SPOUDAI Journal of Economics and Business, Vol. 71 (2021), Issue 3-4, pp. 86-100.

University of Piraeus

SPOUDAI
Journal of Economics and Business
Σπουδαί
http://spoudai.unipi.gr

Nexus Between Stock Returns, Funding Liquidity and COVID-19

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Abstract

Using a panel of stock indices of the BRICS countries from 31 December 2019 to 17 October 2020, the nexus between funding liquidity, stock returns and COVID-19 pandemic is examined using the fixed effects model. Results show that funding liquidity and the COVID-19 pandemic interacts positively with stock market returns. The findings were irrational to the theoretical predictions as stock markets seem to be recovering from their initial losses despite the spike in the number of COVID-19 cases. In the early periods, investors appeared to have exaggerated the lethality of the virus but now they have become used, resilient, and optimistic despite a surge in the number of reported new cases and deaths. The findings also confirmed the fact that stock markets respond to macroeconomic effects with a lag. Therefore, the ongoing policy interventions and individual behaviour are achieving the desired goal of stabilizing the situation. Thus, emerging markets governments were proactive and pragmatic in dealing with the pandemic as the effects of adopted economic policies outweighed/ thwarted the negative impact of the witnessed spike in COVID-19 cases. The revelation that funding liquidity contrary to theory improved as the pandemic worsened indicates a fruitful area for future research.

JEL Classification: G10, G12, C23.
Keywords: funding liquidity, COVID-19, stock market returns, volume.

1. Introduction

Unlike the other previous pandemics and natural disasters which had spill-over effects on the global markets the COVID-19 pandemic is global and is directly affecting economies (Goodell, 2020). Flight to safety by foreign investors resulted in significant portfolio reversals in emerging markets with the onset of the pandemic (International Monetary Fund (IMF), 2020). Thus, the persistence and uncertainty of COVID-19 are generating a new episode of international financial

stress. Most emerging markets faced unprecedented portfolio outflows due to the pandemic in early March as investors' flight to quality and invest in dollar-denominated assets (IMF, 2020). Brunnermeier and Pedersen (2009) assert that worsening funding environments and reduction in liquidity provision by investors can lead to flight-to-quality incidences. Globally the COVID-19 pandemic has affected communities, businesses and organisations with noticeable effects on the economy and the financial markets. There is the knowledge that the markets react to catastrophic events be it environmental, political, health or social (Goodell, 2020). However little empirical research is available on the effect of the pandemic on funding liquidity in emerging markets. The COVID-19 health crisis is unique in that it is global and the different interventions at the country level to contain the virus have disrupted the normal functioning of economies and ultimately financial markets.

The universal social distancing regulations during the COVID-19 have severe economic and financial costs for the emerging markets. This article investigates the effects of COVID-19 and funding liquidity on stock returns in selected emerging markets including, Brazil, Russia, India, China and South Africa widely known as the BRICS. BRICS is the abbreviation created from an association of five major emerging national economies: Brazil, Russia, India, China and South Africa in that order The scale and scope of empirical research on the effects of the pandemic on funding liquidity are still depressed It is the rationale of this paper to contribute to the literature on the effects of the pandemic on funding liquidity in BRICS. According to Bakaert and Harvey (2017), emerging markets are not entirely integrated into world capital markets therefore, they must be treated as a distinct asset class. Given that, emerging markets are technically and fundamentally different from developed markets (see for example Marozva, 2020), the analysis of the effects of COVID-19 and funding liquidity on the stock return in such markets is justified.

Also, it is important to investigate the nexus between these variables as the international credit conditions during the pandemic tighten. According to Fontaine, Garcia and Gungor (2015), funding shocks influence the volatility of stocks returns. Kiyotaki and Moore (2019) argue that funding illiquidity results in investors selling off their holding illiquid assets and equity. The onset of COVID-19 and the response by governments of locking down their economies harmed financiers (IMF, 2020). This was due to the anticipated significant increase in non-performing loans because the pandemic distorted the operational capacity of various industries with effects on the value chain of several companies and hence their creditworthiness and values (Ibn-Mohammed et al., 2020). Nevertheless, results in this study seem counterintuitive as the increase in the COVID-19 cases was associated with an increase in stock returns. Likewise, stock returns improved with an increase in funding liquidity. The results show that emerging markets governments were proactive and pragmatic in dealing with the pandemic. This implies that the effects of adopted economic policies thwarted the negative impact of the witnessed spike in COVID-19 cases.

