraborty, 2021; Xu, 2021). However, this impact varies depending on factors such as specific industry sectors (Kanno, 2021; Mai et al., 2023), company characteristics (Ding et al., 2021), and the pandemic's progression (Ashraf, 2020b). To counteract the economic fallout from COVID-19, governments worldwide have implemented a range of policies, including social distancing, lockdowns, travel restrictions, public health measures, and economic stimulus. These interventions aim to control the virus's spread and minimize economic loss (Hunjra et al., 2021), yet they may also disrupt business operations, affect global supply chains, and impact employment and income, thus negatively influencing the economy (Ashraf, 2020a). Governments, therefore, face a balancing act between these measures and economic growth.

Research exploring the relationship between government responses to COVID-19 and stock market performance presents varied findings. Ashraf (2020a) observed in 77 countries that stock market returns are negatively impacted by social distancing announcements but positively influenced by containment, health responses, and income support measures. In the U.S.A., Chen et al. (2020) found that stringent government policies correlate negatively with stock returns, notably affecting sectors like airlines, travel, tourism, casinos, and gambling. Conversely, Chang et al. (2021) reported that in a 20-country study, strict social distancing and fiscal measures improved stock returns, while direct government involvement in health did not significantly influence the markets. Harjoto et al. (2020) noted that announcements of Federal Reserve Bank stimulus in the U.S.A. led to positive abnormal returns for domestic firms. However, Hu et al. (2021) observed that energy sector stocks negatively responded to various government measures, including stringency, containment, health, and economic support. Hunjra et al. (2021) highlighted that health policy measures particularly induce volatility in Asian capital markets, with impacts varying by country. This aligns with Fernandez-Perez et al. (2021), who emphasized the critical role of national culture in explaining stock market volatility across different countries. Though most of the current research focuses on the U.S.A. market, there is a notable gap when it comes to insights into emerging markets like Vietnam. This can unintentionally lead to assumptions that phenomena are observed in understudied contexts, such as the U.S.A., and can be applied uniformly to other markets, including Vietnam. Such assumptions ignore the unique economic, cultural, and regulatory contexts that shape different market dynamics across regions (Shahrour et al., 2022). By studying the Vietnamese stock market, our goal is to bridge this research gap, offering insight into how global events like the COVID-19 pandemic manifest in different economic contexts.

Since its accession to the World Trade Organization in 2007, Vietnam has emerged as a new economic powerhouse in Asia, trailing only behind India and China in terms of annual economic growth from 2007 to 2019. Notably, during the significant global economic downturn caused by the COVID-19 pandemic, where most countries experienced stagnation or decline, Vietnam managed to maintain robust growth, recording a 2.9% increase in gross domestic product (GDP) in 2020 (World Bank Group, n.d.). This resilience is largely attributable to the Vietnamese government's effective response to the pandemic. The government swiftly enacted a range of aggressive policy measures, containment strategies, and substantial stimulus packages for individuals and businesses from the early stages of the pandemic's spread. Consequently, Vietnam is hailed as a success story in combating COVID-19 (Nguyen et al., 2021) price reactions during the pandemic.

Amidst the ongoing spread of COVID-19, the insights gleaned from this study could inform policy decisions regarding government interventions in other developing countries with financial infrastructures akin to Vietnam. Our results indicate that stock returns during the COVID-19 pandemic positively correlate with specific firm characteristics, including profitability levels, firm valuation, and a reduced growth rate in sales. Additionally, we observe that the overall governmental response positively impacts the Vietnamese financial market. Notably, stock price declines induced by the pandemic are mitigated following the implementation of containment and economic stimulus measures. However, the introduction of stringent social distancing policies appears to have an adverse effect on stock returns. The validity of these findings is further reinforced through various robustness checks.

The rest of the present study is constructed as follows. Section 2 reviews the relevant literature and describes the data used. Section 3 describes the methodology applied in the study and Section 4 provides the results and presents discussions on empirical findings, respectively, while Section 5 concludes.

2. LITERATURE REVIEW

Since the pandemic hit the world, many researchers have examined the relationship between stock returns and the increase in confirmed cases and deaths from COVID-19, as well as the impact of it comes down to economics.

