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Price Discovery in Indonesia Banking Stocks

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ABSTRACT

This study aims to analyze the price discovery of banking stock prices on the Indonesia Stock Exchange. The sample used was the main board financial sector company on the IDX for the 2022 period as many as 29 samples using purposive sampling techniques. The data used in this study is secondary data obtained from banking sector companies on the Indonesia Stock Exchange (IDX). Data analysis using panel data regression analysis with the Eviews program. The results of the study partially showed that there was a significant negative influence between volatility and price discovery. There is a significant negative influence between stock trading volume and price discovery. There is a significant positive influence between the frequencies of stock trading on price discovery. There is a significant positive influence between momentum and price discovery. There is no influence between foreign net buying on price discovery in the main board banking sector companies listed on the IDX. Meanwhile, the results of the research simultaneously show that there is a significant effect on the variables of volatility, volume, frequency, momentum and foreign net buying on price discovery in the main board banking sector companies listed on the IDX.

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KEYWORDS: volatility, volume, frequency, momentum, foreign net buying, price discovery.

1. INTRODUCTION

In the transaction process for various types of transactions, especially the process of buying and selling shares in the banking sector on the Indonesia Stock Exchange (IDX), the role of price will be very important in making a decision. Pricing is obtained from decisions made based on the price performance itself which has an effect, either a result that is detrimental to the perpetrator of the transaction because the price has decreased or a beneficial effect because the price has increased for the perpetrator of the transaction. In transaction activities there are transaction actors who already know the potential price, transaction actors who do not know the potential price and transaction actors who do not want to know the potential price, thus the bargaining process through price availability is one of the auction processes that occurs between the seller and the seller. buyers in order to reach an agreed price.

Knowledge of past price performance and paying attention to current price performance, the role of trading volume and available past data is very important in identifying price trends that are believed to last into the future **(Cowles, 1933; Brock et al., 1992; dan Lo et al., 2000)**. then the price discovery process can provide a projection of future returns **(Goh et al., 2013; Neely et al., 2014)** The formation of price discovery is the background to be able to encourage transaction performance, because price discovery is part of the micro market structure. (**Hasbrouck, 2007)** states that the study of Market Micro Structures is "The study of the trading mechanisms used for financial securities." Hasbrouck's statement is clearer than **(O'Hara, 1995),** statement, where the micro market structure clearly explains how a price is formed from various structures. And components traded by various parties. The theory and practice of the micro market structure is the essence of the transaction process carried out by the parties to achieve the expectations of liquidity growth, price differences, and price performance in the short, medium to long term. The market micro structure is "The study of the process and outcomes of exchanging assets under explicit trading rules" **(O'Hara, 1995).** The theory of market microstructure is used as an approach to the potential changes in the liquidity of a price caused by changes in trading rules. The market microstructure is a new theory that discusses the formation of stock prices in the market. In the development of market transactions, especially buying and selling banking shares, approaches and implementation of practice and theory, the market microstructure becomes an important part in determining transaction attitudes to be able to increase the number of transactions when the market gives a positive

signal accompanied by potential price movements, or vice versa to limit the number of transactions. Transactions when the market signal is negative. The interactions that occur in securities markets are among the fastest, most information-intensive, and most highly strategic of all economic phenomena. Empirical Market Microstructure is about the institutions that have evolved to handle our trading needs, the economic forces that guide our strategies, and statistical methods of using and interpreting the vast amount of information that these markets produce, (**Hasbrouck, 2007)**.

