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Does the market pressure increase during the Covid-19 in Vietnam? Evaluating the impacts from government responses

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Abstract

Efficient stock price and liquidity are heavily affected by the extreme order imbalances, being the difference between the buy- and sell-initiated trades, leading to the market pressure. Data from Vietnam's stock market during Covid-19 is used to examine the effect of various government responses and policies during the Covid-19 pandemic on buying/selling pressure. Our findings indicate that the government responses and economic support are associated with an increase in the order imbalance or an increase in the buying pressure. In contrast, a country's risk from easing the stringency of policies leads to selling pressure. Regarding the impact of containment and closure policies, we find that the buying pressure is more likely associated with policies on workplace closing, restrictions on gatherings, and closed public transport than the stay-at-home requirements.

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1. Introduction

In the very early days of the Covid-19 pandemic, Vietnam reported the first Case on 23rd January 2020. Two months later, from 22nd March 2020, the country has officially suspended the entry of all foreigners with very few exceptions. One week later, the order for nationwide isolation was implemented for 15 days from 1st April to 15th April 2020. The social isolation rules were gradually lifted since then, even with the second wave Covid-19 in Danang City in July 2020. However, the country has now faced the most severe wave of the Covid-19 pandemic in the last 18 months. The total number of confirmed cases has passed 500,000 cases, and the number of deaths is more than 12,000 patients (Worldometers, 2021). Ho Chi Minh City – the largest city in Vietnam, has been in a complete lockdown since May 2021. There is no ending sign of the devastation of the current pandemic on socio-economic life in Vietnam.

The stock market, a lifeblood of the economy, responded negatively to these restrictions. The market index, generally known as the VN-Index, fell by 31 per cent from the start of 2020. However, the market increased by 25 per cent from the lowest level in March 2020. In particular, Vietnam's equity market index dropped more than 300 points from 1,000 points to 629 points in just three months from December 2019 to March 2020 (Nguyen, 2021). In addition, the market has generally exhibited a high degree of volatility, which led to a suggestion from Vietnam's Ministry of Finance (MOF) that the State Security Commission of Vietnam halts the stock trading at times of substantial market fluctuations in June 2020 (Nguyen, 2021). This regulation, if becoming effective, potentially damages market liquidity (Frino et al., 2011).

While trading volumes and the bid-ask spreads help study market liquidity, it is not clear about trade direction. These indicators are less meaningful to indicate when the market is oversold or overbought, leading to the calls for market suspension. For example, there is a reported volume of 10,000 shares. This information can be interpreted differently. On the one hand, this might represent a trade of 10,000 shares sold. On the other hand, it would involve 5,000 shares sold to investors and another 5,000 shares bought from investors. Each scenario presents different implications for the prices and liquidity of the market. The theory of price formation (Kyle, 1985) and the inventory models (Spiegel and Subrahmanyam, 1995) indicate that prices and liquidity are affected by the extreme order imbalances, or the difference between the buy- and sell-initiated trades, regardless of volume. We consider that the order imbalance computed from the buy- and sell-initiated trades represents market pressure, particularly during the economic downturn, such as during the Covid-19 pandemic.

Various papers have been conducted to examine the effect of the Covid-19 pandemic on the financial markets around the world. We find many papers focus on the economic and financial effect of the pandemic on the performance of the equity markets for various countries (Albuquerque et al.,2020; Alfaro et al., 2020; Bretscher et al.,2020; Cejnek et al.,2020; Croce et al., 2020; Ding et al.,2020; Gerding et al., 2020; Gormsen and Koijen, 2020; Hassan et al.,2020; Pagano et al.; Ramelli and Wagner, 2020; Ru et al., 2020). We note that these limited studies have been conducted in various countries. However, none of these studies is conducted for Vietnam. Our literature review indicates that it appears that a limited number of empirical studies has been conducted for Vietnam using the country's specific policies and responses to the current pandemic.

