Information Vs Investor Sentiment Effect on Stock Market Liquidity During Covid-19 Pandemic

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Abstract:

Stock markets are known to be very uncertain. Not only are they affected by announced facts and events but also they are affected by investor sentiment. The present research examines the extent to which announced information and investor sentiment affect stock market liquidity. The study took place during the outbreak of covid-19 during which there was lack of information. During this period there was a little some of information all about the number of new patients, the cumulative number of patients, the number of new deaths and the cumulative number of deaths. Accordingly, many investors based on their sentiment to compensate for this lack of information. The present study asserts that both developed and developing countries stock markets are affected by investor sentiment. The study uncovers the existence of a negative relationship between investors sentiment and the market liquidity and, therefore, it adds to the literature related to the controversy between traditional finance and behavioral finance.

Keywords: investor sentiment, covid 19, stock market liquidity, stock market efficiency, developed markets, developing markets.

1. Introduction

Traditional finance theory assumes that asset prices tend to move early as a corrective mechanism for any price fluctuations which makes the stock market efficient in the long term. This theory assumes that stock market investors rationally avoid risk to maximize their expected utility. In other words, this theory asserts that only fundamental factors affect asset prices, returns, and liquidity in financial markets.

However several studies such as Shleifer & Vishny (1997) and Alan Greenspan (1996) assume that there are limits to achieving full arbitration and that the market is directed by many irrational investors.

Hence, the idea of the influence of psychological factors has become more than just a momentary, temporary, or short effect on stock market, despite the persistence of doubts from academic researchers in the field of finance.

2. literature review

There has always been a controversy between traditional finance theory and behavior finance theory. On the one hand traditional finance theory assumes that stock market investors rationally avoid risk. It assumes that investors depend on information to

take decisions that maximize their expected utility. This theory, however, is not able to explain many anomalies in the market. It seems that there is a need for a complimentary theory that explains irrationalities.

On the other hand, behavior finance theory asserts the role of sentiment, which arouses heated debates among academic researchers in the field of finance.

According to this theory several psychological factors play major roles on stock markets. The role of this theory is asserted by Shleifer & Vishny (1997) and Alan Greenspan (1996) who states that there are limits to achieving full arbitration and that the market is directed by many irrational investors.

Hence, the idea of the influence of psychological factors has become more than just a momentary, temporary, or short effect on stock market, despite the persistence of doubts from academic researchers in the field of finance.

There is a lot of controversy about the idea of market efficiency, but there is great support for the idea that there are limits of arbitrage, and therefore the idea of making decisions by investors seems more affected by psychological and cognitive biases, especially because those decisions are characterized by a great deal of uncertainty.

Based on the above and due to the inability of the traditional finance theory to explain many anomalies in the market, the behavioral finance approach is based on many researches that drops the traditional assumptions of finance and concentrate on two mainstays, which are cognitive psychology (how people think) and limits of arbitrage (when the market becomes inefficient).

This irrational behavioral theory is confirmed in the study of De Long et.al, (1990) who state that investors are affected by sentiment. this idea of sentiment is defined by Baker and Würgler (2007) as "a belief about future cash flow and investment risks that are not justified by the facts at hand". This meant that the investors make their decisions based on emotional biases rather than rationality. Fisher and Statman (2000) mention that biased investors' expectations in the stock market, make them seek to obtain additional returns. As Schleifer and Vishney (1997) emphasized that betting against sentimental investors is expensive and risky.

The behavioral finance literature suggests that investors sentiment influences trading decisions. And the impact of investors' future expectations can lead to affect the stock market liquidity, this is confirmed by De Long et al. (1990) and Baker and stein (2004).

According to Lee and Chiu (2012) and McMillan (2003), financial markets can reflect nonlinear behaviour as a consequence of the interaction between informed traders and noisy traders.

Debata et al. (2018) investigated the impact of domestic and international investor sentiment on ESM liquidity. Kumari (2019) refers to the positive influence on all liquidity factors as the authors discover a positive effect of investor sentiment on liquidity, meaning that the sentiment causes larger market liquidity. Furthermore, several studies have utilised the closing percent quoted spread to forecast stock-market liquidity (Fernandez- Amador et al., 2013; Chung and Zhang, 2014; Fong Kingsely, 2017; Ma et al., 2017).