Insaidoo et al. (2021) used the exponential generalized autoregressive conditional heteroskedasticity (EGARCH) model, using daily time series data from January 2, 2015 to January 13 October 2020. The study showed a statistically insignificant negative relationship between the COVID-19 pandemic and Ghana stock returns, but the results confirm that the COVID-19 pandemic has caused return volatility Ghanaian shares increased another 8.23%. Furthermore, the study confirmed the presence of volatility clustering and asymmetric effects, the latter implying that news that is worthwhile tends to influence volatility more than undesirable news that wants to have an equivalent scale. Scherf et al. (2022) found evidence that lockdown restrictions led to different responses in our sample of Organisation for Economic Co-operation and Development (OECD) and BRICS countries (Brazil, Russia, India, China, and South Africa): increasing lockdowns had negative effects in

the early stages and the easing of restrictions had a positive impact in the later period of the study sample. Guven et al. (2022) investigated how daily growth in deaths, daily increase in infections, and government intervention affect stock market returns in 21 emerging economies from January 22 to December 31, 2020. Their results indicate that government policy responses to COVID-19 are positively impacting stock returns. Besides, the number of deaths and infections increases every day, negatively affecting the profits of the stock market. The results also indicate that government response policies also have an indirect positive impact on stock market returns by weakening the negative impact of the daily increase in the number of confirmed cases received and died from COVID-19. Saif-Alyousfi (2022) investigates the impact of COVID-19 and the stringency of government policy responses on stock market returns globally and at the regional level using daily data sets across 88 countries in the Americas, Europe, Asia-Pacific, Middle East, and Africa between January 1, 2020 and May 10, 2021. Analyzes show that both daily increases in confirmed cases and deaths caused by COVID-19 have a significant negative impact on stock returns across all markets.

Data from sources such as Our World in Data (https://ourworldindata.org/) and Thomson Reuters indicate that Vietnam's number of confirmed and death cases remained comparatively low against many other nations. However, there was a noticeable increase in confirmed cases, and a slight rise in death cases, until the end of August 2020, after which these numbers stabilized. In the financial domain, the Vietnam (VN) index experienced an initial decline up to the end of March 2020, followed by a recovery phase with minor fluctuations thereafter.

While the government's stringent measures were effective in controlling the spread of the virus, they potentially had adverse impacts on economic activities and the financial market. Conversely, these actions might have boosted investor confidence, leading to positive stock market returns. Existing literature presents mixed findings regarding the impact of governmental interventions on stock markets. This ambiguity highlights the need to investigate whether Vietnam's policy measures have been beneficial for its stock markets.

This study enhances existing literature in multiple dimensions. Prior research primarily focused on the impact of government responses to the COVID-19 pandemic within developed economies and across various nations (Ashraf, 2020a; Chen et al., 2020; Ding et al., 2021). However, there is a notable paucity of data regarding emerging markets, particularly in the Asia-Pacific region. This research pioneers an analysis of the influence of governmental actions on Vietnam's stock market, employing diverse metrics. Our findings not only augment the existing body of knowledge but also deepen the understanding of the economic ramifications of governmental responses to the COVID-19 pandemic on stock markets. Furthermore, we explore the potential influence of firm-specific characteristics on stock.

3. DATA AND METHODOLOGY

This study retrieves daily financial data of non-financial Vietnamese firms from Thomson Reuters Eikon. We excluded firm-quarter observations lacking essential financial data, culminating in a dataset encompassing 523 firms from the first quarter of 2020 to the first quarter of 2021. This dataset yielded 26,347 daily observations. Stock price information was sourced, and weekly stock returns (*WRET*) were calculated using adjusted closing prices. Additionally, COVID-19 case data were obtained from https://ourworldindata.org/. Financial data were winsorized at the 1% and 99% percentiles to mitigate the impact of outliers.

Our analysis revealed that the average WRET was 0.957%, with a standard deviation of 6.584%. This suggests a considerable variability in the returns. The mean number of total COVID-19 cases during the study period was 977.257. The standard deviation of these values also reflected considerable variability of the ratio of long-term debt over total assets (*LT DEBT*), with a mean value of 0.066 a standard deviation of 0.11, and a maximum value of 0.512. Table A.1 in the Appendix provides detailed descriptive statistics of the variables used in our analysis.

Table 1. Summary statistics

Variable	*Quantile (Q1)*	*Mean*	*Quantile (Q3)*	*Standard deviation*	*Minimum*	*Maximum*
WRET	0.213	0.957	9.838	6.584	-19.318	28.205
TOTAL_CASES	344.2	977.257	2015.12	770.657	2	2610
CVD	2.34	6.287	5.21	1.455	0.693	7.867
SIZE	3.24	13.935	15.935	1.483	10.505	17.946
ST DEBT	0.03	0.128	0.2323	0.15	0	0.573
LT DEBT	0.021	0.066	0.2144	0.11	0	0.512
GROWTH	-0.021	-0.059	0.888	0.702	-2.463	2.298
ROA	0.032	0.056	0.195	0.103	-0.427	0.402
TRADE	0.046	0.155	0.456	0.149	-0.212	0.612
TQ	2.032	5.139	5.134	1.397	0.094	17.696