The uniqueness of the COVID-19 pandemic is that its effects are devastating and depressing across most of the world markets, even the well-developed markets are not spared. The increase in the number of cases and deaths are significantly associated with an increase in market illiquidity and volatility (see Baig, Butt, Haroon & Rizvi, 2020) The impetus to examine the effects of COVID-19 and funding liquidity in emerging markets came at a time when four of the five BRICS countries are among the list of the most affected countries. Moreover, the connection between market returns, COVID-19 and the funding liquidity in emerging economies to the best of our knowledge is not yet researched. Brunnermeier and Pedersen (2009) argue that market

liquidity and funding liquidity are complimentary, funding liquidity causes market liquidity and the other way round Since investors and traders are instrumental in the provision of market liquidity, their ability depends on the availability of funding (IMF, 2020). Given the mutable trends and ever-changing scientific understanding of the virus, regulators and policymakers require evidence-based policy responses. In times of crisis, funding is meagre and this depresses stock markets (Haroon & Rizvi, 2020). Fontaine, Garcia and Gungor, (2015) argue that the illiquidity and volatility of stocks increase with funding shocks, and stock returns are depressed when there is a funding shock . This paper attempts to answer this questions of whether funding liquidity in the presence of rapidly spreading coronavirus cases impact stock returns. This was done by examining the differential stock price reactions to the changes in funding liquidity and variations in COVID-19 cases.

The rest of the paper is organised as follows: Section 2 presents the literature review. Section 3 presents trends on stock markets indices and COVID-19 new cases and deaths in BRICS. Section 4 presents the data, empirical model specification and estimation techniques. Section 5 presents and discusses the empirical results. Section 6 concludes by presenting the main findings of the paper and the recommendations.

2. Literature Review

The Bernanke and Gertler (1995) credit channel tool suggests that changes in the funding environment influence bank lending, firm value and the spread between the costs of funding (internal versus external). Jensen and Moorman (2010) argue that there is a link between investor pricing decisions and the funding environment. During the period of funding constraints, economies have low average stock returns (Lamont, Polk & Saaá-Requejo, 2001). Hevia and Neumeyer (2020) contend that the coronavirus pandemic is the largest macroeconomic shock to affect the global economy with an effect on liquidity in both developing and the developed worlds.

Public health pandemics are becoming invisible risks that alter firm value. Changes to the firm value affect the stock returns of the firm with a likely effect on the funding. Brunnermeier and Pedersen (2009) argue that during crisis periods funding liquidity can be tight reducing the positions taken by traders. Furthermore, the traders are reluctant in taking positions during funding constrained periods resulting in lower market liquidity, increased volatility and a depressed market (bearish market). An increase in funding illiquidity increases the bid-ask spread thereby negatively affecting the performance of the stock market (Chiu, Chung, Ho & Wang, 2012). Mishra, Rath and Dash (2020) opine that the financial markets in India underperformed with the onset of the pandemic as the stock returns were highly volatile except for the stock in the health sector.

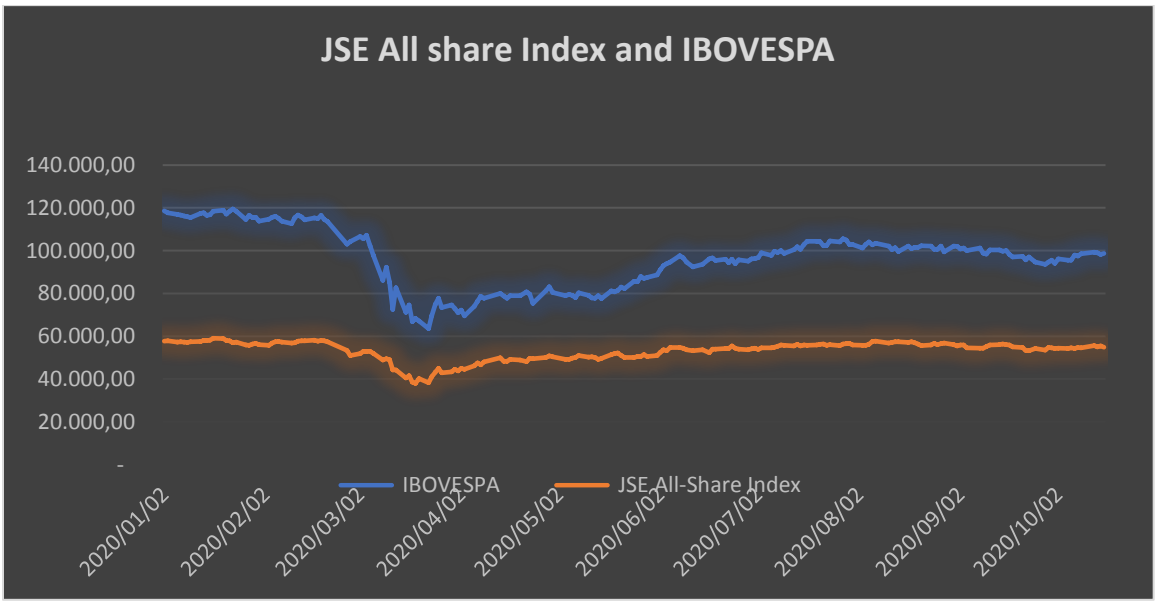
COVID-19 introduced some tightness in the funding market such that in most emerging markets fiscal and monetary policies were introduced to cushion their respective economies (IMF, 2020). The study focuses on the emerging markets in the BRICS bloc. To ease the tightening market conditions several monetary and fiscal measures were taken by the BRICS countries. The measures included reduction of the policy rate, open market operations and the exchange rate intervention. According to the IMF (2020), the common interventions in the BRICS countries to ensure financial stability are policy rate cuts, liquidity support, targeted reliefs for banks and borrowers. Furthermore, the New Development Bank (NDB) a multilateral development bank