Liu (2007) examines the relationship between investor sentiment and liquidity on a sample of all NYSE and AMEX common stocks, Results showed that the investor sentiment is negatively associated with illiquidity. With reference to Liu's (2015) results, in the US market, Amihud's (2002) illiquidity measure and sentiment are negatively correlated. This negative correlation suggests that the Amex and NYSE stock markets are liquid, except when the investor sentiment is optimistic.

Whereas Hui Hong, et al. (2021) found that COVID-19 was a significant factor for market inefficiency, creating profitable opportunities for traders and speculators. Rational investors who seek to maximize returns may need to pay close attention to insider trading before making any decisions in the stock market, on the other hand, such crises may also lead to inequality of

income and wealth as market participants who have much of Liquidity at hand can seek for profitability in the stock market.

The researchers note that there is a strong contradiction in the results between the previous studies that studied the relationship between stock market liquidity and investor sentiment, as we can make a great contribution if we study this relation during a crisis period when the investor in pessimistic mood, and there is a little attention has been paid to examining the impact of investor sentiment on stock-market liquidity while there is a great number of researches discuss the relation between investor sentiment and stock market prices, so we find in COVID-19 pandemic a chance do investigation on the effect of investor sentiment on stock market liquidity from one side and from the other side determine which will have a great effect on the liquidity, is it information or investor sentiment.

After we review the literature we find that we have only one important hypothesis which is :

H1: investor sentiment has a significant effect on stock market liquidity.

H1-1: investor sentiment has a significant effect on stock market liquidity in the developed countries.

H1-2: investor sentiment has a significant effect on stock market liquidity in the developing countries.

3. Description of Data and Sample

To test the effect of information versus investor sentiment, we develop this model to illustrate the different effects of the information and investor sentiment on the stock market liquidity, to understand how investor sentiment affect the stock market during covid-19 pandemic, figure 1 illustrates the research model.

The researchers relied on a sample of fourteen countries: Brazil, the United Kingdom, Canada, Egypt, Germany, Italy, South Africa, Spain, the United States of America, France, Turkey, Holland, Saudi Arabia and the United Arab Emirates.

The sample consisted of two groups: one for the developed countries and another for the developing ones. The rationale behind this classification resides in the fact that investors' awareness and culture differ across countries. Investors of advanced countries might tend to take informative decisions but those of developed countries might be affected by sentiments." The first group included United Kingdom, Canada, Germany, Italy, Spain, the United States of America, France and Holland and the second included Brazil, Egypt, South Africa, Turkey, Saudi Arabia and the United Arab Emirates.

The study period extended for 33 days and the period from April 2021 to August 2021 was chosen randomly.

