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Government Policy Responses and Stock Liquidity: COVID-19 Pandemic

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Abstract

The COVID-19 pandemic has caused huge disruptions in global economies, and a government is needed to implement different degrees of stringency measures to prevent the virus's spread. This study examines the impact of government policy responses on stock liquidity in Malaysia during the COVID-19 pandemic. The sample period covered from January 2, 2020 to June 30, 2022, comprising 890 publicly traded stocks, disaggregated into 539 large and 351 small capital stocks. The pooled ordinary least squares results show that the government policy announcement has significantly improved liquidity in Malaysia's financial market. Hence, our findings demonstrate that restrictions and policies taken by the government are important for policymakers and financial institutions to mitigate liquidity challenges amidst heightened uncertainty and market volatility during the coronavirus outbreak.

Keywords: Government Stringency Index Policy, Liquidity, COVID-19, Stock Market, Malaysia

Introduction

The COVID-19 pandemic was first detected in Wuhan, China, in late 2019 and has caused global health problems in recent years. It has created extraordinary economic concerns worldwide, including severe volatility and liquidity challenges in the stock market. As a result of the pandemic, the Malaysian stock market experienced a significant decline in trading volumes and wider bid-ask spreads, which deteriorated liquidity in the stock market.[1]

[1] https://www.nst.com.my/business/2020/03/577392/bursa-malaysia-ends-red-mid-and-small-cap-under-pressure

In the wake of the pandemic, government intervention is needed to stabilize the financial market. The Central Bank of Malaysia implemented monetary easing policies such as reducing interest rates, lower borrowing costs, and liquidity injections to support banks and financial institutions and stimulate economic activity. These strategies aimed to boost foreign and local investor confidence, stabilize markets, and ensure the smooth operation of the financial system, especially stock market liquidity. Shan et al. (2023) classify three categories of China's monetary policy such as interest rates, monetary easing, and liquidity policy as market stabilizers during the COVID-19 pandemic. They find that liquidity policies provide positive stock market reactions, particularly in small and medium-sized enterprises (SMEs) and private-owned enterprises compared to state-owned enterprises (SOEs). Therefore, this study examines the impact of government responses on liquidity and understands how Malaysian government policies can mitigate liquidity risks during the COVID-19 pandemic.

While previous studies have explored the broader effects country-level analysis of government policy responses on stock return (Aharon & Siev, 2021; Chang et al., 2021; Guven et al., 2022; Yu & Xiao, 2023), stock market performance (Janzen & Radulescu, 2022; Keh & Tan, 2021; Li et al., 2023), volatility (Caporale et al., 2022), and market growth (Jiang et al., 2022). There is limited attention on liquidity, except for the studies by Aharon et al. (2022) and Kassamany and Zgheib (2023), which focus on cross-listed stocks and industry-specific analysis. Chia et al. (2023), on the other hand, explore the impact of COVID-19 and liquidity on the top 30 companies from FTSE Bursa Malaysia KLCI stock. This study extends Chia et al. (2023) paper which covers details in the firm-level analysis that included all publicly listed companies and disaggregates into large and small capital stocks. We also conduct sector-specific liquidity analyses because each sector is not uniform, as they will suffer different levels of difficulties during the pandemic crisis.

By shedding light on the complex dynamics between stringency index and liquidity, our findings prove that government interventions positively impact market liquidity across all publicly listed stocks, including large and small capital stocks. Apart from that, seven out of fourteen industries also directly impact government policy responses on liquidity, namely, closed-end funds, consumer products and services, health care, technology, industrial products and services, trading and services, and real estate investment trusts.

The following are some of the contributions to this study. First, we cover all publicly listed companies in Malaysia and disaggregate them into large and small capital stocks. Second, our study further conducts sector-specific analyses to demonstrate the Malaysian government's policy responses regarding stock liquidity in different sectors during the COVID-19 pandemic. Third, our findings provide insights into monetary policy intervention to stabilize financial stock market liquidity.

This study is structured as follows. Section 2 describes the data and methodology. Section 3 presents the findings of the analysis conducted. Section 4 provides additional analysis showing how government intervention policies affect liquidity across industries. The final section concludes this study and provides recommendations for policymakers and investors.

