



The Causal Relationship between Trading Volume and Return Volatility with Interest Rate and Exchange Rate as Exogenous Variables

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Abstract

This study aims to analyze the causal relationship between trading volume and return volatility along with macroeconomic variables such as interest rates and exchange rate. The endogenous variables in this study are trading volume and return volatility, while the exogenous variables are interest rates and exchange rates. The sample used in this research is property indexes in Indonesia, Malaysia, Philippines, and Thailand who provide monthly data for the four variables during the observation period in January 2012-December 2019. The analysis technique used to test the hypothesis in this study is Vector Autoregression (VAR) technique. The result of this study indicate that trading volume has positive effect on return volatility in property indexes of Indonesia, Philippines, and Thailand, meanwhile trading volume has no effect on return volatility in Malaysia's property index. Return volatility has no effect on trading volume in all the countries whether in Indonesia, Malaysia, the Philippines, or in Thailand. There is a one-way causality relationship between trading volume and return volatility in property indexes of Indonesia, Philippines, and Thailand. There is no causality relationship between trading volume and return volatility in Malaysia's property index.

Hubungan Kausal antara Volume Perdagangan dan Volatilitas Pengembalian dengan Suku Bunga dan Nilai Tukar sebagai Variabel Eksogen

Abstrak

Penelitian ini bertujuan untuk menganalisis hubungan kausal antara volume perdagangan dan volatilitas return beserta variabel makroekonomi seperti suku bunga dan nilai tukar. Variabel endogen dalam penelitian ini adalah volume perdagangan dan volatilitas return, sedangkan variabel eksogen adalah suku bunga dan nilai tukar. Sampel yang digunakan dalam penelitian ini adalah indeks properti di Indonesia, Malaysia, Filipina, dan Thailand yang menyediakan data bulanan untuk keempat variabel selama periode pengamatan Januari 2012-Desember 2019. Teknik analisis yang digunakan untuk menguji hipotesis dalam penelitian ini adalah Vector Teknik Autoregression (VAR). Hasil penelitian ini menunjukkan bahwa volume perdagangan berpengaruh positif terhadap volatilitas return indeks properti Indonesia, Filipina, dan Thailand, sedangkan volume perdagangan tidak berpengaruh terhadap volatilitas return indeks properti Malaysia. Volatilitas return tidak berpengaruh terhadap volume perdagangan di semua negara baik di Indonesia, Malaysia, Filipina, maupun di Thailand. Terdapat hubungan kausalitas satu arah antara volume perdagangan dan volatilitas return pada indeks properti Indonesia, Filipina, dan Thailand. Tidak ada hubungan kausalitas antara volume perdagangan dan volatilitas pengembalian dalam indeks properti Malaysia.

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INTRODUCTION

Due to the rapid growth in recent years, ASEAN markets managed to attract investors from various countries. One of the most popular sector is Property and Real Estate. The property sector attracts many investors because of the rate of population in ASEAN countries is increasing, it affects the constant development in the country. This causes the real estate market in ASEAN and Asia is much more alive than the real estate market in the US and Europe (Ching, 2014).

From a theoretical and practical point of view, trading volume and return volatility are simultaneously determined by the same market dynamics and are closely interrelated. In the previous empirical studies, only a few studies analyzed trading volume and volatility as a whole (Abraham, 2011). Although some research examines the relationship between trading volume and volatility, it still focuses on advanced financial markets. Financial reactions and information flow in developing countries may differ from developed countries, it is possible to have a lead-lag relationship between developed markets and developing markets (Ahmad, 2010). Many previous studies have focused on the non-listed real estate market or the relationship between the real estate market and the stock market. There are no studies that concentrate on the property index. Therefore, to complement the

scarcity of research on this topic, this research will focus on property indexes in ASEAN5 countries.