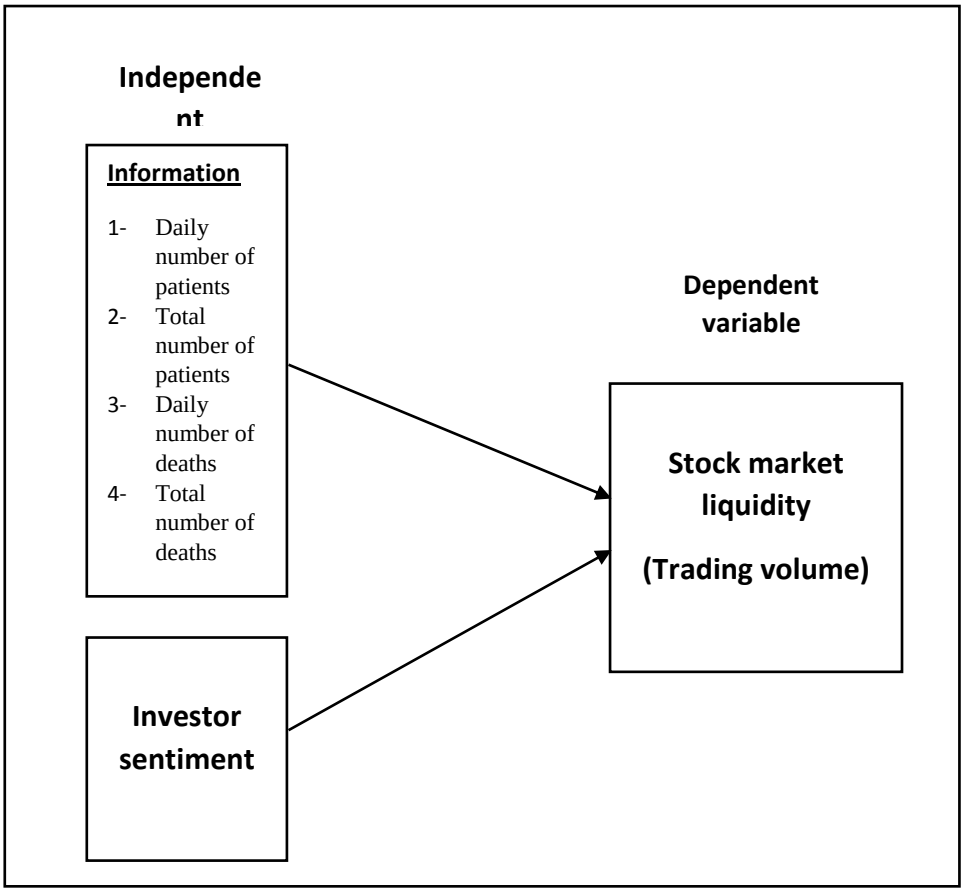

Figure 1. Research model

3.1 Dependent variable

The dependent variable is the stock market liquidity which is measured by the trading volume of the stock market in each country within the sample, we used the same variable for

measuring the liquidity adopted by Liu (2006), the following table illustrates indexes used in the research.

Table 1. Stock market indexes

Country	Stock market index
Brazil	**BVSP**
United kingdom	**FTSE 100**
Canada	**S&P/TSX Composite (GSPTSE)**
Egypt	**EGX50**
Germany	**DAX**
Italy	**FTSE Italia All Share**
South Africa	**JTOPI**
Spain	**IBEX 35**
USA	**NASDAQ Composite (IXIC)**
France	**CAC 53**
Turkey	**BIST 100-30**
Netherlands	**AEX**
Saudi Arabia	**Tadawul All Share**
United Arab Emirates	**ADX General**

3.2 Independent variables

3.2.1 Information variables

All the information that was available to investors in the first wave of the Covid 19 pandemic is the daily number of patients, the total number of patients, the daily number of deaths and the total number of deaths, and it was obtained from the database of the World Health Organization for all the countries under study daily, the following table shows the information variables and its symbols in the research.

Table 2. Information variables

Variables	Symbols
Daily number of patients	**New_cases**
Total number of patients	**Cumulative_cases**
Daily number of deaths	**New_deaths**
Total number of deaths	**Cumulative_deaths**

3.2.2 investor sentiment

To quantify investors' sentiment, the researchers used tweeter sentiment as a precursor. The strategy for so-doing was to choose a large number of tweets from every country over a period of 33 days and to analyze them qualitatively on a daily basis. The main search key for mining in the tweets was the word "Covid-19". Every tweet was analyzed independently and was given a value of "positive", "negative" or neutral. The investor sentiment in a certain day was calculated through counting the number of positive tweets and the number of negative tweets to calculate the sentiment index through Zang and Skiena (2010) equation as follows:

$$\text{Sentiment index} = \frac{\textit{Number of Positive tweets} - \textit{Number of negative tweets}}{\textit{Number of Positive tweets} + \textit{Number of negative tweets}} \text{X100}$$

The number of all tweets for each country is sown in table 3, and as we can see the research depend in calculating the sentiment index on analyzing 464939 tweets.

The following table shows the number of all tweets for each country and the overall number for the tweets used in the study.

