

IMPACT OF ANONYMITY BROKER ID ON MARKET QUALITY: EVIDENCE FROM INDONESIA STOCK EXCHANGE

Farah Permanasari, Buddi Wibowo

Fakultas Ekonomi dan Bisnis, Universitas Indonesia, Indonesia

E-mail: farah.permanasari@gmail.com

Abstract

This study aims to determine the effect of the implementation of Anonymity Broker ID on the quality of the stock market on the Indonesia Stock Exchange (IDX). The application of Anonymity Broker ID is measured by dummy indicators over the period before and after Anonymity Broker ID. Market quality measurement consists of high low volatility of stocks, bid-ask-spread, total depth Value and volume. Hypothesis Testing was carried out using Fixed Effect Ordinary least squares (OLS) and Fixed Effect Two-Stage Least Square (2SLS) regression models and using a sample of all stocks that were actively transacting during the period 04 December 2020 to 06 December 2022. The results provide empirical evidence that Anonymity Broker ID has a positive effect on the volatility and Total depth Value of the 330 most active stocks, negatively effects on Bid Ask Spread and Volume. It can generally be concluded that Anonymity Broker ID can effectively dampen excessive market reaction during enactment.

Keywords: Anonimity Broker ID, Transparency Broker ID, Volatility High low, Bid-Ask-Spread, Total depth Value, Trading Volume.

Introduction

The Indonesia Stock Exchange (IDX) effectively enforced Anonymity Broker ID on December 6, 2021, following a series of tests conducted by Broker to ensure that the Broker Back Office system can accommodate Anonymity Broker ID. The Exchange's policy on enforcing Anonymity Broker ID on the transaction system aims to create fairness in the formation of closing prices, minimize sharp price movements and price adjustments at closing, increase transparency of price formation, and boost transactions during pre-closing, in recognition of IDX's efforts to safeguard investors. Although trade transparency can be one of the parameters of a healthy financial market because it simplifies the price formation process, encourages investors to trust the market and participate, ensures the best execution, supports the development of fair trade, and enables market participants to make more informed investment decisions (Schiona, 2016), pre-trade or post-trade transparency cannot be eliminated entirely and

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must be calibrated appropriately (Schiona, 2016). The IDX implemented Anonymity Broker ID pre-trade and post-trade on December 6, 2021. This implementation is consistent with other exchanges' implementations, particularly in Europe and Asia. This implementation is not governed by any specific regulations and merely removes data from the computerized trading system, namely the Jakarta Automated Trading System (JATS). According to JCI data for the years 2019 to 2022, when Anonymity Broker ID goes into effect in 2022, it is expected that there will be negative investor sentiment in the short term and hysteria in the behavior of investors and the stock market as a result. This indicates the potential for short-term investor opposition to the implementation of Anonymity Broker ID.

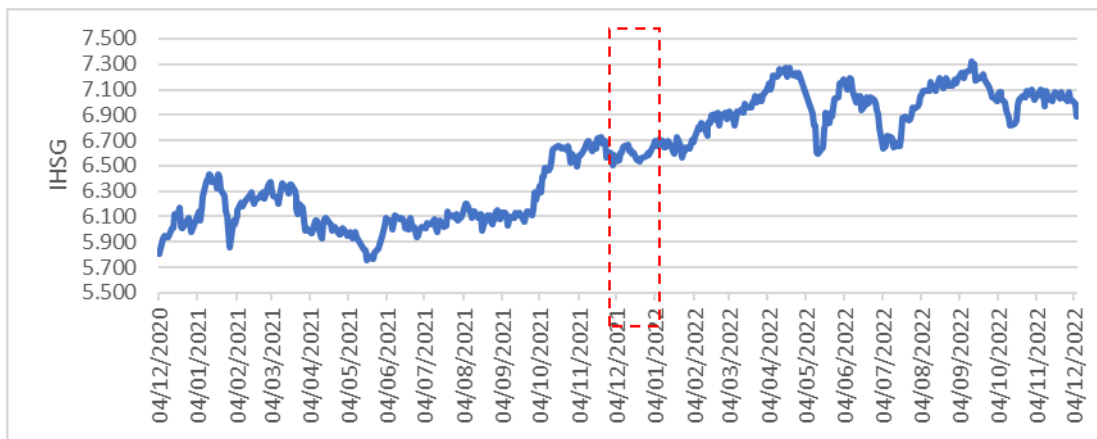


Figure 1. Indonesia JCI movement in 2020 s.d. 2022

Source: www.finance.yahoo.com, processed

Based on data on Transaction Value and Frequency for the period 2019 to.d., various results are obtained. In 2022, it will be known that at the effective implementation of Anonymity Broker ID on December 6, 2021, there was an increase in transaction value and frequency, allowing for the possibility of long-term investor optimism and investor support for the implementation of Anonymity Broker ID.