The majority of capital markets in ASEAN are still developing markets, which in their development are heavily influenced by general macroeconomic conditions (Geetha, 2011). Macroeconomic factors are factors that exist outside the company, but affect the ups and downs of the companys performance directly or indirectly. When macroeconomic factors change, investors will calculate the positive and negative impacts on the companys performance in the future, after which it can decide to sell shares or buy shares (Mbulawa, 2015).

Based on the discussion above, this research was conducted because of the business phenomenon and research gap: there is no research on the causality relationship between trade volume and volatility of return in ASEAN5 countries before, so this research can contribute to the development of science. There are research gap and gap phenomenon on the relationship of trading volume, return volatility, and macro economic variables, such as interest rates and exchange rate, it is concluded that the problem in this study is «there are different results in earlier studies regarding the causality relationship between trading volume and return volatility with interest rate and exchange rate as exogenous variable

Table 1. Research Gap of Previous Studies

No.	Scope of Previous Studies	Authors
1.	There is research on the causal relationship between trading volume and return volatility in developing countries, namely: China, Brazil, Thailand, and Malaysia	Chao & Zhong (2004), Medeiros & Bernadus (2018), Ching & Hsieh, Hong & Min (2019)
2.	There is research on the causal relationship between trading volume and return volatility in developed countries, namely: Singapore, Hong Kong, Japan, Korea, and Taiwan	Ching & Hsieh (2014), Hong & Min (2019)

Research gap: There are no studies that have analyzed the causal relationship between trading volume and return volatility in ASEAN5 countries, namely: Indonesia, Malaysia, Thailand, the Philippines, and Singapore.

Source: Various Journals

Tabel 2. Research Gap of Previous Studies

No.	Research Gap	Results	Authors
1	There are differences in previous studies results between interest rates on trading volume	Interest rates has a positive effect on trading volume	Jonathan (2013)
		Interest rates has a negative effect on trading volume	Utomo (2007), Murni (2010), Yuliana (2014), Hendrayanti (2016)
		Interest rates has no effect on trading volume	Pramaditya (2008), Enggal (2016)
2	There are differences in previous studies results between interest rates on return volatility	Interest rates has a positive effect on return volatility	Dewi (2015), Laksmi (2014)
		Interest rates has a negative effect on return volatility	Gupta (2000), Oseni & Philip (2011)
3	There are differences in previous studies results between exchange rates on trading volume	Exchange rates has a positive effect on trading volume	Bakhromov (2011)
		Exchange rates has a negative effect on trading volume	Merdekawati (2007), Pramaditya (2008), Yuliana (2014),
		Exchange rates has no effect on trading volume	Murni (2010), Jonathan (2013), Hendrayanti (2016), Enggal (2016)
4	There are differences in previous studies results between exchange rates on return volatility	Exchange rates has a positive effect on return volatility	Dewi (2015)
		Exchange rates has a negative effect on return volatility	Oseni & Philip (2011), Zakaria & Shamsuddin (2012)

Source: Various Journals and Thesis

Hypotheses Development

Mixture of Distribution Hypothesis (MDH)

This model implies that volatility is positive-related to trading volume because of its dependence on the level of information arrival. When investors receive new information, trading volume increases sharply and the process of price changes is much faster, while the distribution of prices depends on the flow of information (Bhat, 2015).

According to MDH, trading volume and

volatility are based on the same news arrival and information flow. So, if there is «good news» then the price will increase while if «bad news» comes, the price will decrease. Both of these events are accompanied by trading activity in the market which is above average because it adapts to the new equilibrium. MDH explains that the arrival of information encourages simultaneous changes in volume and volatility to achieve a new equilibrium (Glascock, 2013).

This suggests that an update in the market will be responded by all investors together so that the final equilibrium of volume and volatility will be created.