The formation of a price is through a bargaining process, accompanied by liquidity and existing trading rules. **(O'Hara, 1995),** Market Micro Structure, namely "The study of the process and outcomes of exchanging assets under explicit trading rules." Price discovery discusses how prices are formed through buying and selling, which are finally agreed upon from bargaining efforts in the market and the formation of liquidity with existing trading rules. On the other hand, price formation occurs every time an order is placed on a transaction through a bargaining process to conduct stock price transactions in the banking sector on the Indonesia Stock Exchange (IDX). (**Harris , 2004),** explains that "Market Microstructure is the branch of financial economics that investigates trading and the organization of markets". The market microstructure is an important part of economics and finance that investigates stock trading and market organization. Price discovery can be obtained through the process of forming price liquidity, for that there are four dimensions of price liquidity. (**Wyss, 2004),** states that there are four aspects or dimensions of a liquid financial market, namely trading time, tightness, depth, and resilience. Trading time is the space of time between two transactions, both buying and selling transactions. Tightness is the ability to buy or sell an asset at the same price at the same time or at the same price. Depth is the ability to buy or sell an asset in a certain amount without any effect on the price recorded in the market at any one time. Resiliency is the ability to buy or sell a certain amount of an asset with little effect on the recorded price. Furthermore, from a different perspective, market microstructure is seen as a branch of financial economics that investigates stock trading and market organization (**Wyss, 2004)**. Through the price discovery process there are several main things that can be used to conduct market investigations, including price volatility (or returns) where volatility finds the relationship between return volatility and trading volume that results in price performance with positive or negative returns in certain stock markets, (**Chuang et al., 2012),** and the relationship between volatility and trading volume is an asymmetric relationship, **(Sabbaghi, 2011).** According to the literature, the existence of commonality in liquidity indicates that individual company liquidity is sensitive to changes in aggregate stock market liquidity. High transaction frequency performance supports the price discovery process and proves that assessing co-movement in liquidity is important for a number of reasons. Price discovery is an important part of providing information based on price performance so that price information becomes information to become a source of calculating the fundamentals of an asset. Conversely, if all traders who choose to be informed receive identical pieces of information as in the model (eg, exact knowledge of fundamental values), the separation caused by illicit trading can increase price discovery. This is because the decrease in the number of informed traders (because there are fewer uninformed traders in an lit market) corresponds to a decrease in the level of competition on the same pool of private information, but there is no change in the amount of private information that exists in the market. the aggregate is held by the information merchant, Volume provides additional information signals traders' information in the market microstructure literature, **(Blume, Easley, & O'Hara, 1994; Bernardo & Judd, 1996; and Schneider, 2009)**, **(Lee and Swaminathan, 2000),** explain that trading volume is not highly correlated with market liquidity, but provides information about the specific characteristics of prices. Volume explains that the uncertainty is company specific and does not explain the level of liquidity. Transaction momentum is an important part of adjusting the transaction process at a price. Through momentum, price discovery processes and transaction methods can verify that all propositions amount and value transactions **(Easley & O'Hara, 1992).** On the other hand, the price discovery process and transaction method take into account the decision of transactors to make decisions based on liquidity, so that the resulting transactions are more efficient when prices have high liquidity and liquidity maximizes shareholder value, **(Jensen, 1986, 1988).** The price discovery process is a method that takes into account returns including price valuation ratios, spreads, **(Campbell, 1987, Fama & French, 1988),** and stock market volatility, **(Guo, 2006; Goyal & Welch, 2008).** In the application of technical indicators, strategies that are widely used by traders and investors for investment portfolio management, **(Chincarini & Kim, 2006)**. Based on the background of this study, the authors want to find out the important role of volatility, volume, frequency, momentum, foreign net buying on the process of finding stock prices in the banking sector listed on the Indonesia Stock Exchange (IDX). Thus, this dissertation is expected to gain novelty and the role of volatility, volume, frequency, momentum, foreign net buying on price discovery or Price Discovery for stock price performance in the banking sector listed on the Indonesia Stock Exchange.

2. SIGNIFICANCE OF THE STUDY

2.1. Theoretical review

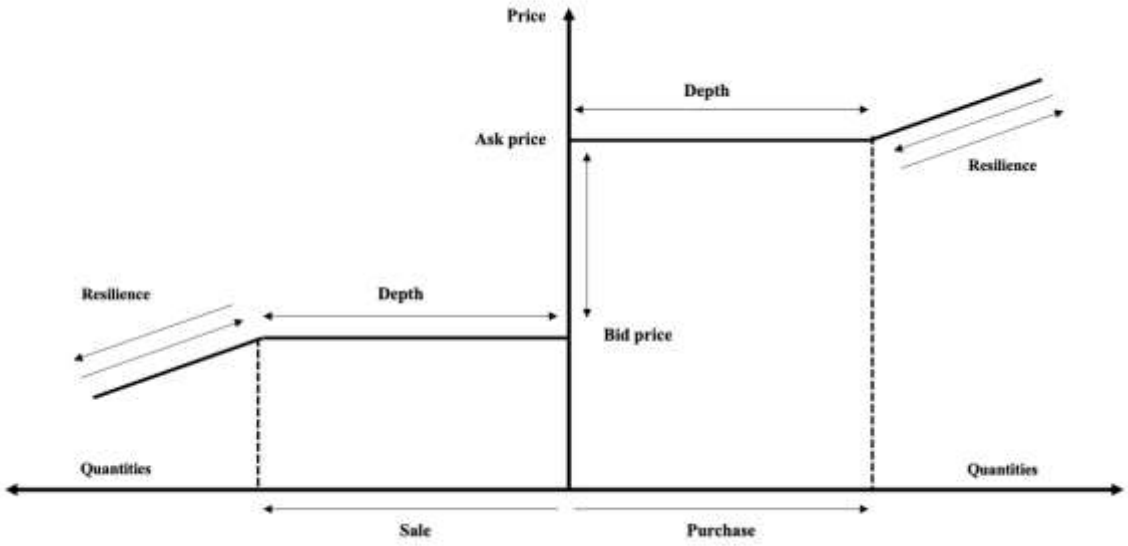
This study will discuss part of the market microstructure, namely price discovery. In an effort to make optimal transactions, the bargaining conditions that exist at one time must meet high liquidity. So that it can represent a form of

appreciation of market participants for a traded price. Liquidity is one of the most interesting parts to study.