This short paper examines the impacts of various government responses to market pressure, proxied by the order imbalance, in Vietnam during the Covid-19 pandemic. The current pandemic will not come to an end very soon. As such, the policymakers need to track the order imbalance as predictors of liquidity and volatility so that supports can be provided on a timely basis to ensure

the regular operation of the stock market. In this paper, we focus on the following responses: (i) the overall Government responses to Covid-19; (ii) economic policies; and (iii) Test & trace approach. In addition, we will examine the impact of the containment and closure policies on market pressure.

2. Data and research methodology

2.1 Data

We obtain the trade and quote intraday data of all stocks listed in the Ho Chi Minh Stock Exchange (HSX). Data is collected from Thomson Reuters from January to September 2020. We retain the data during the continuous trading hours from 9:15 am to 11:30 am and 1:00 pm to 2:30 pm. The trading volume of all trades simultaneously and price are aggregated into one observation. The valid quotes are those with positive bid-ask quotes and favourable bid-ask spreads. Following Chordia et al. (2002), we first identify the trade direction (buy or sell trades) by the Lee and Ready (1991) algorithm. Next, the order imbalance is measured as the difference between the number of buyers- and seller-initiated trades for each stock day. Finally, we compute the daily equal-weighted average on all stocks to proxy for the market-wide order imbalance.

We collect the daily data on the Covid-19 confirmed cases from the Coronavirus Resource Centre website of the John Hopkins University and different government responses to the pandemic, namely the *stringency index, containment and health index, economic support index, and overall government response index* from the Oxford Covid-19 Government Response Tracker (OxCGRT) database. In addition, we collect the individual policy responses underlying the government response indexes above (see Hale et al., 2020a, b). The *economic support index* consists of *income support, debt/contract relief, fiscal measures,* and *international support*. *The stringency index* includes *school closing, workplace closing, cancel public events, restrictions on gatherings, close public transport, stay-at-home requirements, restrictions on the internal movement and international travel controls* under the containment and closure policies. Finally, the *containment and health index* includes those in *stringency index* and *public campaigns, testing policy, contact tracing, emergency investment in healthcare,* and *investment in vaccines*.

Lastly, the extent of commuting activities is proxied by the mobility trend reports from Apple. The mobility trend consists of indexes on driving and walking of users in the country's capital city Ha Noi and the largest economic and business centre, Ho Chi Minh city. We sum up all individual indexes to have the aggregate mobility index or *mobility.* We note that the higher the level, the more direction requests in Apple Maps.

We note that the *emergency investment in healthcare, vaccines, fiscal measures* and *international support* are recorded in monetary USD value announced in a particular day and remain zero most of the time. Therefore, a study on market reaction to such event announcements is more relevant to the nature of these variables. Meanwhile, other policy responses exhibit more significant time-series variation or resemble the dummy variable that is suitable to our methodology.

2.2 Methodology

Ashraf (2020) documents that the daily number of newly confirmed cases matters to stock market returns. Therefore, we control such variable given its potential to impact other market-related variables in our regression as follows:

$$\mathrm{Y_t} = \beta_0 + \beta_1 Government\ Response_t + \beta_2\ Confirmed\ Case_{t-1} + \beta_3 Government\ Response_t \times Confirmed\ Case_{t-1} + \Sigma_{i=3}^{6} D_{i,t} + \epsilon_t,$$

where: Y is the variable of market-wide order imbalance[1] $Government\ Response$ represents the policy. $Confirmed\ Case$ is the number of newly confirmed cases. D_i represents the day-of-the-week fixed effect.[2] We note that our empirical results show that the 1-day lagged many newly confirmed cases does not execute a substantial impact on order imbalance. Therefore, it is less meaningful to include other lags in the regression. By construction, the government policies are similar to the ordinal variable, whose higher-order indicates a stricter response. The interaction term studies if the government policy remedies any impact of newly confirmed cases to a market-wide order imbalance. The standard errors are adjusted for heteroskedasticity to control volatility clustering in the stock market.

[1] The results are also robust with the Ellis, Michaely and O'Hara (2000) algorithm to identify the trade direction and available upon requests.