established to assist BRICS countries has been assisting the countries with financial assistance during the time of the pandemic under its COVID-19 Emergency Program Loan (NDB, 2020). The Bank approved and largely disbursed $4bn, which comprised of a $1bn COVID-19 response loan each to China, Brazil, India and South Africa. The loans were disbursed to mitigate socio-economic impacts of the pandemic (NDB, 2020). An increase in the daily number of infections and deaths challenged policymakers with a choice of containing the pandemic and sustaining economies. Section 3 discusses trends for the stock markets returns and the daily number of reported cases and deaths in BRICS.

3. Trends on stock markets indices and COVID-19 new cases and deaths in BRICS

In the midst of the tightening of the credit conditions during the pandemic, the figures (1-3) show the stock market performance of the BRIC economies.

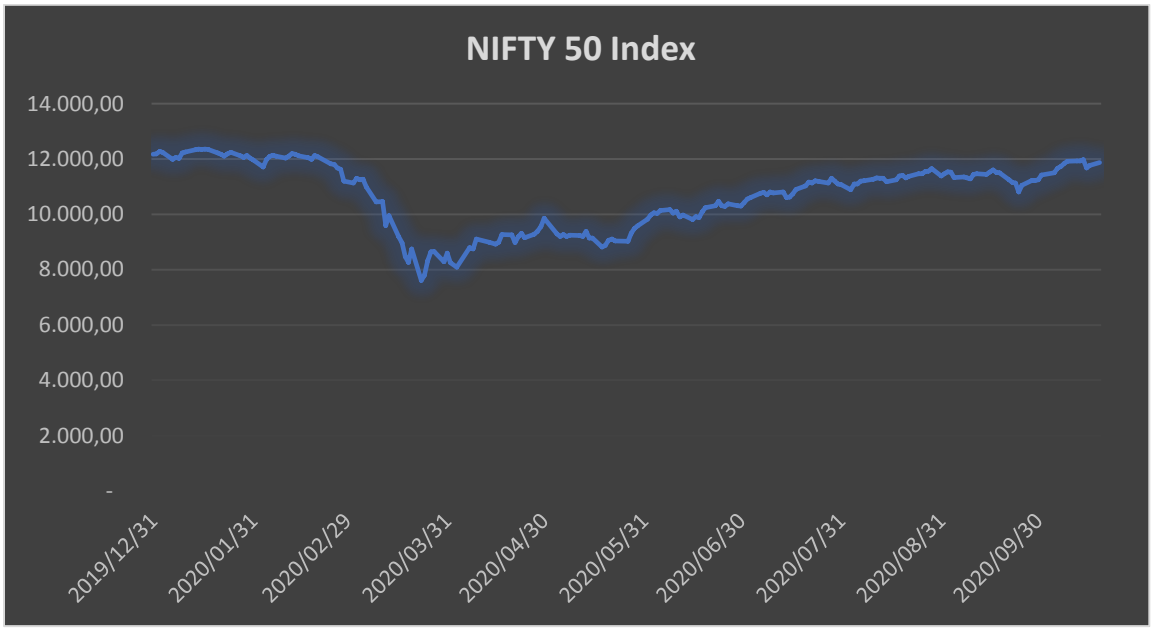
Figure 1: IBOVESPA and JSE All-Share Indices