(O'Hara, 1995), states that liquidity is one component that provides important insight into market behavior and the interrelationships in it, and is considered a major player in market formation. **(Hameed and Terry, 1998),** found that a decrease in the share price fraction was able to increase trading volume, provided that the stock was actively traded. **(Gerace et al., 2012),** stated that a decrease in the price fraction has an effect on increasing market liquidity and contributes to an increase in the minimum price in the financial market. The liquidity of a stock is measured by several indicators, such as the number of shares outstanding, trading frequency, trading volume, price change, and spread, (**Wyss, 2004)**.

Liquidity is the ability to make transactions on the spot at a price that is in accordance with supply and demand conditions **(Bennemark and Chen, 2007).** (**Wyss, 2004)**, defines four aspects or dimensions of a liquid financial market, namely trading time, tightness, depth, and resilience. Trading time is the space of time between two transactions, both buying and selling transactions. While tightness is the ability to buy or sell an asset at the same price at the same time or at the same price. Then, depth is the ability to buy or sell an asset in a certain amount without any effect on the price recorded in the market at a time. And resilience is the ability to buy or sell a certain amount of an asset with little effect on it recorded price. This information is explained in the following figure:

Table 2.1



Sources: *Bervas, 2006*

2.2. Price Discovery

Stocks are one of the most sought after capital market instruments by investors, because they are able to provide an attractive rate of return. Shares are papers that clearly state the nominal value, company name, and are followed by rights and obligations that have been explained to each holder, **(Fahmi, 2012).** Meanwhile, according to **(Darmadji and Fakhruddin, 2012),** stock is a sign of participation or ownership of a person or entity in a company or limited liability company. Shares are in the form of a piece of paper that explains that the owner of the paper is the owner of the company that issued the securities. Based on the understanding of the experts above, it can be concluded that shares are proof of ownership of a company in which the nominal value, company name, and rights and obligations are explained to each holder. Market Microstructure Theory (Market Microstructure Theory) discusses how stock prices are formed in Indonesia. The descriptions of academics and research conducted on the formation of stock prices on the Exchange can be grouped into three major groups, namely the three important approaches to the process of price formation, namely the Inventory Model Approach, the Information Based Model Approach, Trading Strategy Model (Strategic Trader Model Approach). Market Microstructure: A Reading, **(Adler Haymans, 2022).**

The stock price is the closing price of the stock market during the observation period for each type of stock sampled and its movement is always observed by investors. One of the basic concepts in financial management is that the goal of financial management is to maximize the value of the company. For companies that have gone public, this goal can be achieved by maximizing the market value of the share price in question. Thus, decision making is always based on considerations of maximizing the wealth of shareholders. **(Sartono, 2011)** states that stock prices are formed through the mechanism of supply and demand in the capital market.

If a stock is in excess of demand, the stock price tends to rise. On the other hand, if there is an excess supply, the stock price tends to fall. According to **(Hartono, 2013)** the notion of share price is "the price of a share that occurs in the stock market at a certain time determined by market participants and determined by the demand and supply of the shares concerned in the capital market". According to **(Brigham and Houston, 2011)** share price is the share price determines shareholder wealth. Maximizing shareholder wealth translates into maximizing the company's share price. The stock price at any given time will depend on the cash flows expected to be received in the future by the "average" investor if the investor buys the stock. Based on the understanding of the experts above, it can be concluded that the stock price is the price formed according to demand and supply in the stock trading market and is usually the closing price. Price dynamics on financial and investment instruments are formed dynamically, for that it is important for transaction actors to know the discovery process until the formation of the price of the instrument, where price is a vital component to achieve transaction goals with optimal results. Used as a means to sell and buy financial and investment instruments, including the Indonesia Stock Exchange (IDX), with the main function of an exchange as a price provider. Meanwhile, price discovery is a provider of price findings in order to create appreciation for buying and selling so as to encourage the level of liquidity. Therefore these functions are interrelated. The Indonesia Stock Exchange must provide a means that allows a fair and transparent price formation process so that the price that occurs is close to the accurate price value for trading. So without liquidity, the price discovery function is difficult to realize. Through price discovery and liquidity, the price discovery function of a financial and investment instrument will be better and can avoid manipulation or traded prices. Price discovery is the process of entering new information into the prices of assets traded in the market and determining the new equilibrium price. **(Pathak, Ranajee & Kumar, 2014).** In the market microstructure literature, price discovery has been defined in such a way as, "the process of finding market clearing prices" **(Madhavan, 2000).**

Price discovery is about the cointegrated adjustment of trading prices to shocks that cause deviations from the law of one price. In a well-functioning and efficient market, the price of an asset reflects its fundamental value. However, due to market imperfections such as transaction costs, information and regulatory asymmetry, new information will not be directly incorporated into prices, but only gradually. This is a price discovery process, which is of great interest not only in finance but also in economics in general **(Karabiyik, Westerlund & Narayan, 2021).**