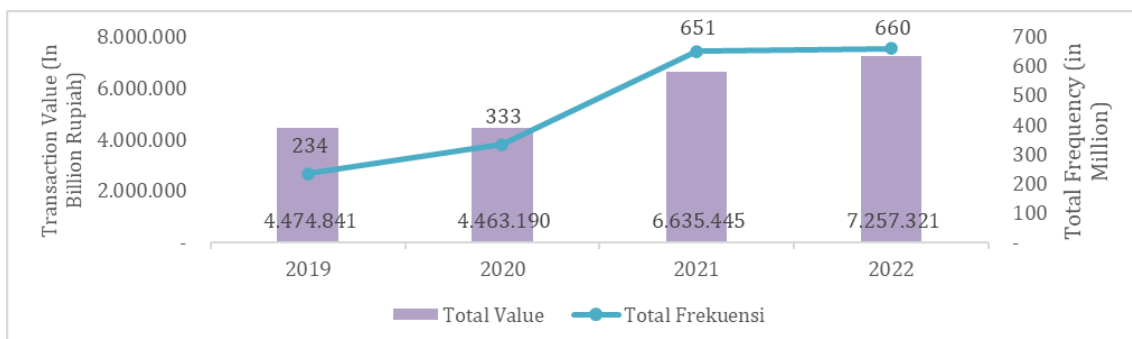


Figure 2: Variation in Transaction Value and Frequency from 2019 to 2022

Source: Bloomberg, processed

Several researchers, including Comerton-Forde, Frino, and Mollica (2005), have studied the effect of Anonymity Broker ID on market quality on other exchanges. They examined the effect of limit order anonymity on transaction liquidity in Paris, Tokyo, and Korea. Since 2001, Euronext Paris Bourse has implemented Anonymity Broker ID, which can reduce the bid-ask spread relatively and effectively. The bid-ask spread was also reduced at the Tokyo Stock Exchange, which had discontinued the Broker ID in 2003. It was unlike the Korea Stock Exchange, which had implemented (displayed) Broker ID transparency since 1995, resulting in decreased liquidity. Pham (2013) conducted a study on the effect of Broker ID transparency and prices on transactions on the Korean Exchange, which revealed more rapid price fluctuations. Based on IDX monitoring, there was no decrease in volume and frequency of transactions from the beginning of implementing the closing of the broker code until one week after the implementation. In fact, volume and frequency increased compared to the previous average. Given these circumstances, the authors conducted research on *Impact Of Anonymity Broker Id On Market Quality: Evidence From Indonesia Stock Exchange*. The researcher intends to replicate the work of Comerton-Forde, Frino, and Mollica (2005) for his study of the Paris Stock Exchange (Euronext Paris), the Japan Exchange Group (JSX), and the Korea Stock Exchange (KOSX). The originality of this study originates from the fact that no previous study has examined the impact of Anonymity Broker ID post trade on the Indonesia Stock Exchange.

To reduce the volatility of stock price fluctuations, maintain trading liquidity, and preserve the integrity of the stock market, it is necessary to anonym Broker ID. Based on research conducted in other countries, it can be concluded that the impact of anonymity Broker ID on post trades on other exchanges, particularly European and Asian exchanges, can reduce transaction execution costs, increase liquidity, reduce front running arrests, information leaks, and piggybacking, and tighten the bid-ask spread and increase the depth of quotes. However, the disadvantages of this processing include the dearth of information required by customers to conduct market analysis, trading strategies, and/or algorithmic trading, to attract more customers to the Capital Market, and to reduce market efficiency.