Source: Authors' calculations using data from Bloomberg

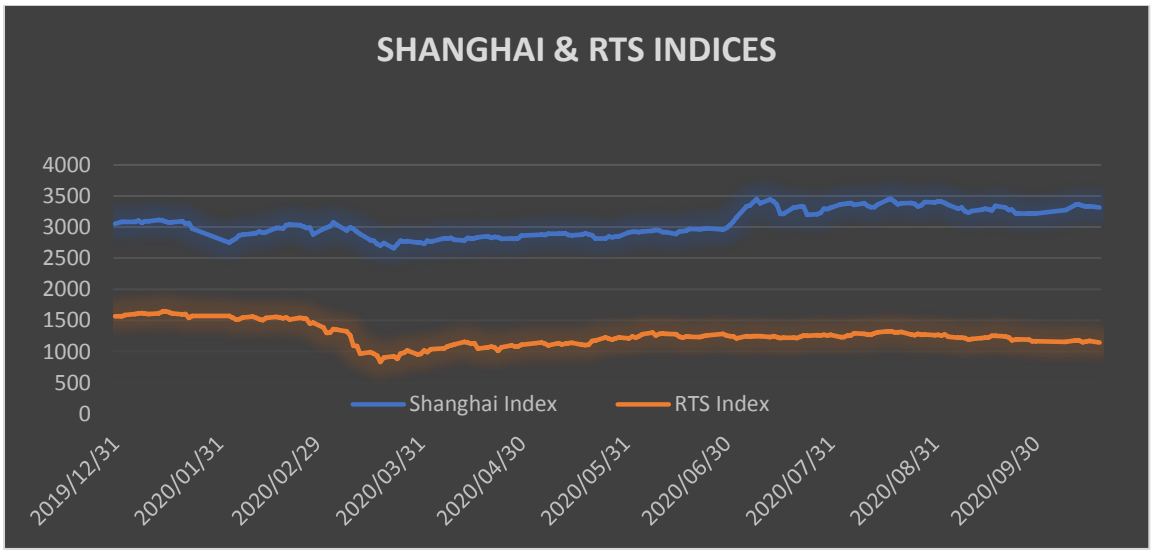
Figures 1-3 show the development of stock market indices selected from the BRICS countries for the period 31 December 2019 to 20 October 2020. The pandemic started in the Wuhan region in China and spread to other countries within the bloc at different periods. The trends in Figure 1-3 show that with the onset of the pandemic the stock market indices were on a downward trajectory until mid-March 2020 when markets began to recover from the effects of the pandemic. As a result of the pandemic, investors increased the risk aversion in financial markets globally with a major sell-off in the emerging markets (IMF, 2020). Additionally, the respective initial conditions of each country resulted in differences in market reactions in the countries. (see Baldwin & di Mauro, 2020). There is heterogeneity in how public information about the COVID-19 pandemic and the impact of subsequent lockdowns affected the stock market in each country although the impact was not homogenous in all the countries (see Capelle-Blancard & Desroziers, 2020).

Figure 2: Nifty 50 Index



Source: Authors' calculations using data from Bloomberg

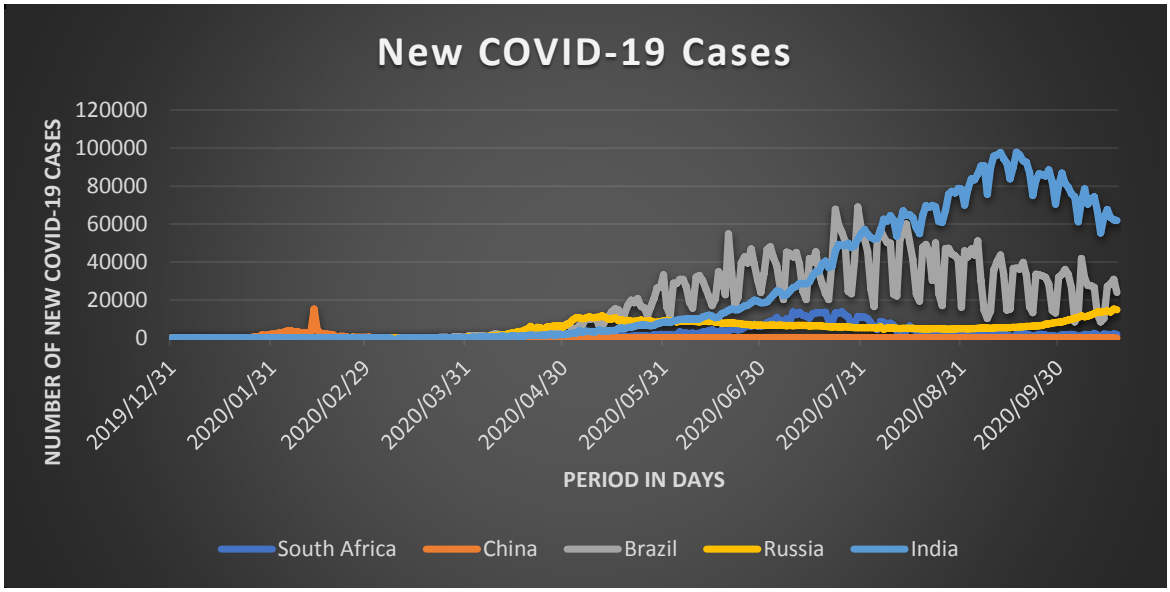
Figure 3: Shanghai and RTS stock indices



Source: Authors' calculations using data from Bloomberg

Figures 4 and 5 show the number of COVID-19 cases and deaths in BRICS countries. As of 22 October 2020, the bloc had four countries that were in the top five countries with the highest exponential growth in new infections globally except for China (Worldometer, 2020).