Table 3. number of tweets per country

COUNTRIES	TOTAL NUMBER OF TWEETS
BRAZIL	47801
BRITAIN	42963
CANADA	49500
EGYPT	8131
GERMANY	45731
ITALY	44885
SOUTH AFRICA	42769
SPIN	17768
USA	49204
FRANCE	39776
TURKEY	22936
NETHERLANDS	13834
SAUDI ARABIA	12697
UNITED ARAB EMARITS	26944
TOTAL	464939

4. Methodology

The researchers apply stepwise regression in all samples to evaluate the influence of all independent variables on stock market liquidity, as well as to determine which independent variables have the greatest effect on stock market liquidity.

5. Results

5.1 Results from all countries

5.1.1 Multiple Regression analysis

Table 4. Multiple Regression for all countries

Multiple Regression for all countries	
Independent variable: stock market liquidity (trading volume)	
	Model 1
Adjusted R Square	. 476
Model significance	**.000 *****
New_cases	**.156** **(-1.420-)**
Cumulative_cases	**.000 ***** **(-4.579)**
New_deaths	**.029 **** **(2.187)**
Cumulative_deaths	**.000 ***** **(12.894)**
Sentiment index	**.003***** **(-2.951)**

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

The multiple regression model for all countries was significant (table 4). The explanatory power of the model was 48. Accordingly, it revealed that certain variables (Cumulative New cases, New deaths, Cumulative deaths and Sentiment index) have significant relationships with the stock market index. As for the

variable of new cases, it has no significant relationship with the stock market liquidity. This means that stock market liquidity is not only affected by information but also by investor sentiment.

Results revealed that there is no significant relationship between new cases and stock market liquidity.

Results revealed that there is significant relationships between certain variables (Cumulative New cases, New deaths, Cumulative deaths and Sentiment index) and stock market liquidity.

5.1.2 Stepwise Regression Analysis

Table 5. Stepwise Regression for all countries

Stepwise Regression for all countries			
Independent variable: stock market liquidity (trading volume)			
	Model 1	Model 2	Model 3
Adjusted R Square	.368	.461	.472
Model significance	**.000 *****	**.000 *****	**.000 *****
New_cases			
Cumulative_cases		**.000 *****	**.000 *****
		(-8.328)	**(-8.793)**
New_deaths			
Cumulative_deaths	**.000 *****	**.000 *****	**.000 *****
	(15.190)	**(13.473)**	**(13.904)**
Sentiment index			**.003 *****
			(-3.014)

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

As shown in table 5, the stepwise regression generates three models that are all significant. model 3 has the most explanatory

power with 47%. This model showed that Cumulative cases, Cumulative deaths and Sentiment index have a significant relationship with the stock market liquidity. New cases were excluded from the three models, we can see that when sentiment index entered in the model 3 the explanatory power of the model enhanced, this explains the severity effect of the investor sentiment on the stock market liquidity, and we also find that there is a negative relationship between investor sentiment and stock market liquidity which means that pessimistic investor sentiment reduced the market liquidity.

5.2 Results from Developed Countries

5.2.1 Multiple Regression analysis

Table 6. Multiple Regression for developed countries

Multiple Regression for developed countries	
Independent variable: stock market liquidity (trading volume)	
	Model 1
Adjusted R Square	.652
Model significance	**.000 *****
New_cases	**.605**
	(.518)
Cumulative_cases	**.000 *****
	(-4.882)
New_deaths	**.000 *****
	(3.900)
Cumulative_deaths	**.000 *****
	(12.696)
Sentiment index	**.000 *****
	(-3.872)

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

As table 6 shows, the multiple regression model for developed countries is significant. The explanatory power of the model is 65%. The model showed that Cumulative cases, New deaths, Cumulative deaths and Sentiment index have a significant relationships with the stock market liquidity. In contrast, in contrast, there was no significant relationship between new cases and the stock market liquidity. These results confirm that stock market liquidity is not only affected by information but also by investor sentiment. the present study has also proved the existence of a negative relationship between investor sentiment and stock market liquidity which means that pessimistic investor sentiment reduced the market liquidity in developed countries.