This study will investigate how the Indonesia Stock Exchange's Market Quality is impacted by the implementation of anonymity Broker ID. By measuring volatility, spread, depth, and volume, the impact of anonymity Broker ID on market quality is determined. Consequently, the formulation of this study's problem is whether the implementation of anonymity Broker ID policy has an impact on the market quality of the Indonesia Stock Exchange as measured by market volatility and liquidity indicators (spread, depth, and volume).

Motivation of this study was to determine the impact or influence of anonymity Broker ID on the quality of the Indonesian stock market which was assessed based on 4 factors, namely volatility, spread, depth and volume through a sample of shares that are actively traded.

Research Methodology

This investigation is evaluated using non-parametric analysis. Utilized the Paired T-Test, Wilcoxon Signed Rank Test, and Mann-Whitney U Test to demonstrate the existence of differences in the following research variables: high low volatility, quoted spread, total depth value, and volume for 330 companies prior to and after Anonymity Broker ID. In addition, panel data regression was used to test hypotheses regarding the effect of applying Anonymity Broker ID, specifically the dummy independent variables for the period before and after applying the Anonymity Broker ID on market quality in 330 stocks. If the Gauss-Markov Theorem is satisfied, including non-autocorrelation, a decent panel data regression will yield an estimation result, namely Best Linear Unbiased Estimation ("BLUE"). This study employs control variables, specifically transaction frequency, time trend, and market capitalization. All of these variables are employed to forecast the quality level of the Indonesian Stock Exchange's stock market, particularly for 330 stocks.

The phases of this investigation are as follows:

1. Request Indonesia Stock Exchange information obtained from Bloomberg and JATS
2. Descriptive statistics based on General statistics of the data and the Wilcoxon Rank (Mann Whitney) test for two samples
3. examine the classical hypotheses using the Correlation Test, the Unit Root Test, the Shapiro-Wilk normality test, and the Wald test
4. Examine the Determination of the Estimation Method utilizing the F-Test, Hausman Test, and Breusch-Pagan Lagrangian Multiplier test Regression analysis of a fixed effect model for panel data using Ordinary Least Squares (OLS)
5. Testing Heteroskedasticity Using the Modified Wald Test
6. Regression Analysis of Panel Data Using the Two-Stage Least Square Model (2SLS) and
7. Model Interpretation.

The following are operational variables used in this study

Price Volatility

$$Vol_{it} = \alpha_{it} + \beta_1 Num_Trade_{it} + \beta_2 Trend_{i,t} + \gamma TotalDepthVal_{it} + \beta Dummy_{it} + \epsilon_{it}$$

(1) where

Vol_{it}	measurement of volatility, high low volatility for each stock i on day t
Num_Trade_{it}	Transaction frequency for each share i on day t
$Trend_{it}$	Time trend uses the number 1 and increases by 1 for each day of the time period under study
$TotalDepthVal_{it}$	daily average of the total depth in Rupiah
$Dummy_{it}$	a value of 0 for the period before the anonymity Broker ID and 1 for the period before anonymity Broker ID

Quoted Spread

$$Spd_{it} = \alpha_{it} + \beta_1 Vol_{it} + \beta_2 Vola_{i,t} + \beta_3 Trend_{it} + \gamma TotalDepthVal_{it} + \beta Dummy_{it} + \varepsilon_{it} \quad (2)$$

where

Spd_{it}	Measurement of the quoted spread for each stock i on day t
Vol_{it}	Transaction volume for each share i on day t
$Vola_{it}$	measurement of volatility, high low volatility for each stock i on day t
$Trend_{it}$	Time trend uses the number 1 and increases by 1 for each day of the time period under study
$TotalDepthVal_{it}$	daily average of the total depth in Rupiah
$Dummy_{it}$	a value of 0 for the period before the anonymity Broker ID and 1 for the period before anonymity Broker ID

Depth

$$DepthVal_{it} = \alpha_{it} + \beta_1 LogVol_{it} + \beta_2 Vola_{i,t} + \beta_3 Trend_{it} + \beta Dummy_{it} + \varepsilon_{it} \quad (3)$$

where

$LogVol$	Transaction volume for each stock i on day t is logged
$Vola_{it}$	measurement of volatility, high low volatility for each stock i on day t
$Trend_{it}$	Time trend uses the number 1 and increases by 1 for each day of the time period under study
$Dummy_{it}$	a value of 0 for the period before the anonymity Broker ID and 1 for the period before anonymity Broker ID

