

FOREIGN INVESTOR AND MARKET VOLATILITY: EVIDENCE ON INDONESIA STOCK MARKET

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ABSTRACT

Indonesia as the fourth largest country in the world as well as its status as emerging country has attracted many investors, especially foreign investors. Previous studies still debating whether these foreign investors are giving significant effect on Indonesia stock market volatility. Our study found that there is evidence on how foreign investors affecting the stock market. Evidence found suggest that foreign trading activity gives significant effect on Indonesia stock market volatility. Another evidence suggested that as market capitalization increases, trading volume will increase as well. However, our findings found that the percentage of foreign investor ownership does not give any significant effect towards market volatility.

Keywords: Foreign investor, foreign investor ownership, volatility, Indonesia stock market

1. INTRODUCTION

Indonesia as an emerging country has its own appeal that attracts investors, especially foreign investors. However, the volatility in emerging countries is higher than that in developed countries [1]. Market's volatility became a key indicator because it will affect the cost of capital, inhibiting market growth in the long run, and hindering investment opportunity.

Another interesting this is how domestic investors is reacting to the market development. Previous studies show that there is inconsistency to the "random walk" hypothesis that eventually drives the development of "behavioral finance" hypothesis. This new hypothesis triggers new studies on how the market is over-reacting or under-reacting towards news and explaining the "momentum trading" phenomena. These theories that studies on investors behavior also stems from psychological research as well as common sense on everyday trading activities.

Newest study by [2] shows that there is evidence of foreign investor ownership affecting the market movement in Indonesia. Wang stated that that foreign investor purchase of stock had a calming effect on the market and lowers volatility. When foreign investors sold the stock, the market had an increase in volatility. Another study by [3] suggest that in Taiwan stock market, a high concentration of foreign investor ownership in a stock will outperform stocks with low foreign investor ownership. Other that foreign investor ownership, foreign participation in daily trading also affects the volatility in Indonesia and Thailand stock market [4].

Moreover, [3] also found that foreign investor also has advantages in long term information than domestic investors. An even earlier study by [5] found that foreign investor portfolio had better performance than domestic investors. Another research by [6] suggest that foreign investors had similar information resource and tend to move in the same direction. The study

by [7] also found similar results where foreign investors tend to do herding and using positive feedback trading strategy.

These findings become more interesting for further study because in 2020 there has been a market shock when the first Covid-19 case were first identified in Indonesia on March 2nd 2020. The case triggers the investors to become more skeptical of the future of economic growth as a whole and causes the market shock to occur on March 2020 resulting on the price of Composite Index to plummet 38.15% from its Q1 2020 peak. This study hopefully could shed some light to see how investors behave and how those behavior varies one another based on the same information at different timeline. Moreover, this study hopefully yields a result that will help investor to design an alternative strategy by analyzing information.