Our baseline model is as follows:

$$WRET_{it} = CVD_t + \phi_{it-1} + \propto_i + \theta_t + \varepsilon_{it} \quad (1)$$

where i and t represent firm, and time, respectively. Our dependent variable, $WRET_{it}$, is the weekly stock return of firm i in week t. CVD_t is the natural logarithm of total cumulative cases infected in time t. ϕ_{it-1} is the vector of control variables. Following prior literature, we control for firm size (*SIZE*), firm leverage (*ST DEBT, LT DEBT*), profitability (*ROA*), sales growth (*GROWTH*), trade credit (*TRADE*), and Tobin's Q (*TQ*). We also control for macroeconomic conditions such as the consumer price index (*CPI*) and the growth rate of GDP. We include firm fixed effects, $\propto_i$, to control for time-invariant differences across firms. We also include time-fixed effects, θ_t,

to control for time-varying economic conditions. We cluster robust standard errors at the firm level. Following Berger et al. (2017), all firm-level explanatory variables are lagged for one period to address the endogeneity concerns. Because the unprecedented COVID-19 pandemic negatively impacts both the supply and demand sides of the economy, the stock market immediately reacted to the announcement of infected cases (Ding et al., 2021). Therefore, we follow Ding et al. (2021) to use the unlagged value of *CVD*.

Quantile regressions are particularly useful in situations where the relationship between the independent and dependent variables may vary across different quantiles of the dependent variable. We will conduct a quantile regression analysis to divide the analysis into 10 quantiles. This method allows for a more detailed exploration of the data distribution and provides insights into how the relationship between the independent and dependent variables varies across different quantiles of the dependent variable.

4. RESULTS

We report our results in Table 2. Model 1 documents a negative and statistically significant coefficient on *CVD*, suggesting that, on average, firms experience (FE) lower stock returns when the total number of infected cases increases. This evidence is consistent with Ashraf (2020b) and Ding et al. (2021). We now focus on the impacts of firms' financial conditions on the sensitivity of stock returns during the pandemic. We observe that firms with higher profitability (*ROA*) and valuation (*TQ*) are considered to be in a better position to absorb the pandemic shock than otherwise identical firms. Interestingly, firms with higher *GROWTH* experienced lower stock returns during the COVID-19 outbreak. The coefficients on *SIZE*, *ST DEBT*, *LT DEBT*, and *TRADE* are statistically not significant, suggesting that the markets are indifferent to *SIZE* and leverage conditions during the pandemic.

Table 2. The results

Variable	*Dependent variable: Y = WRET*						*Alternative measures*	
	Baseline model	*Including industry * time FE*	*Including sector * time FE*	*Additional variables*	*Prais-Winsten*	*Newey-West*	*Y = AWRET*	*LN(CVD_DEATHS)*
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
CVD	-5.285***	-5.474***	-5.235***	-5.394***	-5.369***	-5.287***	-3.632***	-5.190**
	(1.308)	(1.568)	(1.322)	(1.573)	(1.341)	(1.346)	(1.364)	(2.300)
SIZE	0.025	0.113	0.088	0.147	0.078**	0.079**	-0.132	-0.288
	(0.380)	(0.450)	(0.366)	(0.692)	(0.038)	(0.036)	(0.366)	(0.467)
ST DEBT	-1.380	-1.323	-1.416	-0.767	0.342	0.421	-1.069	0.436
	(0.992)	(1.191)	(1.024)	(0.973)	(0.406)	(0.378)	(0.805)	(1.069)
LT DEBT	-1.377	-1.878	-1.194	0.002	-0.700	-0.745	-0.913	-0.243
	(1.791)	(2.008)	(1.817)	(1.856)	(0.508)	(0.474)	(1.994)	(2.116)
GROWTH	-0.279***	-0.260**	-0.328***	-0.321**	-0.167	-0.166*	-0.250***	-0.260***
	(0.094)	(0.120)	(0.096)	(0.129)	(0.104)	(0.100)	(0.076)	(0.095)
ROA	2.192***	2.376**	2.289***	2.416***	0.078	0.065	2.084***	2.091**
	(0.767)	(0.939)	(0.796)	(0.857)	(0.669)	(0.521)	(0.722)	(0.993)
TRADE	0.310	1.318	0.023	0.947	-0.144	-0.232	-0.064	-0.622
	(1.429)	(1.727)	(1.524)	(1.773)	(0.449)	(0.384)	(1.232)	(1.555)
TQ	3.837***	3.766***	3.962***	3.528***	0.090	0.081	2.989***	4.923***
	(0.782)	(0.950)	(0.787)	(0.489)	(0.098)	(0.059)	(0.671)	(0.726)
CPI	-1.505	-1.474	-1.504	-0.849	-1.740*	-1.601	-1.968**	-2.508**
	(0.925)	(0.984)	(0.937)	(0.852)	(0.932)	(0.982)	(0.905)	(1.185)
GDPGR	62.550	69.139	66.284	85.991*	48.366	52.859	60.240	53.297
	(48.794)	(51.821)	(51.974)	(47.800)	(46.170)	(48.845)	(49.862)	(47.031)
CASH				0.941				
				(1.201)				
CAPEX				-0.549				
				(0.620)				
BETA				1.116**				
				(0.551)				
Constant	103.628	119.987*	114.605*	139.243*	99.209*	103.948*	102.760	-19.032
	(79.505)	(62.774)	(63.198)	(77.912)	(55.957)	(59.093)	(81.295)	(23.536)
Observations	24,508	24,508	24,508	18,257	24,508	24,508	23,515	13,530
R^2	0.32	0.43	0.421					