5.2.2 Stepwise Regression analysis

Table 7. Stepwise Regression for developed countries

Stepwise Regression for developed countries

Independent variable: stock market liquidity (trading volume)

	Model 1	Model 2	Model 3	Model 4
Adjusted R Square	.531	.591	.634	.653
Model significance	**.000 *****	**.000 *****	**.000 *****	**.000 *****
New_cases				
Cumulative_cases		**.000 *****	**.002 *****	**.000 *****
		(-6.295)	**(-7.461)**	**(-7.967)**
New_deaths			**.000 *****	**.000 *****
			(5.623)	**(5.586)**
Cumulative_deaths	**.000 *****	**.000 *****	**.000 *****	**.000 *****
	(17.289)	**(11.734)**	**(12.082)**	**(12.808)**
Sentiment index				**.000 *****
				(-3.875)

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

As shown in table 7 the stepwise regression for developed countries generates three models all are significant. Model 4 has the most explanatory power with 65%, The model showed that Cumulative cases, New deaths and Cumulative deaths and Sentiment index have a significant relationship with the stock market liquidity, while New cases excluded from the three models, we can see that when sentiment index entered in the model 3 the explanatory power of the model enhanced, this explains the severity effect of the investor sentiment on the stock market, and we also find that there is a negative relationship between investor sentiment and stock market liquidity which means that pessimistic investor sentiment reduced the market liquidity in developed countries.

5.3 Results from developing countries

5.3.1 Multiple Regression analysis

As we can see in table 8, the multiple regression model for developing countries is significant, The explanatory power of the model is 15 %, The model showed that only Sentiment index has a significant relationship with the stock market liquidity, while all the information variables haven't a significant relationship with the stock market liquidity which gives researchers the impression that investor sentiment has a great effect on the stock market without any effect from information, from the results, we can conclude that the stock market in developing countries is

affected by behavioral factors in addition to investor sentiment and it is not affected by the efficiency of the information available, and we also find that there is a negative relationship between investor sentiment and stock market liquidity which means that pessimistic investor sentiment reduced the market liquidity in developing countries as in developed countries.

Table 8. Multiple Regression for developing countries

Multiple Regression for developing countries	
Independent variable: stock market liquidity (trading volume)	
	Model 1
Adjusted R Square	.150
Model significance	**.000 *****
New_cases	**.916** **(-.106)**
Cumulative_cases	**.433** **(-.787)**
New_deaths	**.275** **(-1.097)**
Cumulative_deaths	**.512** **(.658)**
Sentiment index	**.045 *** **(-2.020)**

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

5.3.2 Stepwise Regression analysis

As we can see in table 9, the stepwise regression for developing countries is significant, The explanatory power of the model is

approximately 16%, The model showed that New deaths and Sentiment index have a significant relationship with the stock market liquidity, while other variables excluded from the two models, we can see that when sentiment index entered in the model 2 the explanatory power of the model enhanced, this explains the severity effect of the investor sentiment on the stock market liquidity, and we also find that there is a negative relationship between investor sentiment and stock market liquidity which means that pessimistic investor sentiment reduced the market liquidity in developing countries.

Table 9. Stepwise Regression for developing countries

Stepwise Regression for developing countries
Independent variable: stock market liquidity (trading volume)

	Model 1	Model 2
Adjusted R Square	.139	.162
Model significance	**.000 *** **	**.000 *** **
New_cases		
Cumulative_cases		
New_deaths	**.000 *** **	**.000 *** **
	(-4.699)	**(-4.951)**
Cumulative_deaths		
Sentiment index		**.033 ** **
		(-2.151)

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

All above results clarify that investor sentiment have a negative effect on stock market liquidity in both developed and developing countries, we can refer it to the crises of Covid 19, which create a negative sentiment to the investors and make them pessimistic, and this agreed with psychology studies explored the negativity bias in sentiment Beach and Strom (1989) and Peeters (1971)

6. Conclusion

At the end of the research results demonstrate two main findings, The first is that both developed and developing countries stock markets are affected by investor sentiment not only by the available information. The second finding is that investor sentiment has a negative effect on stock market liquidity in both developed and developing countries, which is a new relationship we can refer it to the crises of Covid 19, which create a negative sentiment to the investors and make them pessimistic, and this new contribution agreed with psychological studies.

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