Multifactor Model

Stephen Ross in Bodie et al., (2006) defines a multifactorial model. He said that there were differences in the company's sensitivity to macro risks which could affect stock returns. If there are 2 essential sources of macroeconomic risk, for example, uncertain business cycle conditions due to non-anticipation of GDP growth, and changes in interest rates. For example, IR is any unwanted decrease in interest rate, which should be good news for stocks (Wang, 2009)

PPP IRP and IFE theory

PPP, IRP, and IFE theories are related to exchange rate determination, but these three theories have different implications. The IRP focuses on why the forward rate differs from the spot rate and how much of a difference it must have at a given point in time. Meanwhile, the focus of PPP and IFE theory is how the spot rate of currency changes from time to time (Gallo & Zhang, 2010). In PPP theory, it is explained that the spot rate changes according to differences in inflation, whereas in the IFE theory says that the spot rate changes according to differences in interest rates. These three theories explain the correlation between inflation, interest rates, and the exchange rate (Sichoongwe, 2016). Various theories of differences in interest rates and inflation explain if the performance in the capital market is also influenced by changes in exchange rates. If the exchange rate is high and uncertain, it will affect the uncertainty of return on investment in the capital market. This situation causes performance in the capital market to decline and has an impact on the uncertainty of the stock market prices in various sectors (Tripathi & Seth, 2014).

Relationship between Trading Volume and Return Volatility

MDH explains that the arrival of information encourages simultaneous changes in volume

and volatility to achieve a new equilibrium. This suggests that information in the market will be responded by all investors together so that the final equilibrium of volume and volatility will be created.

Thus, there is a positive correlation between trading volume and return volatility. Previous studies conducted by Chao & Zhong (2004), Ching & Hsieh (2014), Hong & Min (2019) shows that there is a positive causal relationship between trade volume and return volatility. Based on the arguments and literature review, the following research hypotheses can be proposed:

- H1: Trading volume has a positive effect on return volatility
- H2: Return volatility has a positive effect on trading volume
- H3: There is a causality relationship between trading volume and return volatility

Relationship between Interest Rates and Trading Volume

According to the multifactor model, differences in a company's sensitivity to macro risk can affect stock returns. If macro risks stem from rising interest rates that harm the company, it will cause a decrease in stock returns. Changes in interest rates will affect stock prices in reverse, *ceteris paribus*. This has the meaning that if interest rates increase, it will cause stock prices to decline, *ceteris paribus* (Kennedy, 2016).

The theory of asset demand states that estimated return is positively correlated to total asset demand. When interest rates increase and provide a greater return than investing in the capital market, then investors will prefer to invest their funds in the form of savings or deposits than to the capital market, this will cause the decrease of trading volumes in the capital market (Kutty, 2010).

The results of this study strengthen the research conducted by Utomo (2007) and Murni (2010) shows that there is a negative relationship between interest rates and trading volume. Based on the arguments and literature review described, the following research hypotheses can be proposed:

- H4: Interest rates has a negative effect on trading volume

Relationship between Interest Rates and Return Volatility

Generally, if interest rates rise, the interest rates required for investment in stock will also increase. If interest rates get bigger, then the economy will get sluggish, interest costs will increase, company profits will decline, this will cause investors to sell their shares.

Research conducted by Gupta (2000) and Oseni & Philip (2011) shows that interest rates has a negative effect on return volatility. Based on the arguments and literature review described above, the research hypothesis is:

H5: Interest rates has negative effect on return volatility.

Relationship of Exchange Rate to Trading Volume

If the economy in the future is bad, there is a possibility that the rate of return of shares in circulation will have a comparable decline (Ang, 2010). But if the economy seems to be strong, then stock price reflection will be good as well. Improved stock prices will increase stock returns received by investors. When stock returns show an increase, investors will increase their investment activities in the capital market. The increase in trading activities in the capital market can be interpreted as an increase in trading volume in the market because trading activities can be seen with indicators of trading volume activity (Husnan, 2015).