Price discovery can also be referred to as the process of discovery and price formation, where price discovery is a process of determining prices in a market through interactions between sellers and buyers. Through price discovery, the process of discovery and price formation, transaction actors can obtain better information and assessments so that they can participate in taking advantage of a transaction process on financial and investment instruments. Until finally price discovery can also be referred to as the process of discovery and price formation can be a representation of the price performance of a financial and investment instrument, among others, stock prices, commodity market prices, currency exchange rates, and other asset values. Price discovery can cause price changes or movements. Because price discovery reacts with reasons, among others, how to find and form a transaction price with a transaction fee that is quite low compared to other price performances. So this makes the condition of the price of financial instruments and investments as a market that gives an indication of what is happening in the market, It is also very helpful in forming better prices. From an economic perspective in general, if the volume of domestic trade increases, it is expected that price discovery and reference prices can be formed in the economic conditions of a country, especially in Indonesia, so that they can move the national economy. Price discovery is the process of determining the price of an asset from the interaction between buyers and sellers in the market until the formation of a price, while the reference price is the price level that becomes the benchmark.

3. REVIEW OF RELATED STUDIES

3.1. Methodology

This study uses a research design, namely research or quantitative research. Quantitative research philosophically uses data in the form of numbers, where the data is collected either from primary data or secondary data or tertiary data. Is a scientific research through a systematic process on the parts and phenomena of price discovery and their relationships. Quantitative research is used as a systematic investigation of the phenomenon of price discovery with data collection methods that are measured from volatility, volume, frequency, momentum, foreign net buying. The method used in this research is causality research. This method is done by collecting data, testing the data and getting the results of a causal relationship between the dependent variable (price discovery) which is influenced by the independent variables (volatility, volume, frequency, momentum and foreign net buying.). The data used in this study is secondary data obtained from banking sector companies on the Indonesia Stock Exchange (IDX).

3.2. Model panel data

This research use Model data Panel to estimate relationship some independent variable to determine Loan to Deposits Ratio as dependent variable and Net Interest Margin, Non- Performing Loan (NPL), Capital Adequacy Ratio (CAR), Market Power (MP), Risk Adjusted Return on Capital (RAROC), Risk, Oil Price, Exchange Rate (EX), Fed Rate and Cement Consumption as proxy Economic Growth (EG) which is all as independent variable. This research also

uses Oil Price, Exchange Rate and Economic Growth as macroeconomic or external variable to become independent variable. Risk is used as moderating variable. Model Data Panel is appropriate for data small which short time series and small company as sample. Besides that, model data panel also show time and the cross-section as sample. **(Gujarati, 2003), (Wooldridge, 2002), (Greene, 2008), (Biorn, 2017)** and **(Sul, 2019),** stated model data panel is as follows:

Pooled Data Model is model that data combine all together and the model is as follows:

$$Y_{i,t} = \beta_1 + \beta_2 X_{2i,t} + \beta_3 X_{3i,t} + \mu_{I,t}$$

I = 1, 2, … , k ; t = 1, 2, … , n

X's are non-stochastic and E(μit) ~ N(0, σ2)

a. Fixed Effect Model

FEM is a model that μi and X's are assumed correlated.

$$Y_{i,t} = \beta_{1i} + \beta_2 X_{1i,t} + \beta_3 X_{2i,t} + \mu_{I,t}$$

I = 1, 2, … , k ; t = 1, 2, … , n

b. Random Effect Model (REM)

c. REM is a model that εi and X's are assumed uncorrelated.

$$Y_{i,t} = \beta_{1i} + \beta_2 X_{1i,t} + \beta_3 X_{2i,t} + \mu_{I,t}$$

$$\beta_{1i} = \beta_1 + \varepsilon_i$$

I = 1, 2, … , k ; t = 1, 2, … , n

μi is a random error with a mean value of zero and variance of σ 2.

.

(Gujarati, 2003), (Wooldridge, 2002), (Greene, 2008), (Biorn, 2017) and **(Sul, 2019),** stated that how we choose FEM or REM as follows:

1. When T (number of time series data) is large and N (the number of cross- sectional units) is small, FEM may be preferable.
2. When N is large and T is small, if we strongly believe that the individual, or cross-sectional, units in our sample are not random drawings from a larger sample, FEM is appropriate. If the cross-sectional units in the sample are regarded as random drawings, the REM is appropriate.
3. When individual error component εi and one or more regressors are correlated, FEM is an unbiased estimator.
4. REM estimators are more efficient than FEM Estimators, when N is large and T is small and if the assumptions underlying REM hold.