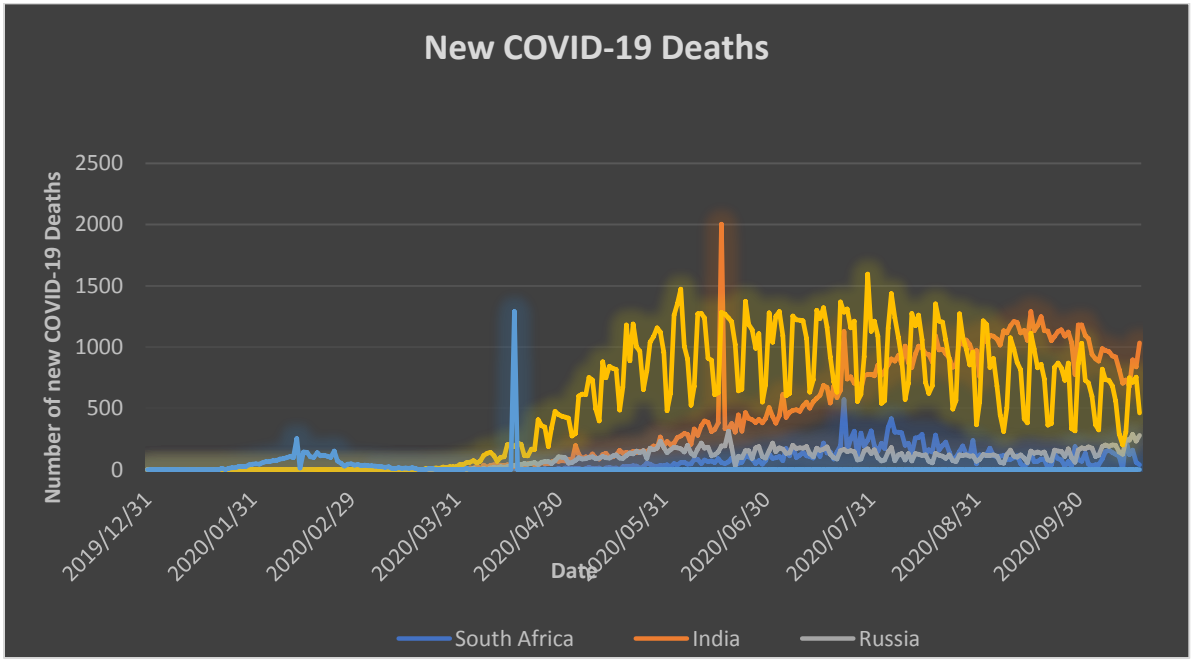
Figure 4: New Covid-19 Cases over 24 hours in BRICS countries



Source: Authors' calculations using data from Worldometer

From Figure 4, Brazil is the worst affected BRICS country in terms of the numbers of daily infection rates. The number of daily death remains higher in Brazil and the least was in China as shown in Figure 5.

Figure 5: Covid-19 deaths over 24 hours in BRICS countries



Source: Authors' calculations using data from Worldometer

An analysis of Figure 1 to Figure 5 show that stock returns responded significantly to the actual increase in coronavirus cases. All stock markets under investigation were bearish during March 2020, an indication that markets respond to pandemics hence the need to further investigate how health crises through funding liquidity are linked to stock returns. How stock markets respond to pandemics and funding liquidity concurrently, remains an unresolved empirical issue that requires further investigation.

4. Data, empirical model specification and estimation techniques.

In this section, the discusses the model specification and estimation techniques that were employed to address the main question of the linkage between stock returns, funding liquidity and COVID-19.

4.1 Data sources and definition of variables

This study used panel data from five countries from 31 December 2019 to 17 October 2020. The panel consists of five stock indices which include South Africa's JSE All-Share Index, China's SHANGAI, Russia Trading System (RTS) Index, Brazil's BOVESPA Index, and India's NIFTY 50. The indices were chosen as their countries fall in a trade block called the BRICS. All data used in this study was obtained from the McGregor database, the central bank and stock exchange markets of the countries under consideration and Bloomberg.

The effects of COVID-19 were examined in line with Al-Awadhi et. al, (2020). The number of total active cases per population of one million and death from COVID-19 per population of one million was used as the proxy for the Coronavirus epidemic. The daily data for the number of daily active confirmed cases and daily confirmed cases of death from COVID-19 for the countries under analysis were obtained from Worldometer (2020).

The analysis of the linkage between COVID-19 and stock returns was motivated by the swings in the stock market that could be directly attributed to COVID-19 developments in late February and early March. Initially, the stock market developments could be attributed to investor reactions on the news about the pandemic around the world. This was then followed by the stock market responding to several fiscal and monetary policy interventions to alleviate market liquidity and the actual effects of the Coronavirus. Thus, financial development from mid-March through the end of April 2020 reflected policy responses to the pandemic, including news about actual or prospective fiscal and monetary policy actions (Baker, Bloom, Davis, Kost, Sammon & Viratyosin, 2020).