This is supported by the theory of asset demand which states that the total demand for an asset is positively related to the estimated return relative to alternative assets (Mishkin, 2008). So, the higher exchange rate in a country, indicates that the economy of the country is bad and it is assumed that the rate of return of shares will go down so that it will also reduce the volume of trading on the exchange. Based on the arguments described, the following research hypotheses can be proposed:

H6: Exchange rate has negative effect on trading volume

Relationship of Exchange to Return Volatility

PPP, IRP, and IFE theories explain the relationship between inflation, interest rates,

and exchange rates. Various theories of differences in interest rates and inflation explain if the performance in the capital market is also influenced by changes in exchange rates (Chiang, 2010). If the exchange rate is high and uncertain, it will affect the uncertainty of return on investment in the capital market. This situation causes performance in the capital market to decline and has an impact on the uncertainty of the stock market prices in various sectors (Mlambo, 2013).

A countrys currency exchange rate against world currencies influences the performance and profitability of industries and companies as large importers. For a country that is still dominated by imports, the decline in the value of the domestic currency would have a negative impact, this would also have an impact on the countrys stock market (Lin, 2011). The price of imported products will increase, so if the demand for goods is elastic, the volume of imports will rise, this will cause cash flow to be lower, both profitability and the companys share price in the country (Nkoro & Uko, 2016).

Research conducted by Oseni & Philip (2011) and Zakaria & Shamsuddin (2012) showed that the exchange rate has negative effect on return volatility. Based on the arguments and literature review described above, the research hypothesis is:

H7: Exchange rate has negative effect on return volatility.

From the description and literature review above, the theoretical framework for this research is:

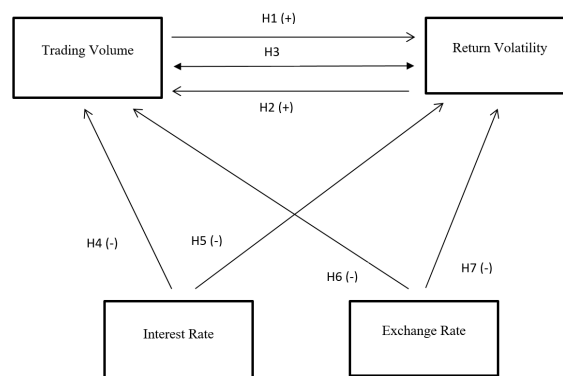


Figure 1. Research Model

METHOD

The population in this study is the property indexes of ASEAN5 countries, which is Jakarta Stock Exchange Construction Property and Real Estate Index for Indonesia, Malaysian Property Index for Malaysia, Philippines Stock Exchange Property Sector Index for Philippines, Thailand Property Fund and REITs Index for Thailand, and Vietnam Property Index for Vietnam. However, the data can only be analyzed in four countries (ASEAN4) because the data for the Vietnam property index is not available in Bloomberg. Meanwhile, the data used in this study are monthly data from January 2012 to December 2019.

This study aims to analyze the causal relationship between trading volume and return volatility and analyze the macroeconomic factors that affect both of these variables. Because the model used is simultaneous, this analysis uses the Vector Auto Regression (VAR) method. Vector autoregression (VAR) is a statistical model used to capture the relationship between multiple quantities as they change over time. VAR is a type of stochastic process model. VAR models generalize the single-variable (univariate) autoregressive model by allowing for multivariate time series. VAR models are often used in economics and the natural sciences.

Table 3. VAR Estimation (Indonesia's Property Index)

	DVOLUME	DVOLATILIT
DVOLUME(-1)	.690164 (.09395) [7.34603]	1.70E-13 (7.7E-14) [2.20673]
DVOLUME(-2)	-.181424 (.09356) [-1.93920]	-1.86E-13 (7.7E-14) [-2.42829]
DVOLATILITAS RETU	1.31E+11 (1.1E+11) [1.17528]	1.058833 (.09130) [11.5972]
DVOLATILITAS RETU	-1.05E+11 (1.1E+11) [-0.95005]	-.182285 (.09078) [-2.00798]
DSUKU BUNGA	-3.52E+11 (1.2E+11) [-2.93332]	.144123 (.09846) [1.46374]
DKURS	1437979. (645778.) [2.22674]	-9.56E-07 (5.3E-07) [-1.80588]
C	1.72E+10 (9.2E+09) [1.87619]	.009625 (.00751) [1.28107]
R-squared	.602909	.911549
Adj. R-squared	.581249	.906725
Sum sq. resids	1.10E+22	.007361
S.E. equation	9.98E+09	.008180
F-statistic	27.83576	188.9384
Log likelihood	-2856.225	399.9000