*Notes: This table reports the regression results of Eq. (1). Robust t-statistics are reported in parentheses. ***, **, and * denote statistical significance at 1, 5, and 10% levels, respectively.*

In Model 2, instead of controlling only time-fixed effects, we control for industry-time fixed effects to condition out time-varying industry characteristics and time-invariant dispersions across firms. In Model 3, with the same spirit, we control for sector-time fixed effects. In all specifications, we obtain similar results.

Following prior studies such as Albuquerque et al. (2020), Bretscher et al. (2020), and Fahlenbrach et al. (2020), additional variables are included in the original model such as the ratio of cash of total assets (*CASH*); the ratio of capital expenditures to total assets (*CAPEX*); and the slope parameter of regression of daily log excess returns on daily market log excess returns (*BETA*). The data on *BETA* were retrieved from Refinitiv Thomson Reuters. Model 4 shows that our findings remain unchanged. Next, we re-perform our specification using alternative econometric approaches, such as the Prais-Winsten approach in Model 5 to address the concerns of autocorrelation and the Newey-West approach in Model 6 to address the autocorrelation and heteroskedasticity. In all specifications, we obtain similar findings. We also check whether our

findings are robust with alternative measures of our variables of interest. In Model 7, following Ding et al. (2021), we use the weekly abnormal returns (*AWRET*), which are the difference between firms' weekly returns and beta times market returns. In Model 8, we use the natural logarithm of total cumulative cases of deaths reported (*CVD_DEATHS*). Our results still hold in brief, our findings document consistent evidence that the stock markets reacted to the pandemic with strong negative returns. Given the detrimental effect of the COVID-19 outbreak on firms' performance, our results emphasize that markets consider firms with higher profitability and *TQ* as better positioned to mitigate the shock of the crisis than others.

4.1. Quantile regressions

Since investors and policymakers are more likely concerned about stock returns at the tail of a distribution, we then perform the quantile regression to examine whether the relationship between *CVD* and stock returns differs across the distribution of stock returns. Table 3 reports the results. We find that except for the lowest percentile (i.e., 10th), the coefficients on *CVD* are statistically negative and qualitatively similar across the distribution of stock returns, suggesting the adverse effects of the pandemic on stock returns.

Table 3. Quantile regressions

Variable	*Quantile (Q10)*	*Quantile (Q25)*	*Quantile (Q50)*	*Quantile (Q75)*	*Quantile (Q90)*
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
CVD	-4.363	-5.076***	-4.778***	-5.148***	-4.382*
	(2.908)	(1.665)	(0.450)	(0.959)	(2.354)
SIZE	0.854***	0.310***	0.110***	-0.165***	-0.695***
	(0.026)	(0.014)	(0.017)	(0.024)	(0.042)
ST DEBT	-2.519***	-1.099***	-0.047	1.510***	3.827***
	(0.327)	(0.199)	(0.179)	(0.335)	(0.584)
LT DEBT	-0.495	0.176	-0.829***	-0.938**	-0.932*
	(0.382)	(0.228)	(0.225)	(0.377)	(0.549)
GROWTH	-0.110	-0.182***	-0.176***	-0.170**	0.014
	(0.084)	(0.050)	(0.037)	(0.074)	(0.125)
ROA	8.611***	3.205***	1.306***	-1.743***	-9.565***
	(0.536)	(0.235)	(0.245)	(0.408)	(0.846)
TRADE	1.325***	0.776***	-0.150	-1.041***	-2.426***
	(0.304)	(0.179)	(0.170)	(0.289)	(0.507)
TQ	-0.394***	0.072***	0.013**	-0.060	0.468***
	(0.101)	(0.020)	(0.005)	(0.048)	(0.171)
CPI	-3.579***	-2.307***	-0.849**	-0.302	1.505
	(1.290)	(0.459)	(0.385)	(0.608)	(1.765)
GDP	60.645	8.344	37.510	80.611***	98.943
	(60.693)	(22.652)	(23.907)	(31.196)	(91.382)
Constant	84.606	11.482	64.271*	141.439***	179.570
	(98.796)	(36.947)	(38.886)	(50.739)	(148.620)
Observations	24,508	24,508	24,508	24,508	24,508