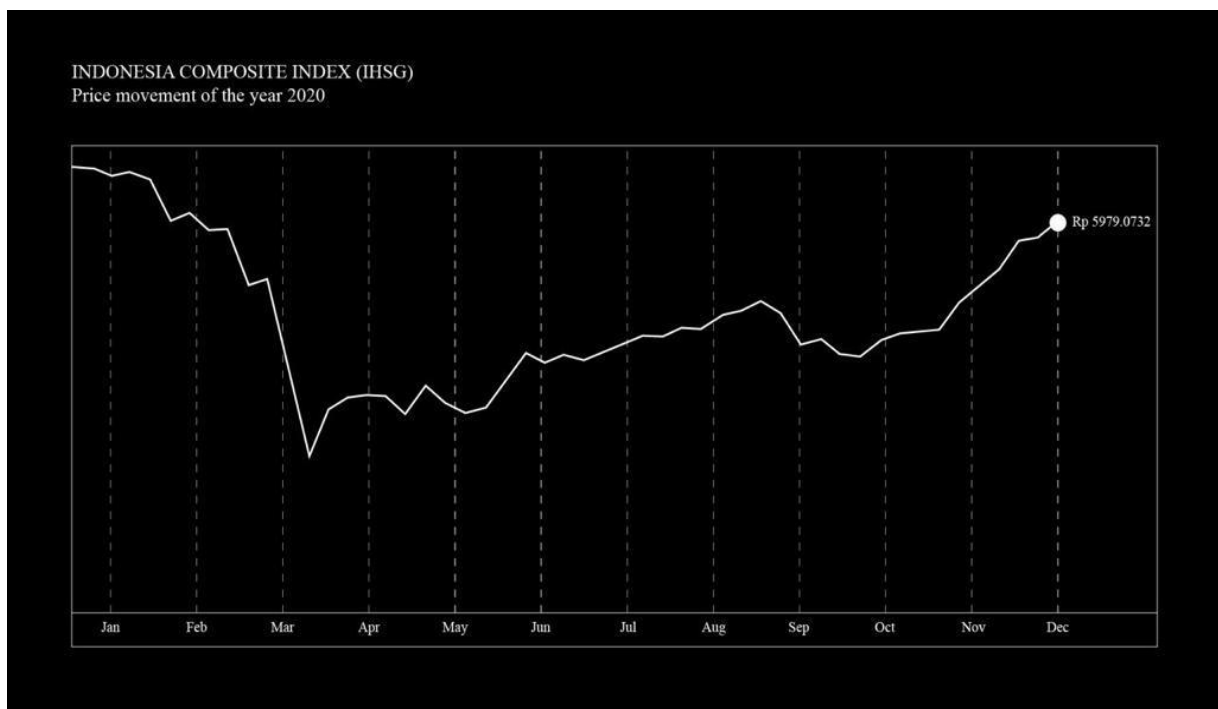


Figure 1 Indonesia Composite Index Candlestick Chart throughout 2020

Related Work

Stock Market Volatility

Market volatility in emerging market found to be more volatile than that of a develop market. Study by [8] found that this volatility was not cause by the fundamental of economy but the study suggest that there might be less insider trading activities in develop market that emerging market. There might be more regulation for equity trading in developed market than in emerging market. Higher volatility also causes the rise of cost of capital [9] that leads to the decline of investors participation [10] that affects the process of investing decision making. Another study [11] found that equity markets in emerging countries are more accessible to foreign investor and has higher investability index than developed countries that resulting in higher return volatility as well.

Foreign Investors

Previous study has not yielded a clearer result whether or not foreign investor has more advantages than domestic investors. [5] uses daily trading activities data and found that foreign investor prefers winning stock more than domestic investors in Finland market. Other study by [12] found that in Indonesia, the condition was not that simple. The study found that even though domestic investor has information advantages, foreign investors were able to choose better winning stocks in the long run than domestic investor. Moreover, it is also found that foreign investors have better strategic information, experiences, and expertise than individual domestic investor. This finding is aligned with [13] findings in Japan where foreign investors prefer to invest in larger companies with high liquidity than the overall market. The results were supported by [14] findings in Latin America where foreign investor's analyst have better capabilities than domestic investors. They also found that foreign investor's analyst was able to provide more accurate and timely analysis than domestic investors. These findings are aligned with [3] findings. They suggest that foreign investors might have a better ability to choose stocks with superior performance than domestic investor in Taiwan stock market.

Foreign Investor Ownership

Foreign investor ownership became an important factor to consider in this study because previous studies still debating the effect of foreign investor ownership. [3] found that in Taiwan stock market companies with higher foreign investor ownership gives higher positive excess returns while companies with lower foreign investor ownership have negative excess returns. There are also possibilities that foreign investor gave positive effect on the companies' management causing the company to yield superior positive performance. Similar findings were found by [15] where in 28 observed countries, foreign investor ownership gave positive impact on corporate governance and company's profitability. Similar findings by [6] found that foreign investors tend to push the company to recover from financial stress.