Akaike AIC	48.94401	-6.716240
Schwarz SC	49.10927	-6.550981
Mean dependent	2.27E+10	.071761
S.D. dependent	1.54E+10	.026784

Vector Autoregression Estimates

Date: 02/06/19 Time: 15:45

Sample (adjusted): 4 120

Included observations: 117 after adjustments

Standard errors in () & t-statistics in []

Table 4. VAR Estimation (Malaysia's Property Index)

	DVOLUME	DVOLATILIT...
DVOLUME(-1)	.485384 (.08816) [5.50562]	-3.64E-13 (8.8E-13) [-.41158]
DVOLATILITAS_RETU...	4.95E+08 (5.2E+09) [.09615]	.890741 (.05166) [17.2414]
DSUKU_BUNGA	-1.05E+10 (2.8E+10) [-.37401]	-.101410 (.28130) [-.36050]
DKURS	-1.35E+08 (2.1E+08) [-.64930]	-.001815 (.00208) [-.87083]
C	1.77E+09 (1.2E+09) [1.45886]	.015393 (.01219) [1.26281]
R-squared	.257354	.815190
Adj. R-squared	.228791	.808082
Sum sq. resids	9.68E+19	.009728
S.E. equation	9.65E+08	.009671
F-statistic	9.009946	114.6848
Log likelihood	-2407.023	353.5005
Akaike AIC	44.25730	-6.394505
Schwarz SC	44.38075	-6.271049
Mean dependent	1.98E+09	.051489
S.D. dependent	1.10E+09	.022076

Vector Autoregression Estimates

Date: 02/06/19 Time: 16:36

Sample (adjusted): 3 111

Included observations: 109 after adjustments

Standard errors in () & t-statistics in []

Table 5. VAR Estimation (Philippines's Property Index)

	DVOLUME	DVOLATILIT...
DVOLUME(-1)	.560034 (.08172) [6.85331]	1.48E-12 (5.8E-13) [2.52820]
DVOLATILITAS_RETU...	3.80E+09 (4.7E+09) [.80848]	.891447 (.03356) [26.5600]
DSUKU_BUNGA	3.85E+09 (1.6E+10) [.24079]	.249693 (.11431) [2.18430]
DKURS	-8884676. (4.0E+07) [-.22227]	.000498 (.00029) [1.74294]
C	1.66E+09 (2.0E+09) [.81271]	-.031013 (.01461) [-2.12293]
R-squared	.350179	.905545
Adj. R-squared	.327176	.902201
Sum sq. resid	1.34E+20	.006823
S.E. equation	1.09E+09	.007771
F-statistic	15.22350	270.8328
Log likelihood	-2620.186	408.2935
Akaike AIC	44.49468	-6.835483
Schwarz SC	44.61209	-6.718081
Mean dependent	3.78E+09	.066389
S.D. dependent	1.33E+09	.024848

Vector Autoregression Estimates

Date: 02/06/19 Time: 17:56

Sample (adjusted): 3 120

Included observations: 118 after adjustments

Standard errors in () & t-statistics in []

Table 6. VAR Estimation (Thailand's Property Index)

	DVOLUME	DVOLATILIT...
DVOLUME(-1)	.489378 (.09306) [5.25864]	7.87E-12 (3.6E-12) [2.17229]
DVOLATILITAS_RETU...	5.59E+08 (1.2E+09) [.44825]	.835320 (.04855) [17.2062]
DSUKU_BUNGA	4.59E+08 (1.9E+09) [.24387]	.164587 (.07332) [2.24486]
DKURS	13491228 (6433279) [2.09710]	.000171 (.00025) [.68295]