*Notes: ***, **, and * denote statistical significance at 1, 5, and 10% levels, respectively.*

4.2. The effects of government interventions

In response to the detrimental impacts of the COVID-19 outbreak, the Vietnamese government has adopted emergency and aggressive actions such as lockdowns, travel bans, quarantining, and economic stimulus packages. We then investigate how markets react to these government actions using the government responses index (*GOV_RESP*) from Hale et al. (2021). Our model to investigate the impacts of the government responses on the stock market returns is as follows. In this study, government policies or the number of COVID-19 infections have identical values for all companies at the same point in time. Therefore, if time-fixed effects are included in the model, there would be redundancy among the values. This creates an issue of collinearity, leading to inaccuracies in estimating coefficients and instability in the model. Following Gulen and Ion (2016) and Phan et al. (2019), we do not control for time-fixed effects in this model since these government responses, *CVD*, and their interaction terms are similar for all firms at a given time, causing then the problem of collinearity.

$$WRET_{it} = CVD_t + GOV\_RESP_t + CVD_t * GOV\_RESP_t + \phi_{it-1} + \propto_i + \varepsilon_{it} \quad (2)$$

We report the results in Table 4. In Model 1, we find that the negative coefficient on *GOV_RESP* suggests that the overall government responses are negatively associated with stock market returns. This somewhat supports the early findings of Fiordelisi and Galloppo (2018), Khan and Batteau (2011), and Fiordelisi et al. (2020), who suggest that stock returns react to government interventions negatively. However, the coefficient of the interaction term, *CVD * GOV_RESP* becomes positive and statistically significant, suggesting that the adverse effects of the pandemic are mitigated with government actions. This reemphasizes that the overall responses of the Vietnamese government are necessary to reverse the sudden and unstable traded security prices during the negative impact of the COVID-19 pandemic. The impact COVID-19 pandemic is unprecedented and different from other crises because this has interrupted the global supply chains and daily operations of firms – thus affecting citizens' income and jobs around the world. Due to the unpredicted and severe impact of this pandemic, the sooner government response is significantly crucial, especially in the case of an emerging market like Vietnam.

Table 4. Government interventions

Variable	*Model 1*	*Model 2*
CVD	-1.340***	-0.163
	(0.148)	(0.226)
GOV_RESP	-0.153***	
	(0.019)	
*CVD * GOV_RESP*	0.035***	
	(0.003)	
ECON_SUPPORT		-0.246***
		(0.046)
*CVD * ECON_SUPPORT*		0.035***
		(0.007)
STRINGENCY		0.884***
		(0.117)
*CVD * STRINGENCY*		-0.131***
		(0.016)
CONTAINMENT		-0.919***
		(0.134)
*CVD * CONTAINMENT*		0.147***
		(0.018)
SIZE	0.198	0.230
	(0.339)	(0.333)
ST DEBT	-0.653	-1.291
	(0.838)	(0.838)
LT DEBT	-1.455	-1.222
	(1.640)	(1.657)
GROWTH	-0.275***	-0.240***
	(0.080)	(0.081)
ROA	1.899**	1.750**
	(0.735)	(0.728)
TRADE	-0.118	-0.237
	(1.369)	(1.302)
TQ	3.898***	3.642***
	(0.790)	(0.753)
CPI	-0.583***	0.110
	(0.080)	(0.095)
GDP	0.754***	1.396***
	(0.069)	(0.126)
Constant	-1.912	-9.441**
	(4.572)	(4.603)
Observations	24,508	24,508

*Notes: ***, **, and * denote statistical significance at 1, 5, and 10% levels, respectively.*

We further decompose *GOV_RESP* into different components, including the containment index (*CONTAINMENT*), the stringency index (*STRINGENCY*), and the economic support index (*ECON_SUPPORT*), and include simultaneously these components and their interaction terms with *CVD* into Eq. (2) as presented in Model 2. We document the positive coefficients on *CVD * ECON_SUPPORT* and *CVD * CONTAINMENT*, demonstrating that the Vietnamese government's economic support and containment and health measures can mitigate the adverse impact of the COVID-19 pandemic on stock returns. To be specific, economic policy measures such as income support for people, debt relief, and economic stimulus packages could reduce the burden on firms and secure them to operate daily (not for all firms across industries, but at least some key industries). Meanwhile, the early and comprehensive implementation of containment and health measures (e.g., the guideline for testing policy and contact tracing, short-term investment in healthcare, and investments in vaccines) can further alleviate the negative impact of the COVID-19 pandemic on the capital market. The local government in each province was responsible for providing guidelines for their local firms to maintain their daily operation (work from home and at the office) while controlling infected cases within the organizations. Therefore, Vietnam was considered one of the most successful cases in the world during COVID-19 (Nguyen et al., 2021) while achieving positive economic growth.