Volume

$$Vol_{it} = \alpha_{it} + \beta_1 Vol_{it-1} + \beta_2 Spd_{i,t} + \beta_3 Vola_{it} + \beta_4 MCap_{it} + \beta_5 Trend_{it} + \gamma TotalDepthVal_{it} + \beta Dummy_{it} + \varepsilon_{it} \quad (4)$$

where

Vol_{it}	Transaction volume for each share i on day t
Vol_{it-1}	Transaction volume for each share i on day t position 1 day before
Spd_{it}	Measurement of the quoted spread for each stock i on day t
$Vola_{it}$	measurement of volatility, high low volatility for each stock i on day t
$MCap$	Market Capitalization for each share i on day t
$Trend_{it}$	Time trend uses the number 1 and increases by 1 for each day of the time period under study
$TotalDepthVal_{it}$	daily average of the total depth in Rupiah
$Dummy_{it}$	a value of 0 for the period before the anonymity Broker ID and 1 for the period before anonymity Broker ID

Discussion

High Low Volatility

The significance value for the volatility hypothesis test on the 330 most active stocks using the Wilcoxon Signed-Rank Test is greater than 0.05, indicating that there is a significant difference between the volatility of stock returns before and after the implementation of Anonymity Broker ID. In the meantime, a Mann-Whitney U test was conducted to compare the market quality of the 330 most active stocks before

and after the implementation of the Anonymity Broker ID. The results indicated that the significance value of stock return volatility was less than 0.05, so it was possible to conclude that the return volatility of the 330 most active stocks was significantly distinct. The volatility of high and low stocks peaked prior to the implementation of Anonymity Broker ID and from December 2020 to February 2021, when the market was bearish due, in part, to the issue of an invasion of war between Ukraine and Russia. In the meantime, Anonymity Broker ID event in May 2022, which was accompanied by the largest decline in the JCI, did not cause a sufficiently high volatility movement, as there were multiple events, such as the policy of the United States central bank, which raised its benchmark interest rate, and US inflation data, which remained elevated, thereby creating a potential increase in volatility. Post-homecoming issues in anticipation of a possible increase in COVID-19 and rising PPKM levels, as well as plans to enforce the closure of foreign local investors' domiciles beginning in June 2022, keep the Fed's interest rate in place.

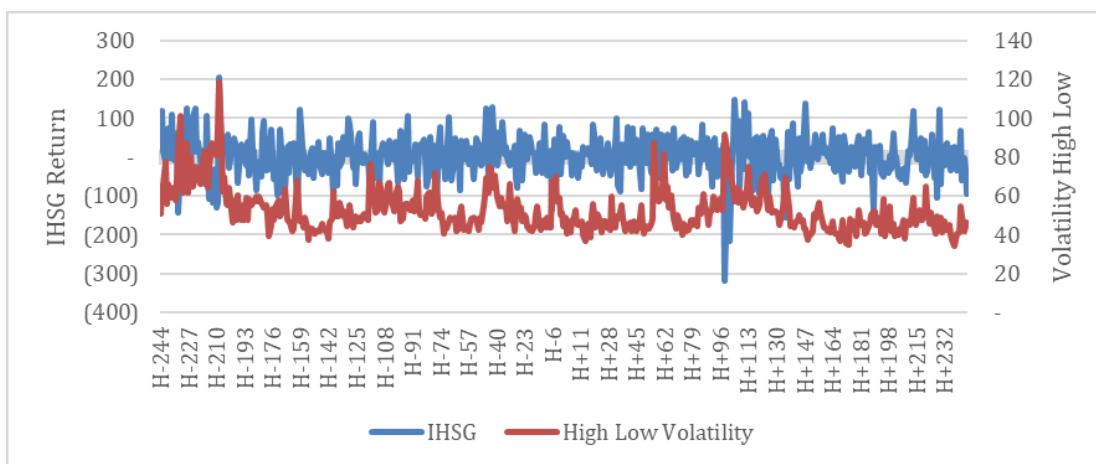


Figure 3. Volatility High Low 330 Most Active Stocks vs. JCI Movement Over Two Years