[2] The coefficients of day-of-the-week dummies are not statistically significant at the 10% level and therefore not reported for the sake of brevity.

3. Empirical results

Panel A of Table 1 reports the main empirical results of different government responses. The number of newly confirmed cases harms order imbalance at the 10% level with the *economic support* index. However, it becomes statistically insignificant for *stringency, containment and health,* and *overall government response index*. Regarding the government policies, its effects to order imbalance are consistently the same across different types of government reactions. In particular, the stricter the government action in *stringency, containment and health, economic support*, or *overall government response*, the higher the buying pressure. Put it differently; the stock market appreciates the Vietnamese government's efforts to fight against the Covid-19. Finally, we note that the statistical significance of government response is much more considerable than that of many newly confirmed cases, where the results are all statistically significant at 1% level except for one Case at 5% level. Regarding the interaction term, the results are mainly statistically insignificant. This finding aligns with the fact that the coefficient of many newly confirmed cases is not statistically significant when controlled for government responses.

Panel B of Table 1 presents the results with the economic policies of *income support* and *debt/contract relief*. Overall, the impact of economic policies is similar to that reported in Panel A. The daily number of newly confirmed cases exerts a weakly negative impact on order imbalance at a 10% level in the presence of *debt/contract relief*. Concerning the individual economic policies, they are positively associated with order imbalance. However, the result is only statistically significant for *income support* at the 1% level. This finding reconfirms the importance of such economic policy to sustain the buying demand in the stock market. The estimated coefficient is positive and statistically significant in the regression on *debt/contract relief regarding the interaction term.* This finding indicates that such a policy can offset the adverse impact of many newly confirmed cases to order imbalance at the weak significance level of 10%.

Table I: The impact of government responses, economic policies and openness risk to COVID-19 on order imbalance

	Government response	t-stat	Confirmed Case	t-stat	Interaction term	t-stat	Intercept	t-stat	Nobs
Panel A: Government responses									
Stringency index									
	0.282	[2.99]***	-0.016	[-0.08]	-0.003	[-0.94]	0.727	[0.09]	168
Containment and health index									
	0.268	[2.83]***	-0.003	[-0.02]	-0.003	[-0.94]	0.604	[0.07]	168
Economic support index									
	0.184	[2]**	-0.407	[-1.85]*	0.006	[1.36]	14	[2.63]***	168
The overall government response index									
	0.31	[2.93]***	-0.07	[-0.34]	-0.003	[-0.78]	-0.11	[-0.01]	168
Panel B: Economic policies									
Income support									
	9.65	[2.67]***	-0.326	[-1.63]	0.302	[1.49]	11.439	[1.99]**	168
Debt/contract relief									
	2.082	[0.57]	-0.421	[-1.75]*	0.449	[1.77]*	17.773	[3.86]***	168

This table presents estimated coefficients and t-statistics in square brackets of the following regression $Y_t = \beta_0 + \beta_1 Government\ Response_t + \beta_2\ Confirmed\ Case_{t-1} + \beta_3 Government\ Response_t \times Confirmed\ Case_{t-1} + \Sigma_{i=3}^{6} D_{i,t} + \epsilon_t$. The intraday transaction data of all stocks listed in HSX is obtained from January to September 2020 to calculate order imbalance. The order imbalance is defined as the difference between the number of buyer-initiated and seller-initiated trades for each stock day. The equal-weighted averages overall stocks are calculated for the daily market-wide value. The daily number of newly confirmed Case and government responses to COVID-19 are obtained from the Coronavirus Resource Centre website of the John Hopkins University and the Oxford COVID-19 Government Response Tracker (OxCGRT) database, respectively. Standard errors are adjusted for heteroskedasticity, and ***, **, and * represent the statistical significance at 1%, 5%, and 10% levels, respectively.