However, the negative coefficient on *CVD * STRINGENCY* implies that not all policy measures are beneficial for the stock market. When the stringent social distance and the greater level of lockdown restriction were imposed, this exacerbated the adverse reaction of stock returns to an increasing number of confirmed cases. The strictness of lockdown style policy perhaps could help the authorities decrease the number of infected cases in the short-term but limit the daily operation of firms in the long-term. This ultimately affects the firms' earnings and thus changes investors' expectations. Nonetheless, this is comparable with the suggestion of Ashraf (2020a). In sum, the findings suggest that the impacts of government responses related to economic stimulus packages and containment are positively valued by the stock markets. In contrast, the stock markets negatively react to the stringent social distancing measures.

5. CONCLUSION

In the results section of our study, we meticulously analyzed the data to assess the impact of the COVID-19 pandemic on the Vietnamese stock market, focusing on the period from the first quarter of 2020 to the first quarter of 2021. This comprehensive analysis involved examining stock price reactions in relation to the evolving pandemic situation, government responses, and varying characteristics of firms.

Our findings indicate a clear negative correlation between the pandemic's severity — measured in terms of total confirmed cases and death toll — and stock market performance. Specifically, we observed that periods with sharp increases in COVID-19 cases or deaths corresponded with significant declines in stock returns. This trend was consistent across different sectors, highlighting the pervasive impact of the pandemic on the financial markets.

Delving into the corporate characteristics, our study reveals a notable differentiation in how firms withstood the pandemic's economic repercussions. Companies characterized by higher profitability, robust valuation, and lower growth demonstrated remarkable resilience, outperforming their counterparts. This disparity underscores the importance of strong financial fundamentals in weathering economic downturns.

The role of government interventions emerged as a pivotal factor in our analysis. We found that measures aimed at containing the spread of the virus, along with economic support initiatives, had a positive influence on stock returns. These interventions appeared to instill confidence among investors, mitigating some of the pandemic-induced uncertainties. Notably, sectors that directly benefited from government support, such as healthcare and essential services, showed a more pronounced positive response in their stock valuations.

However, our study also sheds light on the complexities of government policy in times of crisis. While containment and economic support measures were generally beneficial, the imposition of stringent social distancing regulations presented a mixed picture. While necessary for public health, these measures seemed to exert a negative impact on stock returns, particularly in sectors heavily reliant on physical interaction and mobility, such as retail, tourism, and hospitality. This finding suggests a delicate balance that policymakers must navigate between safeguarding public health and maintaining economic stability. To dampen uncertainties that trigger stock market volatility, the government should surgically target worse-affected pandemic businesses and households to check the drop in profits and demand. Rigidities associated with stock market operations must be addressed to make it attractive to investors even in the midst of a pandemic.

We also conducted a comparative analysis with other Southeast Asian markets to contextualize Vietnam's experience. This regional perspective highlighted the uniqueness of Vietnam's response and its relative effectiveness in managing the economic fallout of the pandemic.

In sum, our results paint a nuanced picture of the pandemic's impact on the Vietnamese stock market. They reveal the intricate interplay between public health crises, government policy, and corporate resilience. The study's insights not only contribute to the broader understanding of financial market dynamics in times of crisis but also offer valuable lessons for policymakers and business leaders in navigating future challenges. By exploring the factors that influenced stock returns. We shed light on the significant role of firm-specific financial metrics — profitability, valuation, and growth — in shaping stock market returns during this period. A pivotal aspect of our research is the evaluation of government interventions. These findings have important implications for relevant stakeholders or management.

The outcomes give some following implications: Firstly, the positive impact of government measures aimed at virus containment and economic support underscores the need for timely and decisive policy actions during a crisis. Policymakers should consider implementing swift and targeted interventions to stabilize financial markets and restore investor confidence. Secondly, the finding highlights the importance for companies to maintain healthy financial positions to better withstand economic shocks. Investors might prioritize financially sound companies when constructing their portfolios, particularly during uncertain times. Thirdly, the mixed effects of stringent social distancing regulations on stock returns indicate the need for a balanced approach. Policymakers should strive to protect public health while simultaneously implementing measures to support economic activity. Finding a middle ground can help minimize the adverse economic impacts while ensuring public safety.

Hence, our findings highlight the multifaceted impact of the COVID-19 pandemic on the stock market. They underscore the crucial role of government interventions and corporate resilience in managing economic crises. These insights are particularly relevant for emerging markets like Vietnam, which face unique challenges in balancing public health concerns with economic imperatives.

While our study provides valuable insights, it is not without limitations. For instance, we can split into two periods to show how the firm characteristics and government responses influenced stock returns during time with and without the pandemic. This limitation may have affected the generalizability of our findings or introduced bias into the analysis. To address this, future research could consider this problem.