Source: Bloomberg, processed

With a sample of 330 of the most active stocks, volatility can explain each dependent variable in Model 1 to the extent of 79.96%, while the difference is explained by variables other than the independent variables used in this study. Based on the estimation results of OLS and 2 SLS Fixed Effects, the relationship between trading frequency and volatility is demonstrated to be more robust than previously believed. By implementing endogenous corrections in Model 1 and emphasizing the negative effect of the time trend variable on volatility with a significance level of 5% and 0.1% for the 330 most active stocks, a significant positive relationship is found between the logarithm of volatility and the logarithm of depth at the Anonymity Broker ID. This contradicts the findings of Pham (2013). In addition, volatility is substantially positively associated with the Anonymity Broker ID, as measured by the volatility dummy coefficient with low frequency data, which is 0.087249. This value

suggests that events are positively impacted by rapid market price fluctuations (based on a depth value of 0.9814991) and increased transaction frequency, as indicated by a positive value of 0.3485324.

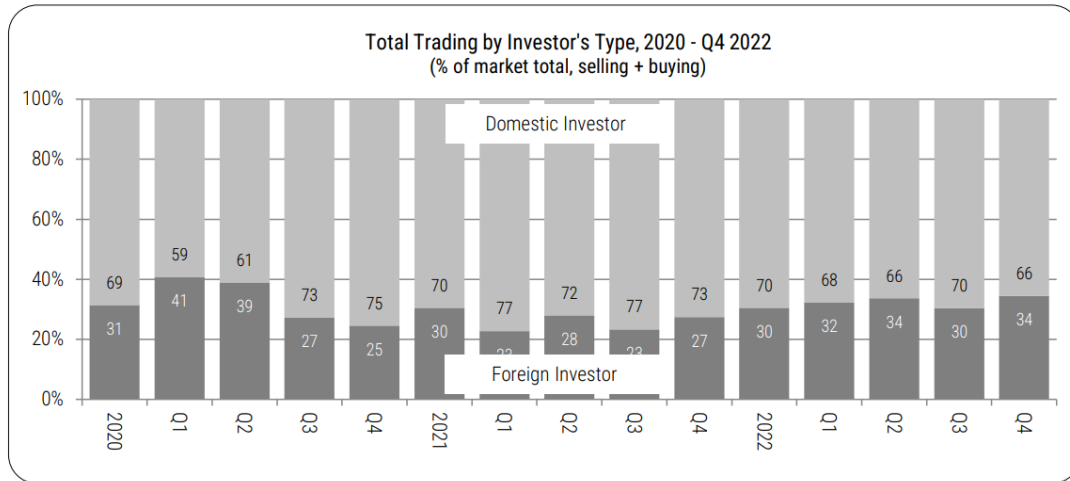


Figure 4. Total Percentage of Transactions Differentiated by Type of Investor During the 2020 to 2020 Period 2022
Source: Bloomberg, processed

During the implementation of Anonymity Broker ID (2022), the total percentage value of domestic investor transactions tends to decrease, indicating that domestic investor transactions are based on analysis and are unaffected by Broker ID making transactions or indicating whether the Broker ID is a foreign or domestic Broker. To corroborate the results of the preceding non-parametric differential test, the researchers also conducted a panel data regression hypothesis test to determine the impact of Anonymity Broker ID on market quality and stock return volatility for the 330 most active stocks. In this study, independent dummy variables are employed for the time periods preceding and following the implementation of the Anonymity Broker ID, transaction frequency, time trend or time period, and total depth value. As described previously, the coefficients of the regression equation for the effect of Anonymity Broker ID on the volatility of high and low stocks for a sample of 330 active stocks are obtained. Based on empirical evidence obtained from the regression equation using the OLS Fixed Effect and 2SLS Fixed Effect methods, the Dummy coefficient for the 330 most active stocks is significantly positive at 0.0891803 and 0.0872495 at a significance level of 1%. This indicates that the greater the volatility of high and low stocks after the application of the Anonymity Broker ID, the closer the number 1 is. The conclusion is therefore that Ha1 is acceptable. Application of Anonymity Broker ID influences the volatility of stock return volatility. This result is consistent with the findings of Pham's (2013) study, which demonstrated that altering the Anonymity Broker ID by a sufficiently large amount had a significant positive impact on volatility. In addition, the effects of Depth, Transaction Frequency, and

Time Trend were examined. The estimation results from the 2SLS Fixed Effect regression model indicate that Depth and Transaction Frequency are positively significant at a significance level of 1%, indicating that Depth and Transaction Frequency have a positive influence on stock return volatility. This indicates that when the Depth and Transaction Frequency increase or become greater, high and low stock volatility will also increase. The Anonymity Broker ID has a significant negative impact on Time Trend at a significance level of 1%, indicating that Time Trend has a negative effect of 0.0008933 on the high and low volatility of stocks.