We now look at the effects of containment and closure policies to order imbalance in Table 2. The daily number of confirmed cases negatively impacts order imbalance statistically significant at a 5% level. However, this finding is only valid in the regression on *stay-at-home requirements*. Consistent with the weak results in Table 1, the number of newly confirmed cases is associated with a reduction in order imbalance. A stricter level of policies on *workplace closing, restrictions on gatherings,* and *close public transport* is associated with an increase in buying pressure or order imbalance at the 1% level, followed by the weakly positive impact of *stay-at-home requirement* at the 10% level. These findings imply that market participants highly appreciate such government policies, leading to more stock purchases in the market. When we use *mobility* as another proxy of commute limit, the coefficient sign remains positive but statistically insignificant. We document the statistically insignificant results regarding the interaction term, except that the coefficient is positive and weakly statistically significant at the 10% level in the regression on *stay-at-home requirements*. In an unreported analysis available upon request, the individual policies underlying the *containment and health index*, such as *public campaigns, testing policy, and contact tracing*, have statistically insignificant results. We note that multiple government responses can take place at the same time. As such, we leave it for future research to see what policies underlying *stringency, containment and health, and economic support index* drive the net results of government response index on order imbalance.

Table II: The impact of containment and closure policies on order imbalance

	Government response	t-stat	Confirmed Case	t-stat	Interaction term	t-stat	Intercept	t-stat	No. Obs.
School closing	-1.591	[-1.62]	0.219	[0.75]	-0.111	[-0.84]	21	[4.87]***	168
Workplace closing	4.467	[3]***	-0.327	[-1.5]	0.049	[0.66]	10.223	[1.79]*	168
Cancellation of public events	2.406	[1.13]	0.159	[0.63]	-0.188	[-1.13]	14.33	[2.67]***	168
Restrictions on gatherings	3.424	[3.16]***	-0.272	[-1.37]	0.063	[1.02]	9.574	[1.67]*	168
Close public transport	6.3	[3.05]***	-0.334	[-1.54]	0.073	[0.63]	11.631	[2.17]**	168
Stay-at-home requirements	2.945	[1.72]*	-0.49	[-2.01]**	0.226	[1.71]*	16.523	[3.68]***	168
Restrictions on the internal movement	2.725	[1.31]	0.148	[0.58]	-0.184	[-1.11]	13.995	[2.4]**	168
International travel controls	3.411	[1.25]	0.234	[0.99]	-0.137	[-1.3]	7.035	[0.7]	168
Mobility	0.025	[1.2]	-0.021	[-0.1]	0	[-0.22]	9.766	[1.02]	169

This table presents the estimated coefficients and t-statistics in square brackets of the following regression $Y_t = \beta_0 + \beta_1 Government\ Response_t + \beta_2\ Confirmed\ Case_{t-1} + \beta_3 Government\ Response_t \times Confirmed\ Case_{t-1} + \Sigma_{i=3}^{6} D_{i,t} + \epsilon_t$. The intraday transaction data of all stocks listed in HSX is obtained from January to September 2020 to calculate the order imbalance. The order imbalance is defined as the difference between the number of buyer-initiated and seller-initiated trades for each stock day. The equal-weighted averages overall stocks are calculated for the daily market-wide value. The daily number of newly confirmed case and containment and closure policies are obtained from the Coronavirus Resource Centre website of the John Hopkins University and the Oxford COVID-19 Government Response Tracker (OxCGRT) database. Standard errors are adjusted for heteroskedasticity, and ***, **, and * represent the statistical significance at 1%, 5%, and 10% levels, respectively.

4. Concluding remarks

This short paper considers the effect of various government responses and policies to the order imbalance, or the buying/selling pressure, in Vietnam during the Covid-19 pandemic in 2020. We note that the Vietnamese government responses, measured by the indices of stringency, containment and health, economic support, and overall government response, lead to buying pressure from market participants. However, the government responses to ease the restrictions during the Covid-19 is associated with the selling pressure. Regarding the impact of containment and closure policies, we find that the buying pressure is more likely associated with policies on workplace closing, restrictions on gatherings, and closed public transport than the stay-at-home requirements. These findings provide important policy implications for the Vietnamese government to balance the benefits and the costs during this dual Covid-19 crisis on the health of the Vietnamese people and the national economy.

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