The panel data regression model of this study is :

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \varepsilon_{it}$$

Description :

Y	= Price discovery
α	= Constant
X_1	= Volatility
X_2	= Volume
X_3	= Frequency
X_4	= Momentum
X_5	= Foreign Net Buying
β	= Koefisien regresi variabel independen
t	= Period -t
i	= Equity -i
ε	= error

4. OBJECTIVES OF THE STUDY

4.1. Descriptive Statistical Analysis

Descriptive statistics of research data are used to determine the characteristics of each variable of volatility, volume, frequency, momentum, foreign net buying, and price discovery (Y). The data used in this dissertation are real data obtained from the Indonesia Stock Exchange. Descriptive statistics in the form of the average value of the data, and the standard deviation are presented in the following table. Descriptive statistics of research data are used to determine the characteristics of each variable of volatility, volume, frequency, momentum, foreign net buying, and price discovery (Y). The data used in this dissertation are real data obtained from the Indonesia Stock Exchange. Descriptive statistics in the form of the average value of the data, and the standard deviation are presented in the following table

Table. 4.1. Descriptive Statistical Analysis

	Price Discovery	Volatility	Volume	Frequency	Momentum	Foreign
Mean	6.848.897	1.041.793	0.961172	6.697.103	6.859.517	2.527.517
Median	6.680.000	1.030.000	0.970000	6.710.000	6.690.000	0.530000
Maximum	9.230.000	1.300.000	1.000.000	1.157.000	9.270.000	1.669.300
Minimum	4.140.000	1.000.000	0.770000	1.390.000	4.060.000	0.000000
Std. Dev.	1.317.341	0.036793	0.030743	2.240.850	1.321.881	1.407.670
Skewness	-0.004817	3.221.399	-2.525.336	-0.245347	-0.017274	1.114.002
Kurtosis	2.096.381	1.962.639	1.335.547	2.504.412	2.101.941	1.301.650

Jarque-Bera	4.933.750	1.920.926	8.020.014	2.938.586	4.879.880	100698.5
Probability	0.084850	0.000000	0.000000	0.230088	0.087166	0.000000
Sum	9.930.900	1.510.600	1.393.700	9.710.800	9.946.300	3.664.900
Sum Sq. Dev.	2.498.956	0.194934	0.136101	7.230.830	2.516.211	28534.11
Observations	145	145	145	145	145	145

Source: *Eviews, 2022*

The data used is data that has been transformed using natural logarithms (LN) because there are too large data such as data frequency, momentum and price discovery.

Based on table 4.2, the average value (mean) of price discovery is 6.85 with a minimum value of 4.14 and a maximum of 9.23 which occurred in the Bank Mega Tbk (MEGA) company in March 2022. The average value was 6.85 This is relatively high which indicates that the price discovery that occurs in the main board financial companies listed on the BEI is quite high.

The average value volatitly is 1.04 with a minimum value of 1.00 and a maximum of 1.30 which occurs in the company PT. Bank Bumiputera Tbk (BCAP) in February 2022. The average value of 1.04 is relatively high which indicates that the volatility that occurs in banking sector companies listed on the BEI is high, PT. Bank Bumiputera Tbk (BCAP) is currently PT. Bank MNC international Tbk (doing business under the name MNC Bank) is a subsidiary of MNC Financial Services which is engaged in banking.

The average value of stock trading volume is 0.96 with a minimum value of 0.77 and a maximum of 1.00 which occurs in the company Bank Mestika Dharma Tbk. (BBMD) in January, April and May 2022. The average value of 0.96 is relatively high which indicates that the volume of stock trading that occurs in banking sector companies listed on the BEI is high.

The average value of the frequency volume is 6.697 with a minimum value of 1.39 and a maximum of 11.57 which occurs in the Bank Central Asia Tbk company. (BBCA) in May 2022. The standard deviation value of 1407.67 is relatively high which indicates that the frequency that occurs in banking sector companies listed on the IDX is quite high which will result in investors getting capital gains.

The average value of momentum is 6.86 with a minimum value of 4.06 and a maximum of 9.27 which occurred in the company Bank Mega Tbk (MEGA) in March 2022. The average value of 6.86 is relatively high which indicates that the momentum that occurs in banking sector companies listed on the IDX is quite high. The value of this momentum causes the momentum of stock price movements to be more optimal.

The average value of foreign net buying is 2.53 with a minimum value of 0.00 and a maximum of 166.93 which occurred in the company Bank Mayapada International Tbk (MAYA) in January 2022. The average value of 2.53 is relatively high which shows that the momentum that occurs in the banking sector companies listed on the IDX is stable.