Data and Methodology

Data Description

This study uses daily data from January 2, 2020 to June 30, 2022, covering the period starting from the onset of the COVID-19 pandemic in Malaysia. The main explanatory variables for government policy responses are the stringency index (*SI*) and the government response index (*GRI*), used for robustness checking. The *SI* data is derived from the average score of the nine metrics, including school closures, workplace closures, public event cancellations, public gathering restrictions, public transportation closures, stay-at-home requirements, public information campaigns, internal movement restrictions, and controls on international travel. The *SI* index measures "lockdown style" policies, ranging from 0 to 100, suggesting that a higher index value is associated with a stricter government response to the COVID-19 pandemic. The government response index (*GRI*), on the other hand, represents the overall responses from the government. Our dataset includes 890 publicly listed stocks (PLCs) in Malaysia, divided into 539 large capital stocks and 351 small capital stocks. The daily data on government response indicators and firm characteristics variables are collected from Datastream. Additional details on the data description can be found in the Appendix.

Methodology

This study uses pooled ordinary least squares (OLS) regression to examine the relationship between government policy responses and stock liquidity during the COVID-19 pandemic. The equation model is followed by Chia et al. (2023) paper which is formulated as follows:

$$CPQS_{it} = \beta_0 + \beta_1 SI_{it} + \beta_2 \ln SIZE_{it} + \beta_3 TURNOVER_{it} + \beta_4 SR_{it} + \beta_5 BETA_{it} + \beta_6 VOL_{it} + YEAR_t + INDUSTRY_k + \varepsilon_{it} \quad \text{(Eq. 1)}$$

CPQS is denoted as the Closing Percent Quoted Spread calculated as the difference between closing ask and bid prices relative to an average of bid-ask prices. Since the *CPQS* indicator is an inverse measure of liquidity, thus, *CPQS* is multiplied by -1. This implies that greater liquidity is linked to a large *CPQS* value. As a robustness check, we use two price impact alternative liquidity indicators, namely: Amihud (2002) illiquidity[2] and *CPQS* Impact[3]. According to Fong et al. (2017), they discovered that these two price impact versions of *CPQS* outperformed the other liquidity horseraces. The main independent variable of government policy responses is proxied by the stringency index (*SI*). We use firm size (ln*SIZE*), turnover, stock return (*SR*), market risk (*BETA*), and volatility (*VOL*) as our control variables to control omitted variable bias in the liquidity model. Following Peterson (2009), we use double-clustered robust standard errors across firms and time levels to control heteroscedasticity.

Empirical Results

Descriptive Statistics

Table 1 tabulates summary statistics of the variables for all PLCs, large and small capital stocks. The average values of *CPQS* are -3.7551 (PLCs), -4.9024 (large capital), and -

[2] Amihud (2002) illiquidity is the ratio of the absolute return divided by trading volume.
[3] *CPQS* Impact is *CPQS* scaled by trading volume.

2.0613 (small capital), respectively. This implies that during the COVID-19 pandemic, liquidity harmed the Malaysian capital stock market. The main independent variable of *SI* for all PLCs has a mean value of 60.1725, suggesting that a higher index value is associated with a stricter government response to the COVID-19 pandemic. The mean values of the control variables for firm size (ln*SIZE*), turnover, stock return (*SR*), market risk (*BETA*), and volatility (*VOL*) are 5.4608, 0.7597, 0.0270, 0.3034, and 4.8356, respectively.

Table 1
Descriptive Statistics

	Obs	Mean	Std. Dev.	Min	Max
			All PLCs Stocks		
CPQS	314886	-3.7551	5.5543	-33.3333	0.0000
SI	314886	60.1725	20.6011	0.0000	80.6000
ln*SIZE*	312875	5.4608	1.6262	2.5447	10.3814
TURNOVER	314886	0.7597	1.9712	0.0000	13.6400
SR	312141	0.0270	4.3814	-14.6783	17.6931
BETA	314886	0.3034	1.0637	0.0000	7.9300
VOL	314886	4.8356	5.5287	0.0000	31.2500
			Large Capital Stocks		
CPQS	190840	-4.9024	6.8876	-40.0000	0.0000
SI	190840	60.1725	20.6011	0.0000	80.6000
ln*SIZE*	189605	5.1156	1.9149	2.3609	10.5500
TURNOVER	190840	0.7273	1.9092	0.0000	13.2900
SR	188876	0.0274	4.7977	-16.0343	19.0354
BETA	190840	0.4220	1.4522	0.0000	10.8900
VOL	190840	5.1425	6.1554	0.0000	33.3300
			Small Capital Stocks		
CPQS	124046	-2.0613	2.6346	-17.1429	0.0000
SI	124046	60.1725	20.6012	0.0000	80.6000
ln*SIZE*	123270	5.9939	0.7961	3.5676	7.5945
TURNOVER	124046	0.8093	2.0615	0.0000	14.1300
SR	123265	0.0211	3.6801	-12.0628	14.5182
BETA	124046	0.1513	0.5498	0.0000	4.0700
VOL	124046	4.3649	4.4010	0.0000	25.0000