Foreign Investor Ownership and Volatility

So, are there actually relationship between volatility and foreign investor ownership? Previous studies slowly focusing on the relationship between the two. [6] as well [7] found that in South Korea, foreign investor ownership, especially offshore mutual fund, does not cause market instability. But on the other hand, [17] found that in 31 observed emerging countries there are evidence on stabilizing effect when foreign investor owns at least 5% of the total shares outstanding in a company. This finding is aligned with the current condition in Indonesia where there is a regulation by the Financial Service Authority (OJK) that ownership disclosure is must when a certain investor controls more than 5% of shares outstanding in a company [1].

Similar findings by [4] suggest that in Indonesia, high foreign investor ownership has a stabilizing effect when Asian Financial Crisis occurs throughout 1997 – 1998. Other important finding by Wang is that foreign investor affects the market greatly when they are selling their stock holdings.

Intuitively, the evidence is aligned with the actual market activities where media coverage mostly focused on the movement of foreign investors in Indonesia.

Our Contribution

Through this research, we hope to shed some new lights on how investors behave, especially in Indonesia stock market. Moreover, our research findings hopefully will be able to fill some missing pieces on the previous studies conducted by different researchers.

Paper Structure

The rest of the paper is organized as follows. Section 2 introduces the foundation of hypothesis and the model for this research. Section 3 will elaborate the data used and research methodology. Section 4 will elaborate the results and findings. Finally, Section 5 concludes the paper and presents direction for future research.

2. RESEARCH HYPOTHESIS

From the elaborated previous studies, we present a couple hypothesis to test on this study. First, does foreign investor ownership is affecting the market volatility in Indonesia? Second, does foreign investor ownership has any benefit towards Indonesia stock market?

The model used for this study will be similar with that of (Wang, 2013) model but using data from different timeline.

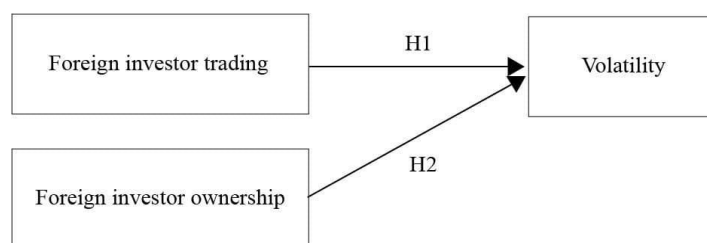


Figure 2 Research Model

3. DATA AND METHODOLOGY

Data

The data observed within this study are those companies that are listed within LQ-45 Index consistently for the period of August 2018 throughout July 2021. The companies that are not consistently present within the timeframe will be excluded from the observation.

This decision was made because as the primary index, LQ-45 represent the majority of Indonesia Stock Exchange universe. Thus, companies that consistently listed in this index possess a strong representation of the majority. Following the filtering requirement above, there are 29 companies that is observed.

The control variable used within this study are daily volatility and average market capitalization at the end of every month. Other variables used are monthly foreign trading activity, monthly foreign investor ownership, daily closing price, and monthly trading volume. These data are taken from Kustodian Sentral Efek Indonesia (KSEI) and Bursa Efek Indonesia (BEI).

Empirical model for this study will be using the same empirical model used by [2] with a slightly different model to calculate the volatility.

Volatility for this study will be calculated by the method presented below:

$$\sigma_{i,t} = \sqrt{\frac{1}{n-1} \sum_{t=1}^n (r_{i,t} - \text{mean}_{i,t})} \quad (3.1)$$

The effect of foreign investor trading activity to market volatility measured using the following model:

$$\ln(\sigma_{i,t}) = \beta_0 + \beta_1 \ln(\sigma_{i,t-1}) + \beta_2 \ln(\sigma_{i,t-2}) + \beta_3 \ln(MCAP_{i,t-1}) + \beta_5 r_{i,t} + \beta_6 r_{i,t-1} + \beta_7 \ln(FT_{i,t}) + \beta_8 FH_{i,t-1} + \varepsilon_{i,t} \quad (3.2)$$

Whereas $\sigma_{i,t}$ is the stock volatility of i -th stock on month t , $MCAP$ is the average market capitalization of i -th stock on month t , $r_{i,t}$ is rate or return of i -th stock on month t , $FT_{i,t}$ is foreign trading activity of i -th stock on month t , and $FH_{i,t}$ is foreign investor ownership percentage on month t .