Bid Ask Spread

There is a significant difference between the bid-ask spread of the 330 most active stocks before and after the Anonymity Broker ID, as determined by the different bid-ask spread test and the volatility of high-low stocks. The Wilcoxon Signed-Rank Test yields a significance value of 0.06673 or greater than 0.05. The researcher attempts to re-analyze the effect of applying the Anonymity Broker ID to the bid-ask spread of the 330 most active stocks one year before and after the implementation of asymmetric auto rejection. Using the Wilcoxon Signed-Rank Test method, the results of the hypothesis test indicate a significance value of 0.05, which is 0.06673, so that H_0 can be rejected, demonstrating that there is a significant difference in the bid-ask spread of the 330 most active stocks for 1 year prior to and after the entry into force of Anonymity Broker ID.

To support the proof of the non-parametric test, the researcher examined the effect Anonymity Broker ID on the bid-ask spread of the 330 most active stocks using the panel data regression hypothesis. The estimation results from the regression model yielded the regression equation coefficients for the effect of applying the Anonymity Broker ID to the bid-ask spread for the research sample of 330 most active stocks. In the OLS Fixed Effect regression model, there is a significant coefficient of the dummy variable with a positive relationship of 0.0776675 before and after Anonymity Broker ID. When applied to the 2SLS Fixed Effect regression model of negative -0.2379917, the inverse relationship is observed. Therefore, it can be concluded that the application of Anonymity Broker ID influences the bid-ask spread of the 330 most active stocks, and therefore H_{a2} is accepted. Application of Anonymity Broker ID influences the stock spread. Based on empirical evidence obtained from the regression equations OLS Fixed Effect and 2 SLS Fixed Effect for Model 2 over Spread, it has been determined that:

- a. consistent with previous research, Pham (2013) found that spread is negatively related to volume in the 2SLS model of 3.633601 (the same is shown in the OLS model of negative 0.0637999);
- b. the relationship between spread and volume in the OLS model is also negative.
- c. The results of the Regression calculation also corroborate the negative relationship between the dependent variable Spread and High Low Volatility, whereas the 2SLS model indicates an insignificant negative relationship of

0.0077025. Spread and Volatility have a positive correlation of 0.2833932, which reveals distinct phenomena.

- d. While the relationship between Spread and Total Depth Value in the 2SLS model demonstrates a positive correlation of 5.835014, the OLS model also demonstrates a positive correlation of .429119 for Depth.
- e. In the OLS model, there is no significant coefficient for the Trend variable, despite its negative relationship with the spread; however, the correlation value of 0.0003495 is minor.

Market Depth

Depth Value is the next variable that demonstrates a significant change before and after the administration of the Anonymity Broker ID. The results of the Total Depth Value different test demonstrate that the application of Anonymity Broker ID affects the Total Depth Value of the 330 most actively traded stocks. This is demonstrated by the significance value of 1,889 for the Wilcoxon Signed-Rank Test. Because the significance values of the shares are 5% and 10%, it follows that H_0 is accepted at the 5% level and rejected at the 10% level, so it can be concluded that there is a significant difference between the Total Depth Values of the 330 most active stocks. In the OLS Fixed Effect regression model, there is a significant coefficient of the dummy variable with a negative relationship of 0.0203902 before and after Anonymity Broker ID. When applied to the 2SLS Fixed Effect regression model of 0.7855, the opposite relationship occurs. Consequently, H_a3 was approved for the 330 most active shares. H_a3 : The Total Depth Value of shares is affected by the application of Anonymity Broker ID. The outcomes of the regression analysis of Total Depth Value on the explanatory variables volume, volatility, and time trend for changes in Anonymity Broker ID. After controlling for changes in volume, volatility, and time trend, the regression analysis results can be used to determine the effect of changes in Anonymity Broker ID post-trade. Contrary to O'Hara (1995) and Bortoli et al. (2006), there is a negative and statistically significant relationship between Total Depth Value in rupiah and trading volume, with an OLS Fixed Effect regression coefficient of -0.0385094 and a 2SLS Fixed Effect regression coefficient of -0.1351643. There is also a positive and statistically significant relationship between total Depth in rupiah and volatility, with a positive OLS Fixed Effect regression coefficient of 0.2701725 and a positive 2SLS Fixed Effect regression coefficient of 0.8331096. As shown by the substantially positive time trend coefficients for both OLS and 2SLS regressions, the measured depth exhibits an upward trend over time. Changes in policy at the Indonesia Stock Exchange have a positive effect on Market Depth as specified by OLS, which is significant for Total Depth. Concurrently with the Anonymity Broker ID, the Indonesia Stock Exchange implemented new arrangements for the pre-opening and pre-closing systems, including the addition of the Indicative Equilibrium Price (IEP), Indicative Equilibrium Volume (IEV), and random closing features, as well as the addition of