C	-3.72E+08 (2.3E+08) [-1.62990]	-.007156 (.00889) [-.80504]
R-squared	.457266	.849122
Adj. R-squared	.432873	.842341
Sum sq. resids	4.06E+17	.000616
S.E. equation	67562535	.002632
F-statistic	18.74614	125.2204
Log likelihood	-1825.496	427.5606
Akaike AIC	38.94673	-8.990650
Schwarz SC	39.08201	-8.855369
Mean dependent	1.67E+08	.018210
S.D. dependent	89715181	.006628

Vector Autoregression Estimates

Date: 02/06/19

Time: 19:10

Sample (adjusted): 3 96

Included observations: 94 after adjustments

Standard errors in () & t-statistics in []

RESULT AND DISCUSSION

The Effect of Trading Volume on Return Volatility

Trading volume has a positive effect on return volatility in property indexes of Indonesia, Philippines, and Thailand. However, trading volume does not affect return volatility on Malaysia's property index. Therefore, it can be concluded that hypothesis 1 is accepted in the property indexes of Indonesia, Philippines, and Thailand.

The results of this study are in line with the mixture of distribution hypothesis (MDH) conceived by Clark. MDH explains that the arrival of information encourages simultaneous changes in volume and volatility to achieve a new equilibrium. This shows that an information in the market will be responded by all investors together so that the final equilibrium of volume and volatility will be created.

Meanwhile, the results of research in the Malaysia's property index indicate that trading volume does not influence return volatility. These results are in line with the Sequential Information Arrival Hypothesis (SIAH) (Clayton, 2008). SIAH assumes that all investors receive new information in stages or not together. In

other words, investors change their position when new information comes to the market. All investors do not receive that information at the same time. Therefore, every investor's response to the new information will form an incomplete equilibrium (Clayton, 2010). The final equilibrium will be formed when all investors receive and respond to new information. SIAH says that there is a lead-lag relationship between volume and volatility. The lagged value of the volume is used to predict current volatility and vice versa. According to SIAH, there is no significant effect between the return volatility and trading volume.

The Effect of Return Volatility on Trading Volume

From this study results, it can be seen that return volatility has no effect on trading volume in all research object countries, whether in Indonesia, Malaysia, Philippines, or in Thailand. Therefore, it can be concluded that hypothesis 2 is rejected in the property indexes of the four countries.

The results of this study are in line with the Sequential Information Arrival Hypothesis (SIAH). SIAH assumes that all investors receive new information in stages or not together.

In other words, investors change their position when new information comes to the market. All investors do not receive that information at the same time. Therefore, every investor's response to the new information will form an incomplete equilibrium. The final equilibrium will be formed when all investors receive and respond to new information. SIAH says that there is a lead-lag relationship between volume and volatility. The lagged value of the volume is used to predict current volatility and vice versa. According to SIAH, there is no significant effect between return volatility and trading volume (Rabia, 2015).

Causality Relationship between Trade Volume and Return Volatility

Granger causality test results in this study indicate that there is a one-way causality relationship between trading volume and return volatility in the property indexes of Indonesia, Philippines, and Thailand. The results in these three countries show that trading volume influences return volatility, but return volatility does not affect trading volume. On the other hand, the granger causality test results in Malaysian's property index show that there is no causality relationship between trading volume and return volatility.

The Effect of Interest Rates on Trading Volume

From the results of this study, it can be seen that interest rates do not affect the trading volume in property indexes in Malaysia, Philippines, and Thailand. However, interest rates has negative effect on trading volume in the Indonesia's property index. Therefore, it can be concluded that hypothesis 4 is accepted in the Indonesia's property index. The results in Indonesia are in line with the multifactor model which says that differences in a company's sensitivity to macro risks can affect stock returns. If macro risks stem from rising interest rates that has negative effect to the company, it will cause a decrease in stock returns. Changes in interest rates will affect stock prices in reverse, *ceteris paribus*. This means that if interest rates increase, it will cause stock prices to decline, *ceteris paribus*.