Methodology

Table 1 List of Variables Used

Variable		Formula	Reference
Volatility	$\sigma_{i,t}$	$\sqrt{\frac{1}{n-1} \sum_{t=1}^n (P_{i,t} - \text{mean}(P)_{i,t})}$	(Naufa et al., 2019)
Market Capitalization	$MCAP_{i,t}$	$P \times \text{Stocks Outstanding}$	Wang, 2013
Rate of Return	$r_{i,t}$	$\frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}$	Wang, 2013
Foreign Ownership Percentage	$FH_{i,t}$	$\frac{\text{Stocks Owned by Foreign Investor}}{\text{Stocks Outstanding}}$	Wang, 2013
Foreign Transaction	$FT_{i,t}$	$\text{Change in Stocks Owned by Foreign Investor}$	Wang, 2013

The method used in this study is relatively like [2] with a few modifications. The difference lies within the calculation of volatility where in this study we are using daily standard

deviation while Wang uses monthly standard deviation as proxy for volatility. Moreover, this study uses transformation to natural logarithm (ln) for foreign trading activity.

Table 1 shows the list of variables used for this study where $P_{i,t}$ is the stock price of i -th stock on month t and $Mean(P)_{i,t}$ is the arithmetic mean of of i -th stock on month t .

Dependent variable for this study is volatility that measured using the formula by [17] as shown on Table 1. The control variable used are based on [2] previous study where there are lag 1 and lag 2 volatility, market capitalization, and return with lag 0 and lag 1. Foreign trading activity will be the observed variable and uses trading volume as proxy. According to [2] foreign trading activity has positive effect on future volatility. Another observed variable is foreign ownership percentage as used on [2] study and defined on Table 1.

The statistical test for this study will be using panel data with the duration of 36 month and 8 independent variables. The test will be done simultaneously and partial using F-test and t-test. The test the proceed to classical assumption test for regression model which includes, multicollinearity test, heteroscedastic test, and autocorrelation test.

4. RESULTS AND FINDINGS

Table 2 Simultaneous-Test Result

Source	DF	Adj SS	Adj MS	F-Value	P-Value
<i>Model</i>	7	72,632	10,3760	80,61	0,000
$\ln(\sigma_{t-1})$	1	19,720	19,7198	153,20	0,000
$\ln(\sigma_{t-2})$	1	0,835	0,8352	6,49	0,011
$\ln(MCAP_{t-1})$	1	7,933	7,9335	61,64	0,000
$Return_t$	1	0,339	0,3390	2,63	0,105
$Return_{t-1}$	1	3,586	3,5855	27,86	0,000
$\ln(TF)$	1	0,531	0,5305	4,12	0,043
FH_{t-1}	1	0,021	0,0206	0,16	0,689
Error	978	125,885	0,1287		
Total	985	198,517			

In Table 2, we can see that all variable simultaneously has explanatory power on volatility. This result is aligned with previous study by [2] where simultaneously control variables and observed variables has explanatory power on volatility.

Table 3 Partial-Test Result

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0,636	0,318	2,00	0,046	
$\ln(\sigma_{t-1})$	0,3939	0,0318	12,38	0,000	1,55
$\ln(\sigma_{t-2})$	0,0826	0,0324	2,55	0,011	1,59
$\ln(MCAP_{t-1})$	-0,0997	0,0127	-7,85	0,000	1,80
$Return_t$	-3,17	1,96	-1,62	0,105	1,05
$Return_{t-1}$	-10,34	1,96	-5,28	0,000	1,05
$\ln(TF)$	0,0244	0,0120	2,03	0,043	1,63
FH_{t-1}	0,0304	0,0761	0,40	0,689	1,26

Moreover, from Table 3 we can see that the VIF values below 10 for every variable that shows the data does not have any multicollinearity issue. The data also proves to be normally distributed as shown on Figure 3 where the histogram shaped relatively similar to bell-shaped curve.