Notes: This table reports the descriptive statistics for all main variables, namely firm-day observations, mean, standard deviation, minimum value, and maximum value for all publicly listed stocks, large and small capital stocks.

Baseline Results

Table 2 presents the empirical evidence on the impact of government policy measures on stock liquidity across all publicly listed companies, large and small capital stocks in Malaysia. The results show that *SI* has a positive and economically significant effect on *CPQS*

across all three columns. Column 1 in Table 2 shows that a one percent increase in the stringency index is associated with a 0.0062% increase in liquidity. The findings show similar results, with a positive coefficient of 0.0087 (large capital stocks) and 0.0037 (small capital stocks) in the last two columns. This suggests that the government intervention policy can improve stock market liquidity, especially in emerging markets which experienced a larger negative impact during the COVID-19 pandemic (Harjoto et al., 2020). Shan et al. (2023) argue that a positive response to liquidity policy announcements is more pronounced in China for small and medium-sized businesses (SMEs) and non-state-owned enterprises during the COVID-19 crisis. As for the control variables, all tested explanatory variables have a significant effect on liquidity except stock return (*SR*). We find that ln*SIZE* and *TURNOVER* are positively correlated with *CPQS*, indicating that larger firm size and higher turnover improve liquidity. In contrast, *BETA* and *VOL* harm *CPQS*, indicating that the adverse impact of COVID-19 spreads to firms with higher risk and market volatility. Thus, our control variable findings are consistent with those of Aharon et al. (2022) and Chia et al. (2023).

Table 2
Stringency Index and Stock Liquidity (CPQS)

Variables	All PLCs Stocks	Large Capital Stocks	Small Capital Stocks
SI	0.0062**	0.0087**	0.0037***
	(0.0026)	(0.0042)	(0.0011)
ln*SIZE*	1.3989***	1.3572***	0.8900***
	(0.0809)	(0.0833)	(0.0934)
TURNOVER	0.5004***	0.6929***	0.2212***
	(0.0542)	(0.0878)	(0.0366)
SR	0.0068	0.0093	0.0130***
	(0.0068)	(0.0101)	(0.0037)
BETA	-1.0194***	-0.7586***	-1.7640***
	(0.1676)	(0.1709)	(0.3618)
VOL	-0.0909**	-0.1158**	-0.0725***
	(0.0395)	(0.0582)	(0.0279)
Constant	-10.2630***	-10.2244***	-6.4174***
	(0.5725)	(0.7444)	(0.5492)
Observations	312,141	188,876	123,265
Adj. R^2	0.3045	0.2682	0.3663

Notes: This table reports the estimation results of the impact of stringency index on stock liquidity from the Eq (1) model. The dependent variable is *CPQS* which measures liquidity. The main independent variable is *SI* which refer to stringency index. The control variables are firm size (ln*SIZE*), turnover, stock return (*SR*), market risk (*BETA*), and volatility (*VOL*). Standard errors are reported in parentheses. ***, **, and * denote significance 1%, 5%, and 10% levels, respectively.

Robustness Checks

To confirm the validity and reliability of our results, we use two alternative liquidity measures, namely: Amihud (2002) illiquidity and *CPQS* Impact, while the government response index (*GRI)* is a robustness check. First, we replace Amihud (2002) illiquidity and *CPQS* Impact in the equation (1) model for our liquidity measures. Table 3 shows that our main findings of the stringency index do not change with alternative liquidity measures. This

indicates that stringency policy yields a significant and positive impact on liquidity across all PLCs, large and small capital stocks. Table 4 uses government intervention policy to proxy the government responses index (*GRI*). The results remain significant and consistent with the former analysis.