the market order feature and extension of trading time in the negotiated market, which included the application of random closing. Consequently, any changes to the estimated profundity are also influenced by this event.

Volume

Transaction Volume is the final variable that has been shown to have significant differences before and after the implementation of the Anonymity Broker ID. The outcomes of the various volume experiments demonstrate that the application of Anonymity Broker ID affects the transaction volume of the 330 most active shares. The Wilcoxon Signed-Rank Test significance value of 7,434 with a significance value of 5% indicates that the null hypothesis (H0) is rejected at the 5% level, so it can be concluded that there is a significant difference in Transaction Volume among the 330 most active stocks. In the OLS Fixed Effect regression model, there is a significant coefficient of the dummy variable with a negative relationship of 0.0766896 before and after Anonymity Broker ID. In the 2SLS Fixed Effect method, a negative relationship with an extremely small value of 0.0000000000000000347 also exists.

In conclusion, Ha4 was approved for the 330 most active shares. Ha4: The application of Anonymity Broker ID impacts the volume of share transactions.

The empirical evidence on the volume of the IDX stock market indicates the following:

- a. there is a positive relationship between Volume and the volume of the previous trading day, with an OLS estimate of 0.5583178 and a 2SLS estimate of 1. This demonstrates the interrelationship between transaction volume and the volume of the previous trading day.
- b. There is a positive relationship between volume and volatility with an OLS estimate of 0.790774 and a 2SLS estimate of 0.0000000000000000688. An increase in transaction volume corresponds to an increase in high low volatility, despite the existence of several anomalous periods.

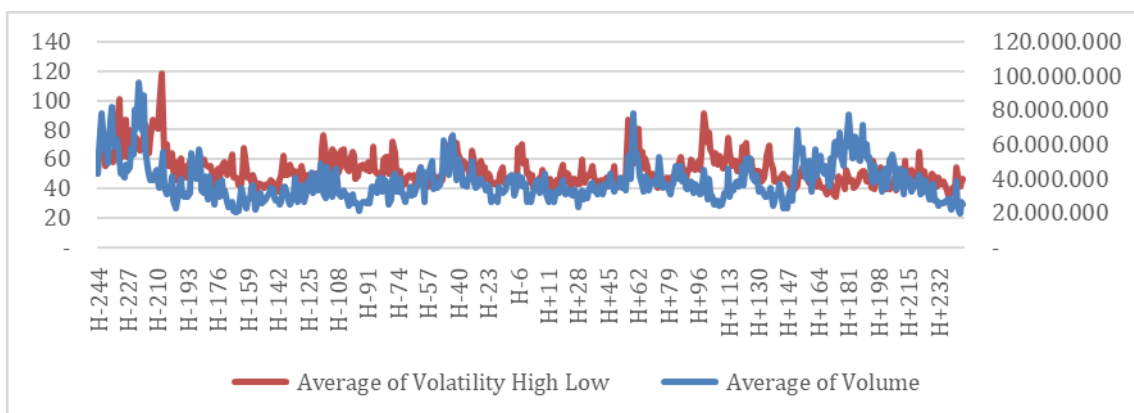


Figure 5. Graph of the relationship between Volume and High Low Volatility
Source: Bloomberg, processed