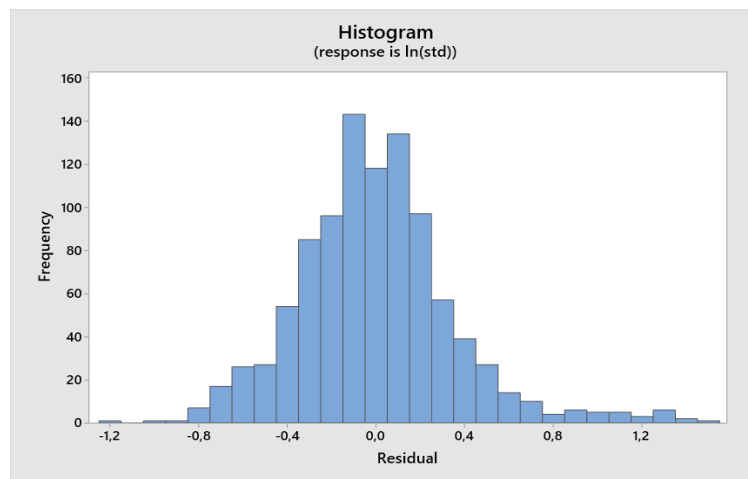


Figure 3 Bell-shaped Curve of Data Histogram

Next the test will observe the relationship between volatility and foreign trading activity. On Table 2, it shows that there are similarities with results from [2] study. Wang stated that volatility has negative correlation with lagged rate of return. On the other hand, foreign trading activity has a significant positive impact. Findings on Table 2 confirms the previous study findings.

However, different result can be found on foreign ownership percentage variable. The result shows that foreign ownership percentage does not give significant effect on volatility. This result yields differently from previous study by [2]). It is possible that the difference in result was caused by the number of selected sample in this study is less than the sample used on [2] study. Wang uses data from the whole Indonesia Stock Exchange listed companies while our study only uses samples from filtered LQ-45 index, which is only roughly 5% of the total sample used by Wang.

On another research by [17], the result showed to have similarities. On 6 observed countries in Southeast Asia as a whole, including Indonesia, foreign ownership percentage does not affect the volatility.

Results on Table 2 also shows how foreign investor tend to choose stock that has a relatively huge market capitalization value. This result is in line with [13] findings that foreign investors prefer stock with higher market capitalization. It is possible that by having higher market capitalization means the stocks tend to be more liquid. Thus, foreign investors can easily rebalance their investment portfolio when needed.

Another finding that can be seen on Table 2 is that when foreign investors adds up their holding position on a stock, there is a possibility that the stock will have a positive return in the future. This evidence is aligned with [3] research where foreign ownership in a large quantity will drive the positive movement of a stock price. Possibly, these findings are caused by the information that foreign investors had is inaccessible to the general public, thus giving them an information advantage as found by [18] when they observed different emerging markets.

Similar to [2] findings, there is evidence that when there is an increase in foreign investor trading activities then the market volatility will increase. However, this finding does not explain whether the volatility was caused by foreign selling or foreign purchase. A further and elaborated research is needed to better understand how foreign trading activity is affecting the movement of stock price within the observed timeframe. Thus, this question might become future research topic.

5. CONCLUSIONS

This study finds similar results as previous study conducted by [2] where the effect of foreign investors to Indonesian stock market is observed. Evidence found that foreign trading activity has some effect on the market volatility. The higher the trading activity is, the higher the volatility. Another evidence found is that trading volume will increase following the increase of market capitalization of a stock. Resulting in more attractive stock for the foreign investors. However, ownership percentage of foreign investors on a stock does not give any significant effect. Presumably, this was caused by the limited data being used as well as the lack of time to conduct the research. Hopefully, future research study can complement the results of this study and shed another new light on how investors behave in Indonesian stock market.