Casuality. In accordance with the test, the writer of this dissertation uses a fixed effect because the sample (unit of analysis) is purposive sampling. **(Gujarati, 2003), (Wooldridge, 2002), (Greene, 2008), (Biorn, 2017)** and **(Sul, 2019).**

Table 4.2 Hausman Method Selection Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5,046018	0,655837	7,694007	0
VOLAT?	-2,52052	0,307213	-8,20447	0
VOLUM?	-2,28871	0,353351	-6,47716	0
MOMEN?	0,961877	0,011255	85,45847	0
FREQ?	0,004567	0,001704	2,679557	0,0085
FORGN?	-3,44E-06	3,55E-05	-0,09681	0,9231

Sources: *Olahan Eviews, 2022.*

Based on table 4.2, the regression equation:

$$PD_{it} = 5{,}046_{it} - \underset{(-8{,}204)}{2{,}801_{it}}\ VOLAT - \underset{(-6{,}48)}{2{,}772_{it}}\ VOLUM_{it} + \underset{(85{,}46)}{0.991_{it}}\ MOMEN + \underset{(2{,}68)}{0{,}003it}\ FREQ + \underset{(-0.0097)}{0{,}0000344_{\ it}}\ FOREGN$$

F : 9846,64

R^2 : 99,99 %

This equation explains:
The constant of 5.046 means that if (volatility), (volume), (frequency), (momentum), (foreign) the value is 0, then the value of Y (price discovery) is 5.046.
The regression coefficient for the variable (volatility) is -2.52052, meaning that for every increase in (volatility), by 1 unit, it will decrease Y (price discovery) by -2.52052 units, assuming the variables (volume), (frequency), (momentum), (foreign) and Y have a fixed value.
The regression coefficient for the variable (volume) is -2.28871, meaning that for every increase in (volume) by 1 unit, it will decrease Y (price discovery) by -2.28871 units, assuming the variables (volatility), (frequency), (momentum) and (foreign) have a fixed value.
The regression coefficient for the variable (frequency) is 0.004567, meaning that for every increase in (frequency) by 1 unit, it will increase Y (price discovery) by 0.004567 units, assuming the variables (volatility), (volume), (momentum), and (foreign) are fixed.
The regression coefficient for the variable (momentum) is 0.961877, meaning that for every increase in (momentum) by 1 unit, it will increase Y (price discovery) by 0.961877 units, assuming the variables (volatility), (volume), (volatility), (volume), (frequency) and (foreign) are fixed.
The regression coefficient for the (foreign) variable is -00000344, meaning that for every 1 unit decrease in (foreign), the Y (price discovery) will decrease by -00000344 units, assuming the variables (volatility), (volume), (frequency), and (momentum) are fixed.

5. HYPOTHESES OF THE STUDY

Based on the results of the research that has been carried out, the following will be discussed regarding:

1. Hypothesis 1

Based on the test results using the fixed effect model, it can be seen that the volatility variable has a probability p-value of 0.000 < = 0.05 with a statistic value of -8.20447 which means that there is a significant negative effect between volatility and price discovery.

Volatility is a condition to explain fluctuations in price changes in conditions of strengthening or weakening during a transaction at the price of a financial asset in particular, within a certain period of time.
In another study, the volatility function produces price signals for the price discovery process for informed and uninformed traders, the sources of information obtained can be classified into two parts, namely first, market participants who receive information from the main source of information, called informed traders, and second, market participants who obtain information sources based on issues or rumors, are called uninformed traders, The Approach taken by Easley and O'Hara, and similar approach by Glosten and Milgrom .

2. Hypothesis 2

Based on the test results using the fixed effect model, it can be seen that the stock trading volume variable has a probability value of p-value 0.000 < = 0.05 with a statistic value of -6.47716 which means that there is a significant negative effect between stock trading volume on price discovery. Trading volume or Trading Volume Activity (TVA) is a measuring tool used to see the transactions of investors in the capital market, both individuals and corporations, which they use as information to make decisions to find price findings from a range of available prices, **(Mardiyah and Najib 2005).**

Stock trading activity can be seen through the trading volume indicator (trading volume activity). Trading volume can be used as a tool to analyze the movement of a stock because trading volume actually describes the meeting between supply and demand for stock transactions. Trading volume can be used to confirm whether a trend will continue or a reversal has occurred. Very high trading volume activity on the exchange is interpreted as a sign of an improving market. An increase in trading volume followed by an increase in stock prices is a sign of a stronger bullish condition. If the trading volume is large, the stock is in great demand by many investors. The tendency of investors who are interested in stocks to provide high stock returns even though they are risky.

3. Hypothesis 3

Based on the test results using the fixed effect model, it can be seen that the stock trading frequency variable has a probability value of p-value 0.004 < = 0.05 with a tstatistic value of 2.679557 which means that there is a significant positive effect between the frequency of stock trading on price discovery.

Stock trading frequency is the number of stock trading transactions available in a stock price series during one trading day. Trading frequency describes the number of times an issuer's shares are traded among investors in the capital market during the trading session. The higher the trading frequency of a stock, the more actively the stock is traded.

4. Hypothesis 4

Based on the test results using the fixed effect model, it can be seen that the momentum variable has a probability p-value of 0.000 < = 0.05 with a tstatistic value of 85.45847 which means that there is a significant positive effect between momentum and price discovery. Momentum in general is a price condition with a rate of change that shows a positive value when a price increases and a negative value when a price declines, and vice versa, where Momentum is a level of change that shows negative results when a price decline occurs with a previous price increase. The momentum performance measurement method can be done by assessing the condition of a price that is able to penetrate the average performance with a value of zero, or the average price

performance that is able to penetrate the average below zero value.