According to the OLS estimate, there is a positive relationship between volume and market capitalization of 0.545495. Analysing the relationship between transaction volume and market capital, reveals that the criteria for large Market Capitalization are stocks with Market Capitalization greater than the average Market Capitalization value per day, and vice versa for small Market Capitalization. The average number of issuers meeting the criteria for large market capitalization is 54 per day, while the average number of issuers meeting the criteria for minor market capitalization is 276 per day. So that it can be determined that the volume of transactions in small Market Capitalization is typically more volatile than in large Market Capitalization. With an OLS estimate of 0.0004672, there is a positive relationship between volume and time trend, indicating that volume tends to increase alongside the effective period of the Anonymity Broker ID. In the OLS estimate, the relationship between volume and spread and depth is negative, with a value of 0.0967888 and a depth of 1.016325, but in the 2SLS estimate, the relationship is positive, with a Spread value of 0.0000000000000000694 and a depth value of 0.000000000000000111. According to the 2SLS regression estimation, the total depth value and spread will also increase as volume increases. These results were also consistent with the 8.7% increase in the 20 highest Broker transactions and the 13.1% increase for all of Broker.

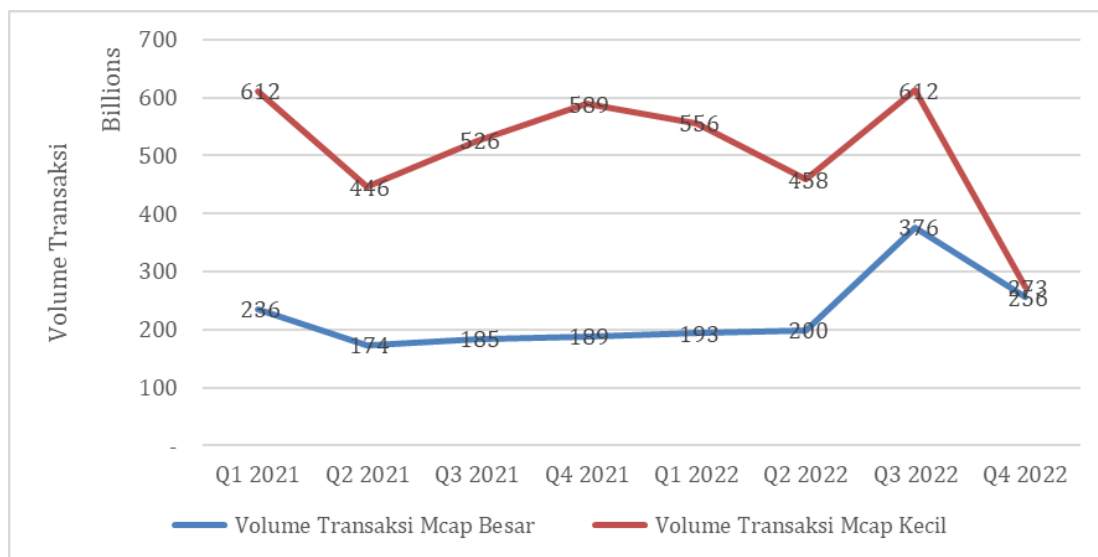


Figure 6. Graph of the relationship between Volume and Market Capitalization
Source: Bloomberg, processed

Conclusion

This study examines the impact of anonymity broker ID on stock market quality for the 330 most actively traded stocks. Four key indicators, namely high-low stock volatility, bid ask spread, total depth, and transaction volume proxies, are analyzed to assess the effects. The results show significant differences in stock volatility before and after the implementation of anonymity broker ID, indicating a positive relationship

between volatility and the logarithm of depth at anonymity broker ID. The bid-ask spread narrows after the implementation of anonymity broker ID. Additionally, the total depth value of shares increases with anonymity broker ID, while the volume of stock transactions decreases. Overall, the implementation of anonymity broker ID has mixed effects on market quality, with smaller spreads and deeper depth indicating improved liquidity, but higher volatility and reduced volume suggesting declining market quality. The study suggests that regulators should consider the effectiveness of anonymity broker ID and its impact on different market capitalization companies. Furthermore, the anonymity broker ID aligns with the concept of information inefficiency in markets, and regulatory measures aim to increase transparency and equal access to information. Technological advancements, including anonymity broker ID, have contributed to narrowing the information gap and enhancing market transparency for investors.

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