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REFERENCES

- [1] De Santis, G., & Imrohoroglu, S. (1997). Stock returns and volatility in emerging financial markets. *Journal of International Money and Finance*, 16(4), 561–579. [https://doi.org/10.1016/S0261-5606\(97\)00020-X](https://doi.org/10.1016/S0261-5606(97)00020-X)
- [2] Wang, J. (2013). The Impact of Foreign Ownership on Stock Volatility in Indonesia. *Asia-Pacific Journal of Financial Studies*, 42(3), 493–509. <https://doi.org/10.1111/ajfs.12022>
- [3] Huang, R. D., & Shiu, C.-Y. (2009). Local Effects of Foreign Ownership in an Emerging Financial Market: Evidence from Qualified Foreign Institutional Investors in Taiwan. *Financial Management*, 38(3), 567–602.

- [4] Wang, J. (2007). Foreign equity trading and emerging market volatility: Evidence from Indonesia and Thailand. *Journal of Development Economics*, 84(2), 798–811. <https://doi.org/10.1016/j.jdeveco.2006.05.001>
- [5] Grinblatt, M. (2000). The investment behavior and performance of various investor types: A study of Finland's unique data set. *Journal of Financial Economics*, 55(1), 43–67. [https://doi.org/10.1016/S0304-405X\(99\)00044-6](https://doi.org/10.1016/S0304-405X(99)00044-6)
- [6] Choe, H. (1999). Do foreign investors destabilize stock markets? The Korean experience in 1997. *Journal of Financial Economics*, 54(2), 227–264. [https://doi.org/10.1016/S0304-405X\(99\)00037-9](https://doi.org/10.1016/S0304-405X(99)00037-9)
- [7] Kim, W., & Wei, S.-J. (2002). Foreign portfolio investors before and during a crisis. *Journal of International Economics*, 56(1), 77–96. [https://doi.org/10.1016/S0022-1996\(01\)00109-X](https://doi.org/10.1016/S0022-1996(01)00109-X)
- [8] Morck, R., Yeung, B., & Yu, W. (2000). The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics*, 58(1–2), 215–260. [https://doi.org/10.1016/S0304-405X\(00\)00071-4](https://doi.org/10.1016/S0304-405X(00)00071-4)
- [9] Lee, C., David, N., & Swaminathan, B. (2003). *The cross-section of international cost of capital*.
- [10] Allen, F., & Gale, D. (1994). Limited Market Participation and Volatility of Asset Prices. *The American Economic Review*, 84(4), 933–955.
- [11] Bae, K.-H., Chan, K., & Ng, A. (2003). Investibility and Return Volatility in Emerging Equity Markets. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.326481>
- [12] Dvořák, T. (2005). Do Domestic Investors Have an Information Advantage? Evidence from Indonesia. *The Journal of Finance*, 60(2), 817–839. <https://doi.org/10.1111/j.1540-6261.2005.00747.x>
- [13] Kang, J.-K., & Stulz, R. (1997). Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan. *Journal of Financial Economics*, 46(1), 3–28. [https://doi.org/10.1016/S0304-405X\(97\)00023-8](https://doi.org/10.1016/S0304-405X(97)00023-8)
- [14] Bacmann, J.-F., & Bolliger, G. (2003). *Who are the Best? Local Versus Foreign Analysts on the Latin American Stock Markets*. FAME.
- [15] Milton, D. (2006). Piercing the corporate veil, financial responsibility, and the limits of limited liability. *Emory LJ*, 56, 1305.
- [16] Li, D., Nguyen, Q. N., Pham, P. K., & Wei, S. X. (2011). Large Foreign Ownership and Firm-Level Stock Return Volatility in Emerging Markets. *Journal of Financial and Quantitative Analysis*, 46(4), 1127–1155. <https://doi.org/10.1017/S0022109011000202>

- [17] Naufa, A. M., Lantara, I. W. N., & Lau, W.-Y. (2019). The impact of foreign ownership on return volatility, volume, and stock risks: Evidence from ASEAN countries. *Economic Analysis and Policy*, 64, 221–235. <https://doi.org/10.1016/j.eap.2019.09.002>
- [18] Froot, K. A., O’Connell, P. G. J., & Seasholes, M. S. (2001). The portfolio flows of international investors. *Journal of Financial Economics*, 59(2), 151–193. [https://doi.org/10.1016/S0304-405X\(00\)00084-2](https://doi.org/10.1016/S0304-405X(00)00084-2)