In this article, funding liquidity is calculated as the spread between 3-months treasury bills and the overnight interbank borrowing rate. The overnight interbank borrowing rate -Treasury bill spread measures the time variation of money market liquidity accurately (see for example Nagel, 2014; Marozva & Makina, 2020). The linkage between stock return and the stock market follows Dellas, Diba, and Loisel's (2015) assertion that markets have frictions and should be investigated as part of finance theory. Allen and Gale (2007) found that during the period when there is a funding liquidity shock in the market, there is an aggregate shortage in market liquidity and this negatively impacts the stock market returns. The funding liquidity shock implies that interbank interest rates will be higher and stock prices trade at lower than their intrinsic values as financial institutions are pressured to dispose off these assets. Brunnermeier and Pedersen (2009) contend that a huge decrease in stock prices emanates from additional restraints in trading resulting from

high margin requirements. Furthermore, Brunnermeier and Pedersen (2009) modelled the reinforcement between market liquidity and funding liquidity.

The analysis of the effect of funding liquidity within the context of the COVID-19 pandemic was motivated by the fact that during crisis agents tend to fire sell stock in flight to safe-haven assets like gold. The sale of assets during crises at a price below their intrinsic value is referred to as fire sale by Schleifer and Vishny (2011). Fire sale according to Berger and Bouwman (2017), is common during financial crises as financial institutions try to reduce the effect of the fragility in the financial system by getting rid of some of their balance sheet assets (see for example Larrain, Muñoz & Tessada, 2017; Marozva, 2017).

The logged trading volume was used to control different stock market depths of the indices that were empirically investigated. This was important as liquidity in emerging markets is different across markets. Moreover, these markets are at different stages of development hence their efficiency and liquidity levels despite being under the same umbrella name of emerging markets. The Panel data regression model was run to investigate the effects of funding liquidity in the presence of COVID-19 on stock returns.

4.2 Model specification

A panel data regression was carried out to examine the nexus between stock returns, COVID-19 and funding liquidity. Hsiao (2014) argues that panel data regression reduces estimation bias and multicollinearity, controls for individual heterogeneity, and identifies the time-varying relationship between dependent and independent variables. Therefore, panel testing is applied to examine the performance of selected stock indices from BRICS countries relative to changes in COVID-19 and funding liquidity, while controlling for index-specific characteristics. Initially, the effects of the number of daily confirmed COVID-19 cases and funding liquidity on stock returns were examined using equation 1. To control for different market depths exhibited by different indices the volume of trades was used, the article followed Chiu et al. (2012) and Stoll (2000) to explore the following regression model:

$$R_{i,t}=\alpha+ \beta_1 LogV_{i,t}+\beta_2 COVID\_19CP_{i,t}+\beta_3 FL_{i,t}+\varepsilon_{i.t} \quad (1)$$

where $COVID\_19CP_{i,t}$ is the daily total confirmed cases of COVID-19 per population of one million in country i on day t; $FL_{i,t}$ is the funding liquidity as measured by interbank lending rate and the three-month Treasury Bill rate spread for country i at time t; $R_{i,t}$ is the daily return for index i at time t; $LogV_{i,t}$ is the logged daily trading volume measuring the market depth for index i at time t, and $\varepsilon_{i.t}$ represents the error term. Since the validity test revealed that both cross-sectional and time-specific effects are valid, the error term is decomposed as follows: $\varepsilon_{i.t} = \mu_i + \lambda_t$ where μ_i is the unobservable individual (Index−specific) effect and λ_t is the unobservable time (period) effect.

The second model involved testing the effects of the number of daily confirmed COVID-19 deaths per population of one million and funding liquidity on stock returns and the model was specified as follows:

$$R_{i,t}=\alpha+ \beta_1 LogV_{i,t}+\beta_2 COVID\_19DP_{i,t}+\beta_3 FL_{i,t}+\varepsilon_{i.t} \quad (2)$$

where $COVID\_19DP_{i,t}$ is the daily total confirmed deaths from COVID-19 per population of one million in country i on day t.

5. Empirical results

This section presents the main results on the effects of COVID-19 and funding liquidity on stock returns in the BRICS countries. Firstly, the descriptive statistics are presented and discussed. Secondly, the cross-correlation analysis is done to test the one-on-one relationship amongst the variables. Finally, the empirical results of the study are presented and discussed in Section 5.3.

5.1 Descriptive statistics

Table 1 presents the descriptive statistics of the variables under investigation and these include COVID-19 total confirmed cases per million of population, COVID-19 total confirmed deaths per million of population, funding liquidity, market depth and stock returns. The statistics were generated from data for the BRICS countries.