Table 3
Robustness Checks on Stock Liquidity (Stringency Index)

Variables	**Amihud (2002) Illiquidity**			***CPQS* Impact**		
	All PLCs Stocks	Large Capital Stocks	Small Capital Stocks	All PLCs Stocks	Large Capital Stocks	Small Capital Stocks
SI	0.0001*	0.0002*	0.00005*	0.0005***	0.0007***	0.0002***
	(0.0001)	(0.0001)	(0.00003)	(0.0001)	(0.0002)	(0.0001)
ln*SIZE*	0.0305***	0.0313***	0.0157***	0.0701***	0.0690***	0.0408***
	(0.0016)	(0.0017)	(0.0016)	(0.0037)	(0.0038)	(0.0049)
TURNOVER	0.0121***	0.0184***	0.0028***	0.0207***	0.0326***	0.0033**
	(0.0009)	(0.0013)	(0.0005)	(0.0021)	(0.0030)	(0.0013)
SR	0.0004	0.0008	0.00003	-0.0013***	-0.0014***	-0.0007***
	(0.0003)	(0.0005)	(0.0002)	(0.0003)	(0.0005)	(0.0002)
BETA	-0.0033	-0.0016	-0.0015	-0.0181***	-0.0135**	-0.0163*
	(0.0023)	(0.0023)	(0.0026)	(0.0057)	(0.0056)	(0.0094)
VOL	-0.0011***	-0.0018***	0.0002	0.0038***	0.0030*	0.0039***
	(0.0004)	(0.0005)	(0.0003)	(0.0011)	(0.0015)	(0.0009)
Constant	-0.2145***	-0.2265***	-0.1299***	-0.5103***	-0.5448***	-0.3378***
	(0.0133)	(0.0181)	(0.0088)	(0.0284)	(0.0389)	(0.0287)
Observations	312,141	188,876	123,265	312,141	188,876	123,265
Adj. R^2	0.0691	0.0622	0.0600	0.0996	0.0935	0.0781

Notes: This table re-estimate Eq (1) model but replace dependent variable with alternative liquidity measures: Amihud (2002) illiquidity and *CPQS* Impact. Standard errors are reported in parentheses. ***, **, and * denote significance 1%, 5%, and 10% levels, respectively.

Table 4
Robustness Checks on Government Response Index (GRI)

Variables	***CPQS***		
	All PLCs Stocks	Large Capital Stocks	Small Capital Stocks
GRI	0.0125***	0.0187***	0.0057***
	(0.0025)	(0.0040)	(0.0011)
Observations	312,141	188,876	123,265
Adj. R^2	0.3058	0.2701	0.3673
	Amihud (2002) Illiquidity		
GRI	0.0002***	0.0004***	0.0001***
	(0.0001)	(0.0001)	(0.00003)
Observations	312,141	188,876	123,265
Adj. R^2	0.0694	0.0626	0.0604
	***CPQS* Impact**		
GRI	0.0007***	0.0011***	0.0003***
	(0.0001)	(0.0002)	(0.0001)
Observations	312,141	188,876	123,265
Adj. R^2	0.1002	0.0943	0.0786

Notes: This table re-estimate Eq (1) model but replace the main independent variable with government response index (*GRI*). Standard errors are reported in parentheses. For brevity, constant and control variables are not reported but available upon request.
***, **, and * denote significance 1%, 5%, and 10% levels, respectively.

Additional Analysis

Table 5 reports Malaysian government policy reactions on stock liquidity across different industries. Our findings confirm that closed-end funds, consumer products and services, health care, and technology industries have significant and positive impacts on both government policy response indexes (*SI* & *GRI*), as reported by Kassamany and Zgheib (2023). This suggests that the government's favorable liquidity in the close-end funds company helped to stabilize financial markets when Malaysia's central bank lowered the interest rates to inject liquidity into the financial system. When the COVID-19 pandemic began, the overnight policy rate (OPR) was cut from 2.75% (January 22, 2020) to 1.75% (March 3, 2022)[4] to reduce market volatility and boost investor confidence[5]. In the consumer products and services and health care industries, foods and household goods, face masks, hand sanitizers, and medical equipment showed high demand due to panic buying by consumers, allowing grocery stores and pharmaceutical companies to earn substantial revenue and increase liquidity (Al-Awadhi et al., 2020; Alam et al., 2021). Given travel restrictions, the physical store has shifted to online shopping which has significantly improved liquidity of the technology sector. The use of electronic payment methods like e-wallets has slowly replaced physical payment after post COVID-19 pandemic. On the other hand, *GRI* reports a positive and significant impact on liquidity in industrial products and services and trading and services. However, real estate investment trusts (*REIT*s) show a negative result, indicating that the