The high and low momentum can affect the high and low price discovery in the main board banking sector companies listed on the IDX. In this study, momentum has a significant positive effect on price discovery.

Momentum or major events that can affect stock prices such as the momentum of the presidential inauguration, rising oil prices, recession, high inflation and so on, so that momentum can have a significant positive effect on the process of finding stock prices.

5. Hypothesis 5

Based on the test results using the fixed effect model, it can be seen that the foreign net buying variable has a probability value of p-value 0.698 > = 0.05 with a tstatistic value of -0.009681 which means that there is no influence between foreign net buying on price discovery. Foreign net buying is the net transaction value transacted on the Indonesia Stock Exchange, where the value is obtained from the results of Foreign Buying minus Foreign Selling, from the results of this reduction, the net buying result will be obtained (the value of the purchase transaction is greater than the value of the net buying). selling made by foreign investors) or Net Selling (the selling transaction value is greater than the buying value made by foreign investors).

Foreign net buying is part of indirect investment, where the owner of the capital is not directly involved in the capital and financial management activities, but simply holds it in the form of stocks or bonds, this type of investment is usually called portfolio investment.

The highs and lows of foreign net buying affect the highs and lows of price discovery in the main board banking sector companies listed on the IDX. However, in this study, foreign net buying has no effect on price discovery. This is possible because the foreign net buying transactions carried out are not taken into account by investors so that they have a weak influence on price discovery.

Hypothesis 6

Based on the test results using the fixed effect model, it can be seen that the Fstatistic value in table 4.6 is 73956.65 with a probability of 0.0000 < = 0.05), so there is sufficient evidence to reject Ho in the simultaneous test. With a 95% confidence level, the data supports statistical evidence that all independent variables of volatility, volume, frequency, momentum and foreign jointly affect price discovery.

Volatility which presents the highest and lowest prices, the high and low volume of stock trading, the high and low frequency of stock trading, momentum and foreign net buying together have an influence on price discovery.

6. CONCLUSION

Based on the results of the research that has been done and the discussion in the previous chapter regarding the effect of volatility, volume, frequency, momentum and foreign net buying on price discovery, several conclusions can be drawn as follows:

There is a significant negative effect between volatility and price discovery in the main board banking sector companies listed on the IDX. Price discovery is a process of looking at price interactions on an asset. integration between the two markets proves an increase in transactions by investigating the relationship between stock market indices in China (Shanghai Stock Exchange Composite Index) and in the US (S&P500 index), Japan (Nikkei index), Hong Kong (Hang Sheng Index) and the world (MSCI Index), evidence suggests that the Chinese stock market has experienced an increasing degree of integration with several major financial markets over the last decade, especially during the recent global financial crisis. Investigating the relationship between the two stock markets, **(Goh, J., Jiang, F., Tu, J., Zhou, G., 2013).** found that several US economic variables have significant predictive ability for the Chinese stock market. **(Wang and Hui, 2018)**. studied the network characteristics and risk spillovers of the Chinese stock market during the collapse of the Chinese stock market from 2015 to 2016 taking into account network information, stock returns and trading volume. **Zhang and Zhuang (2019),** further compare the differences in the topological structure of the Chinese stock market in the two recession periods of 2008 and 2015. In general, the market is more connected during the abnormal stock market volatility phase than the quiet period, the correlation between stock codes is closer, the heterogeneity between nodes is smaller, and the degree of node convergence is relatively low. At the same time, in both phases of abnormal volatility, the capital allocation process and regulatory-leverage deleveraging in 2015 had a greater impact on the SSE A-shares market than the subprime mortgage crisis. This is mainly because the A-shares market was not closely linked to foreign capital inflows in 2008, whereas 2015 was a liquidity shock caused by rapid domestic deleveraging **(Chen, M., Li, N., Zheng, L., Huang, D. & Wu, B., 2022)** Volatility has a negative influence on the price discovery process, because several phenomena show a decrease in transaction value when volatility is high and volatility is low, so transaction actors limit transactions to avoid high transaction costs when volatility is high and limit transactions due to appreciation of stock prices and conditions. The market experiences a decline when volatility is low.