Table 1: Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Jarque-Bera	Obs.
COVID_19CP	730.61	55.89	9,534.02	0.00	1,644.86	2,913.67	1000
COVID_19DP	21.61	1.54	363.37	0.00	58.63	8,374.31	1000
COVID_C	4,217.34	98.00	48,105.00	0.00	8,313.00	2,974.18	1000
COVID_D	127.58	3.00	2,003.00	0.00	282.59	4,018.73	1000
FL	0.13	0.18	1.10	-2.43	0.48	395.15	1000
VOLUME (000)	10,700,000	356,000	170,000,000	0.00	25,600,000	4,516.48	1000
R	0.00	0.00	0.14	-0.15	0.03	1,413.03	1000

Note: COVID_19CP total cases per million population, COVID_19DP is total death per million population, COVID_C number of cases per day, COVID_D is the number of death per day, FL is funding liquidity, R is stock market returns

The number of cases per million population has a maximum of 9,534.02 and an average of 730.61 cases. On the other hand, the number of reported daily cases and deaths of COVID-19 has a maximum of 48,105.00 and 2,003.00 respectively. The BRICS nations are the worst affected countries for the period of this study having four countries (Brazil, Russia, India and South Africa) in the top five countries with the highest numbers of reported cases (Worldometer, 2020). The standard deviation of the daily cases is 8,313.00. The maximum for the funding liquidity is 1.10 with a minimum of -2.43. Haroon and Rizvi (2020a) opine that as the number of infections and deaths increase, they are associated with panic, fear and distortions in the financial markets. The maximum volume traded in the BRICS for the period under study is 170 billion with a minimum of 0.00. The returns for the countries for the period under study had a minimum of -0.15 and a standard deviation of 0.03. An increase in COVID-19 cases and deaths increase global uncertainties, surges stock, investors' panic and generate pessimistic sentiments on prospective returns (Liu, Manzoor, Wang, Zhang & Manzoor, 2020). Section 5.2 discusses the cross-correlations of the study.

5.2 Cross-correlations

Table 2 presents the cross-correlations between variables under examination. The data for the variables under consideration were obtained from the BRICS countries.

Table 2*:* Cross Correlation

Variables	COVID_19CP	COVID_19DP	COVID_C	COVID_D	FL	VOLUME	R
COVID_19CP	1						
COVID_19DP	0.8959***	1					
COVID_C	0.7476***	0.8224***	1				
COVID_D	0.6186***	0.7797***	0.8714***	1			
FL	-0.1106***	-0.024105	0.045288	0.0904***	1		
VOLUME	0.0141	-0.0825**	-0.0759**	-0.1268***	-0.2585***	1	
R	0.0534	0.0559**	0.0752**	0.0628*	0.0339*	-0.0665*	1

Note: COVID_19CP total cases per million population, COVID_19DP is total death per million population, COVID_C number of cases per day, COVID_D is the number of death per day, FL is funding liquidity, R is stock market return, *p<0.05, **p<0.01, p<0.001

Emerging markets have experienced portfolio reversal due to the pandemic and Table 2 shows the cross-correlation for the BRICS countries as the sample of the study. Cumulative deaths per million population (COVID_19DP) are negatively related to funding liquidity. As the number of deaths per population increase the funding liquidity decreases. However, the funding liquidity is positively correlated with daily deaths (COVID_D). An increase in the number of daily deaths due to the pandemic is associated with an increase in funding liquidity. The pandemic is associated with market distortions, furthermore, governments and central banks in emerging markets have implemented measures to ease financial conditions (IMF, 2020). According to Capelle-Blancard and Desroziers (2020), these interventions resulted in the global rebound of the stock prices, causing to worry less about the pandemic. investors no longer appeared to be bothered by news of the health crisis.

There is a negative correlation between total deaths per million population, the number of cases per day (COVID_C), the number of death per day (COVID_D) and the volume traded in the BRICS countries. An increase in cumulative deaths per population, daily cases and daily deaths is associated with a decrease in the volume traded in the countries. Most emerging markets stock markets are prone to investors' sentiments which result in the overreaction of the traded volumes (Zouaoui, Nouyrigat & Beer, 2011). The volume traded is negatively correlated with the stock returns. An increase in the volume traded is associated with a decrease in the stock market returns.

COVID-19 cumulative cases per million population (COVID_19CP) is negatively correlated with funding liquidity. An increase in the cumulative cases per population is associated with a decrease in funding liquidity. Contrary, when the number of daily reported deaths is used as a measure, the correlation with funding liquidity is positive. The correlation between volume traded and funding liquidity is negative. An increase in funding liquidity is associated with a decrease in the volume traded. The onset of the pandemic in emerging markets including the

BRICS countries experienced portfolios reversals as investors' flight to safety investments (IMF, 2020). Returns are positively correlated with cumulative deaths per population, cumulative daily cases and cumulative daily deaths. An increase in cumulative deaths per population, cumulative daily cases and cumulative daily deaths are associated with an increase in returns.

5.3 Empirical results and discussion

Table 3 and Table 4 show results of analyses of the nexus between stock returns, funding liquidity and COVID-19 during the Outbreak and Fever periods. Four estimation techniques including Pooled effects model, Fixed effects model, Random-effects model and the Generalized least squares (GLS) model were used primarily as a means for rigorous testing (robustness). Since the econometric modelling of panel data is based on two principal estimation techniques, fixed effects and random effects models this study also narrowed the analysis to these estimators. The fixed-effects model was selected to be a more efficient and unbiased model. Since variables and units thereof in our panel data set are believed to be systematically different from one another in unobserved ways, the fixed effects model was used because it eliminates the between-unit variation and produces an average effect within units over time (Allison 2009; Wooldridge 2010). The sample included the major stock indices of the BRICS countries between 31 December 2019 and 17 October 2020. The robust standard errors clustered in the country are recorded in parentheses. ***, **, and * indicate that the coefficient estimate is significantly different from zero at the 0.1%, 1%, and 5% levels respectively.