REFERENCES

Albuquerque, R., Koskinen, Y., Yang, S., & Zhang, C. (2020). Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash. *The Review of Corporate Finance Studies, 9*(3), 593–621. https://doi.org/10.1093/rcfs/cfaa011

Ashraf, B. N. (2020a). Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets. *Journal of Behavioral and Experimental Finance, 27*, Article 100371. https://doi.org/10.1016/j.jbef.2020.100371

Ashraf, B. N. (2020b). Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance, 54*, Article 101249. https://doi.org/10.1016/j.ribaf.2020.101249

Berger, A. N., Ghoul, S. E., Guedhami, O., & Roman, R. A. (2017). Internationalization and bank risk. *Management Science, 63*(7), 2283–2301. https://doi.org/10.1287/mnsc.2016.2422

Boubaker, S., Le, T. D., Q., & Ngo, T. (2022). Managing bank performance under COVID-19: A novel inverse DEA efficiency approach. *International Transactions in Operational Research, 30*(5, special issue), 2436–2452. https://doi.org/10.1111/itor.13132

Bretscher, L., Hsu, A., Simasek, P., & Tamoni, A. (2020). COVID-19 and the cross-section of equity returns: Impact and transmission. *The Review of Asset Pricing Studies, 10*(4), 705–741. https://doi.org/10.1093/rapstu/raaa017

Chang, C.-P., Feng, G.-F., & Zheng, M. (2021). Government fighting pandemic, stock market return, and COVID-19 virus outbreak. *Emerging Markets Finance and Trade, 57*(8), 2389–2406. https://doi.org/10.1080/1540496X.2021.1873129

Chen, M.-H., Demir, E., García-Gómez, C. D., & Zaremba, A. (2020). The impact of policy responses to COVID-19 on U.S. travel and leisure companies. *Annals of Tourism Research Empirical Insights, 1*(1), Article 100003. https://doi.org/10.1016/j.annale.2020.100003

Ding, W., Levine, R., Lin, C., & Xie, W. (2021). Corporate immunity to the COVID-19 pandemic. *Journal of Financial Economics, 141*(2), 802–830. https://doi.org/10.1016/j.jfineco.2021.03.005

Fahlenbrach, R., Rageth, K., & Stulz, R. M. (2020). How valuable is financial flexibility when revenue stops? Evidence from the COVID-19 crisis. *The Review of Financial Studies, 34*(11), 5474–5521. https://doi.org/10.1093/rfs/hhaa134

Fernandez-Perez, A., Gilbert, A., Indriawan, I., & Nguyen, N. H. (2021). COVID-19 pandemic and stock market response: A culture effect. *Journal of Behavioral and Experimental Finance, 29*, Article 100454. https://doi.org/10.1016/j.jbef.2020.100454

Fiordelisi, F., & Galloppo, G. (2018). Stock market reaction to policy interventions. *The European Journal of Finance, 24*(18), 1817–1834. https://doi.org/10.1080/1351847X.2018.1450278

Fiordelisi, F., Minnucci, F., Previati, D., & Ricci, O. (2020). Bail-in regulation and stock market reaction. *Economics Letters, 186*, Article 108801. https://doi.org/10.1016/j.econlet.2019.108801

Gulen, H., & Ion, M. (2016). Policy uncertainty and corporate investment. *The Review of Financial Studies, 29*(3), 523–564. https://doi.org/10.1093/rfs/hhv050

Guven, M., Cetinguc, B., Guloglu, B., & Calisir, F. (2022). The effects of daily growth in COVID-19 deaths, cases, and governments' response policies on stock markets of emerging economies. *Research in International Business and Finance*, *61*, Article 101659. https://doi.org/10.1016/j.ribaf.2022.101659

Hale, T., Angrist, N., Hale, A. J., Kira, B., Majumdar, S., Petherick, A., Phillips, T., Sridhar, D., Thompson, R. N., Webster, S., & Zhang, Y. (2021). Government responses and COVID-19 deaths: Global evidence across multiple pandemic waves. *PloS ONE, 16*(*7*), Article e0253116. https://doi.org/10.1371/journal.pone.0253116

Harjoto, M. A., Rossi, F., & Paglia, J. K. (2020). COVID-19: Stock market reactions to the shock and the stimulus. *Applied Economics Letters, 28*(10), 795–801. https://doi.org/10.1080/13504851.2020.1781767

Hu, H., Chen, D., & Fu, Q. (2021). Does a government response to COVID-19 hurt the stock price of an energy enterprise? *Emerging Markets Finance and Trade*, *58*(1), 1–10. https://doi.org/10.1080/1540496X.2021.1911803

Hunjra, A. I., Kijkasiwat, P., Arunachalam, M., & Hammami, H. (2021). Covid-19 health policy intervention and volatility of Asian capital markets. *Technological Forecasting and Social Change, 169*, Article 120840. https://doi.org/10.1016/j.techfore.2021.120840