[4] https://www.bnm.gov.my/monetary-stability/opr-decisions/-/tag/opr-2020
[5] https://asia.nikkei.com/Economy/Malaysia-central-bank-cuts-rate-to-record-low-to-offset-COVID-pain

worldwide economic downturn, especially the COVID-19 pandemic kick in has a substantial impact on the demand for the real estate industry (Alam et al. 2021). Lockdowns and closures of businesses like retail and hospitality *REIT*s suffered significant revenue losses as shopping malls, hotels, and other properties remained unoccupied. As business profit declined, *REIT*s became less attractive to investors, resulting in fewer trading volumes and, thus, reduced liquidity.

Table 5
Government Policy Responses and Stock Liquidity Across Industry

Sector	***SI***	***GRI***
Closed-End Funds	0.0064***	0.0081***
	(0.0000)	(0.0000)
Construction	-0.0029	0.0050
	(0.0053)	(0.0058)
Consumer Products & Services	0.0080*	0.0159***
	(0.0044)	(0.0047)
Energy	-0.0009	-0.0005
	(0.0012)	(0.0011)
Health Care	0.0061***	0.0086***
	(0.0017)	(0.0025)
Hotel	-0.0329	-0.0228
	(0.0343)	(0.0341)
Industrial Products & Services	0.0049	0.0127***
	(0.0037)	(0.0039)
Telecommunications & Media	-0.0043	-0.0026
	(0.0042)	(0.0033)
Plantation	0.0083	0.0166
	(0.0091)	(0.0102)
Property	-0.0012	0.0059
	(0.0046)	(0.0048)
Real Estate Investment Trusts	-0.0029**	-0.0016
	(0.0014)	(0.0011)
Special Purpose Acquisition Company	-0.0011	-0.0005
	(0.0010)	(0.0004)
Technology	0.0142***	0.0195***
	(0.0042)	(0.0047)
Trading & Services	0.0060	0.0111***
	(0.0040)	(0.0039)

Notes: This table uses Eq (1) model where dependent variable is *CPQS* and the main independent variable is stringency index (*SI*) and government response index (*GRI*). Standard errors are reported in parentheses. For brevity, constant and control variables are not reported but available upon request. ***, **, and * denote significance 1%, 5%, and 10% levels, respectively

Conclusion

This study first examines the impact of government policy responses on stock liquidity for all 890 publicly listed stocks, disaggregate into 539 large and 351 small capital stocks in

Malaysia during the COVID-19 pandemic. We find that the implementation of government policy is positively and significantly associated with liquidity. The robustness checks on *GRI* and two alternative measures of liquidity proxied by Amihud (2002) illiquidity and *CPQS* Impact also provide consistent results with our baseline pooled OLS across all PLCs, large and small capital stocks. We report additional analysis that reveals the relationship between government intervention policies and liquidity across fourteen different industries. Our empirical findings show that seven out of fourteen industries, such as closed-end funds, consumer products and services, health care, technology, industrial products and services, trading and services, and real estate investment trusts have a significant impact on government policy responses. However, the vulnerable sectors affected by the pandemic may get assistance and policy support from the Malaysian government. First, the Bank Negara Malaysia has lower interest rates and costs of financing to encourage consumer spending and investment so that it can inject more money to circulate into the stock market. Second, the Securities Commission Malaysia (SC) temporarily prohibits short selling to prevent excessive market volatility[6]. This strategy served to stabilize the market and increase market liquidity. Thus, our findings have implications for policymakers, investors, and shareholders seeking to understand the stock market response to the COVID-19 pandemic.

Last but not least, this study uses market microstructure theory to demonstrate how government policy interventions stabilize market liquidity when liquidity dry-ups are caused by excessive investors quickly selling off their stocks during the COVID-19 pandemic. The empirical results reveal that the stringency index and government response index report that government policies significantly show a positive market response to liquidity and restore investor confidence. This study narrows the literature gap that breaks down the company size based on the company market capitalization, which is different from the previous research that focuses on the country-level market. Hence, our findings contribute to how government policies measurements cope with external shocks in various industries, as liquidity shocks are not homogenous in all sectors.

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