Table 3*:* Effects of funding liquidity and total COVID-19 case on stock returns

	Pooled Effects R	Fixed effects R	Random Effects R	FGLS R
COVID_19CP	0.000103***	0.000119**	0.000103***	0.000103**
	(0.00000772)	(0.0000216)	(0.00000772)	(0.0000652)
FL	1.9521***	2.27***	1.9521***	1.9521***
	(0.273)	(0.235)	(0.273)	(0.230)
LogV	-0.318	-0.662	-0.0318	-0.0318
	(0.0176)	(0.270)	(0.0176)	(0.0633)
_cons	0.129	5.221	0.129	0.129
	(0.220)	(2.166)	(0.220)	(0.532)
N	993	993	993	993
R^2	0.32	0.28	0.31	

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results in Table 3 show that as the funding liquidity was tightening stock returns improved. This is despite governments' efforts to institute policies that improve liquidity. The results are contrary to theory and other empirical studies (Brunnermeier & Pedersen, 2009), where funding liquidity is negatively related to stock returns. Data from the markets under consideration showed that the stock market recovered before a substantial effect on funding liquidity was transmitted, as the decrease in funding liquidity was associated with a decrease in stock liquidity and vice versa. This association confirms the notion that there is always a lag in equity markets

response to macro-economic policy changes.

There is a positive and significant relationship between COVID-19 and stock returns. As the COVID-19 total cases per million of population increased the stock markets improved. This shows that markets responded to the optimism of market participants and this was seen in bullish markets despite exponential growth in the number of cases. The results are opposite to expectation and theoretical and empirical dictates that predict a negative relationship between a pandemic and stock returns (see for example Al-Awadhi, et .al, 2020; Ashraf, 2020). The explanation for this anomaly can be that stock markets generally attract long term investors so much that, these investors perceive the COVID-19 pandemic as short term. Therefore, markets responded positively despite an increase in the number of cases. Moreover, governments responded positively to the pandemic through policies meant to improve liquidity and limit company liquidation. This suggestion is in line with Haroon and Rizvi (2020b) who opine that regulatory interventions improve liquidity in the financial markets.

However, the results show a negative relationship between stock returns and market depth although the relationship is not significant.

Table 4: Effects of funding liquidity and total COVID-19 deaths on stock returns

	Pooled Effects R	Fixed Effects R	Random Effects R	FGLS R
COVID_19DP	0.00278***	0.00392***	0.00278***	0.00278
	(0.000213)	(0.000178)	(0.000213)	(0.00183)
FL	1.837***	2.0921***	1.8377***	1.8375***
	(0.292)	(0.247)	(0.292)	(0.230)
LogV	-0.0158	-0.790	-0.0158	-0.0158
	(0.0239)	(0.310)	(0.0239)	(0.0634)
_cons	0.0167***	6.260**	0.0167*	0.0167***
	(0.0077)	(2.483)	(0.0077)	(0.0040)
N	993	993	993	993
R^2	0.29	0.29	0.30	

Standard errors in parentheses, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 4 reports the results of the panel data test, in which the nexus between stock returns, funding liquidity and COVID-19 is investigated. In this case, COVID-19 was measured as the total number of deaths per million population. The results suggest that stock returns are significantly positively related to total cases of death caused by COVID-19. There is also a positive and significant relationship between funding liquidity and stock returns, the results are similar to those revealed in Table 3.

6. Conclusion

Examining the nexus between stock returns, funding liquidity and COVID-19, the study found that both funding liquidity and COVID-19 interact positively with stock market returns of the BRICS countries. Specifically, stock returns are significant and positively related to both the

total confirmed cases per million of population and confirmed deaths per million of population caused by COVID-19. Funding liquidity as measured by the spread between the interbank lending rate and the 3-month Treasury bill rate is significant and positively related to stock returns.

Overall, the findings illustrate that stock markets responded contrary to theoretical predictions, implying that stock market players though they initially overreacted to the COVID-19 news they later became optimistic. As the participants became more knowledgeable about the pandemic, especially the fact that it was not as lethal as initially anticipated, markets became bullish. The findings also confirmed the fact that stock markets respond to macroeconomic effects with a lag. Therefore, it seems like at this point the ongoing policy interventions and individual behaviour are achieving the desired goal of stabilizing the situation. Further analysis on the effects of funding liquidity is recommended using a different proxy other than the spread. The understanding of how a pandemic affects funding liquidity and ultimately stock market returns is paramount to investors and the economy in general. In case there is another pandemic of similar magnitude in the future, the policymakers should be in a better position to respond more decisively.

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