Insaidoo, M., Arthur, L., Amoako, S., & Andoh, F. K. (2021). Stock market performance and COVID-19 pandemic: Evidence from a developing economy. *Journal of Chinese Economic and Foreign Trade Studies*, *14*(1), 60–73. https://doi.org/10.1108/JCEFTS-08-2020-0055

Kanno, M. (2021). Assessing the impact of COVID-19 on major industries in Japan: A dynamic conditional correlation approach. *Research in International Business and Finance, 58*, Article 101488. https://doi.org/10.1016/j.ribaf.2021.101488

Khan, S., & Batteau, P. (2011). Should the government directly intervene in stock market during a crisis? *The Quarterly Review of Economics and Finance, 51*(4), 350–359. https://doi.org/10.1016/j.qref.2011.07.003

Le, T. D., Ho, T. H., Nguyen, D. T., & Ngo, T. (2022). A cross-country analysis on diversification, Sukuk investment, and the performance of Islamic banking systems under the COVID-19 pandemic. *Heliyon, 8*(3), Article E09106. https://doi.org/10.1016/j.heliyon.2022.e09106

Lee, C.-C., Lee, C.-C., & Wu, Y. (2021). The impact of COVID-19 pandemic on hospitality stock returns in China. *International Journal of Finance & Economics, 28*(2), 1787–1800. https://doi.org/10.1002/ijfe.2508

Mai, X. T. T., Nguyen, H. T. N., Ngo, T., Le, T. D. Q., & Nguyen, L. P. (2023). Efficiency of the Islamic banking sector: Evidence from two-stage DEA double frontiers analysis. *International Journal of Financial Studies, 11*(1), Article 32. https://doi.org/10.3390/ijfs11010032

Nguyen, T. Y. C., Hermoso, C., Laguilles, E. M., de Castro, L, E., Camposano, S. M., Jalmasco, N., Cua, K. A., Isa, M. A., Akpan, E. F., Ly, T. P., Budhathoki, S. S., Ahmadi, A., & Lucero-Prisno III, D. E. (2021). Vietnam's success story against COVID-19. *Public Health in Practice, 2*, Article 100132. https://doi.org/10.1016/j.puhip.2021.100132

Phan, H. V., Nguyen, N. H., Nguyen, H. T., & Hegde, S. (2019). Policy uncertainty and firm cash holdings. *Journal of Business Research, 95*, 71–82. https://doi.org/10.1016/j.jbusres.2018.10.001

Saif-Alyousfi, A, Y. H. (2022). The impact of COVID-19 and the stringency of government policy responses on stock market returns worldwide. *Journal of Chinese Economic and Foreign Trade Studies*, *15*(1), 87–105. https://doi.org/10.1108/JCEFTS-07-2021-0030

Scherf, M., Matschke, X., & Rieger, M. O. (2022). Stock market reactions to COVID-19 lockdown: A global analysis. *Finance Research Letters*, *45*, Article 102245. https://doi.org/10.1016/j.frl.2021.102245

Shahrour, M. H., Girerd-Potin, I., & Taramasco, O. (2022). Corporate social responsibility and firm default risk mitigation: The moderating role of the legal context. *Finance Contrôle Stratégie, 25*(1). https://doi.org/10.4000/fcs.8784

Subramaniam, S., & Chakraborty, M. (2021). COVID-19 fear index: Does it matter for stock market returns? *Review of Behavioral Finance, 13*(1), 40–50. https://doi.org/10.1108/RBF-08-2020-0215

Wagner, A. F. (2020). What the stock market tells us about the post-COVID-19 world. *Nature Human Behaviour, 4*, Article 440. https://doi.org/10.1038/s41562-020-0869-y

World Bank Group. (n.d.). *GDP growth (annual %)*. https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG

Xu, L. (2021). Stock return and the COVID-19 pandemic: Evidence from Canada and the US. *Finance Research Letters, 38*, Article 101872. https://doi.org/10.1016/j.frl.2020.101872

APPENDIX

Table A.1. Variables definitions

Variables	*Definitions*
Dependent variables	
WRET	Weekly returns
Variable of interests	
CVD	Natural logarithm of total cumulative cases infected
Control variables	
SIZE	Natural logarithm of total assets
ST DEBT	The ratio of short-term debt over total assets
LT DEBT	The ratio of long-term debt over total assets
GROWTH	The growth rate of sales
ROA	Net income before taxes over total assets
TRADE	Trade receivables over total assets
TQ	Tobin' Q
CPI	CPI index
GDPGR	GDP growth rate
Additional variables	
CASH	Ratio of cash to total assets
CAPEX	The ratio of capital expenditures to total assets
BETA	The slope parameter of regression of daily log excess returns on daily market log excess returns