There is a significant negative effect between stock trading volume on price discovery in the main board banking sector companies listed on the IDX. The research of **Ma, Yang & Su (2021),** examines the predictability of stock returns from the distance between short-term and long-term moving averages of trading volume (MAVD) in a cross

section. We find that MAVD strongly and negatively predicts the cross-section of stock returns. More importantly, the MAVD also contains predictive information that volume shocks cannot provide. This predictive power is strong after controlling for other well-documented characteristics that affect stock returns across all sections, including firm size, book-to-market, momentum, gross profitability, asset growth, turnover, liquidity, stock prices, idiosyncratic volatility and term reversal. There exists limited empirical evidence that directly addresses the relationship between trust and trading volume. show that social trust has a positive effect on investor reactions to earnings announcements, including trading volume. **(Pevzner et al, 2015)** and alternative samples, including excluding small or illiquid stocks and omitting earnings announcement days. Moreover, the predictive power of MAVD on future returns diminishes as the holding month of the portfolio moves further away from the month of portfolio formation, and becomes insignificant after six months and even reverses at the end of the second year. This predictability pattern over time suggests that the stock market overreacts to information from the MAVD and the resulting mispricing is gradually corrected. In addition, evidence suggests that the MAVD provides significant additional predictive information about future returns beyond that contained in the distance between the short-term and long-term moving averages of past prices (MADV). Volume has a negative influence on price discovery related to stock price developments and transaction practices at the time of stock price character, where there are several types of stocks that have high transaction volume, but these stocks are defensive stocks, so the high transaction volume does not have a significant effect during the volume of such transactions occurs in a limited price range.

3. There is a significant positive effect between the frequency of stock trading on price discovery in the main board banking sector companies listed on the IDX. The research of **(Ammar & Hellara, 2021)** examined the intraday interaction between high-frequency trading (HFT) and the quality of price information to provide evidence on the role of HFT in the price discovery process. HFT and price efficiency feature an inverted L-shaped pattern with a low on the open and a strong increase throughout the trading day. Using the panel vector automatic regression model, we found a bidirectional causality between HFT and efficiency

Managerial Implications

From the results of the research that has been carried out, some empirical evidence is obtained based on the research findings and some managerial implications can be recommended in accordance with the priorities that can be given as inputs that are expected to be useful for the management of banking sector companies on the IDX in accordance with the results of research based on the conclusions. the following implications can be given:

1. Based on the results of the study, it is proven that volatility has a significant negative effect on price discovery, it is expected that the management of the main board banking sector companies listed on the IDX will monitor price volatility more periodically on the volatility performance of the banking sector, where there are banking stocks that have high volatility performance. higher and lower so as to find the ideal price for the performance of banking issuers on the main board on the Indonesia Stock Exchange.

2. Based on the results of the study, it is proven that stock trading volume has a significant negative effect on price discovery, it is expected that the management of the main board banking sector companies listed on the IDX will further increase the volume of stock trading by monitoring the trading volume of stock prices periodically so that they can find ideal price.

3. Based on the results of the study, it is proven that the frequency of stock trading has a significant positive effect on price discovery, for that it is expected that the management of the main board banking sector companies listed on the IDX will further increase the frequency of stock trading by monitoring the frequency of stock trading periodically so that they can find ideal price.

4. Based on the results of the study, it is proven that momentum has a significant positive effect on price discovery, therefore it is hoped that the management of the main board banking sector companies listed on the IDX will pay more attention to the momentum that occurs by monitoring the momentum periodically so that they can find the ideal price.

5. Based on the results of the study, it is proven that foreign net buying has no effect on price discovery, for that it is expected that the management of the main board banking sector companies listed on the IDX will pay more attention to foreign net buying even though it has an insignificant effect.

SUGGESTION

Based on the research findings, it can be suggested several things that may be useful for the company in terms of the factors that affect price discovery as follows:

1. Volatility has been proven to have a significant negative effect on price discovery in the main board banking sector companies listed on the IDX. For this reason, it is recommended that the main board banking sector companies can maintain volatility because high and low volatility can affect price discovery. Volatility is proven to have a significant negative effect on price discovery in the main board financial sector companies listed on the IDX. For this reason, it is recommended to conduct research when the performance of the banking sector is in the condition of the LQ45 composite index and examine the high and low volatility that can affect price discovery.

2. Stock trading volume proved to have a significant negative effect on price discovery in the main board banking sector companies listed on the IDX. For this reason, it is

recommended that the main board banking sector companies can maintain stock trading volume because the high and low stock trading volume can affect price discovery Stock trading volume has been proven to have a significant negative effect on price discovery in main board financial sector companies listed on the IDX. For this reason, it is recommended to conduct research when Block trading occurs and examine the condition of stock trading volumes to be able to influence price discovery.

3. The frequency of stock trading is proven to have a significant positive effect on price discovery in the main board banking sector companies listed on the IDX. For this reason, it is recommended that the main board banking sector companies can maintain the frequency of stock trading because the high and low frequency of stock trading can affect price discovery. The frequency of stock trading proved to have a significant positive effect on price discovery in the main board financial sector companies listed on the IDX. For this reason, it is recommended to conduct research at the time of the post-Initial Public Offering because the high and low frequency of stock trading can affect price discovery.

4. Momentum is proven to have a significant positive effect on price discovery in the main board banking sector companies listed on the IDX. For this reason, it is recommended that the main board banking sector companies pay more attention to momentum because the high and low momentum can affect price discovery. Momentum is proven to have an impact

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