This is supported by the theory of asset demand, which states that the estimated return is positively correlated to the number of assets demanded (Mishkin, 2008). When interest rates increase and provide greater returns than investing in the capital market, investors will prefer to invest their funds in the form of savings or deposits than to the capital market, this will cause the decrease of trading volumes in the capital market.

On the other hand, research in property indexes of Malaysia, Philippines, and Thailand shows that interest rates do not affect trading volume. Interest rates do not affect the trading volume can be caused by the type of investors in Malaysia, Philippines, and Thailand are investors who like to conduct stock transactions in the short term, so investors tend to take profit-taking with the hope of getting a high capital gain in the capital market compared to investing. With interest rates that tend to be stable, investors tend to prefer to invest in the capital market in the hope that they will get a higher return than the interest rate so that trading activities on the stock exchange are not so disrupted.

The Effect of Interest Rates on Return Volatility

From the results of this study, it can be seen that interest rates do not affect the return volatility in the property indexes of Indonesia and Malaysia. However, interest rates has a positive effect on return volatility in property indexes of Philippines and Thailand. Therefore, it can be concluded that hypothesis 5 is rejected in the property indexes of the four countries.

Interest rates do not affect return volatility can be caused by the majority of investors who invest in Indonesia and Malaysia are the types of risk-neutral investors. This type of investor tends to be neutral towards risk, one of which is high-interest rates. Thus, even though macroeconomic conditions such as interest rates are not supportive, the ups and downs of shares in the index are not so disturbed or affected.

Interest rates has a positive effect on return volatility can be caused by the majority of

investors who invest in Philippines and Thailand are the type of investors who likes risk or risk seekers. This type of investor will continue to invest even though macro economic factors such as interest rates in the country are currently not supported. High-interest rates do not necessarily cause them to sell their shares because investors with this character tend to be aggressive and speculative in making investment decisions. This situation can cause the up and down movements of shares in the index will increase. The high volatility is followed by the higher risk or uncertainty of stock return can be shown in the movement of stock prices.

The Effect of Exchange Rate on Trading Volume

From the results in this study, it can be seen that the exchange rate has a positive effect on trading volume in property indexes of Indonesia and Thailand. However, the exchange rate does not affect the trading volume in property indexes of Malaysia and Philippines. Therefore, it can be concluded that hypothesis 6 is rejected in the property indexes of the four countries.

On property indexes of Indonesia and Thailand, the exchange rate has a positive effect on trading volume. This is not in accordance with the hypothesis and asset demand theory which states that the exchange rate has negative effect on trading volume. The positive influence on the Indonesia's property index is likely due to the period of observation between May 2018 to February 2019 when the exchange rate increased, the trading volume also experienced a significant increase. Meanwhile, the Thailand's property index is likely due to the period of observation from April 2017 to November 2018 when the exchange rate increased, the trading volume also increased significantly.

On the other hand, the exchange rate does not affect the trading volume on property indexes of Malaysia and Philippines. Aside from being an emerging market, the capital markets of Malaysia and Philippines are half-strong capital markets, where an announcement containing information will provide an abnormal re-

turn to the market. Investors who invest in the capital markets of Malaysia and Philippines tend to see the capital markets in these two countries as a capital market in the form of a half strong, wherein these markets investors can still get abnormal returns from their investments. So that when investors can still obtain abnormal returns, investors will continue to conduct stock trading activities in the stock market even though macro economic factors are not supported such as when the countrys currency is depreciating.

The Effect of Exchange Rates on Return Volatility

From the results of this study, it can be seen that the exchange rate has negative effect on return volatility in Indonesia's property index. On the other hand, the exchange rate does not affect return volatility on property indexes of Malaysia and Thailand. Meanwhile, the exchange rate has a positive effect on return volatility in the Philippine's property index. Therefore, it can be concluded that hypothesis 7 is accepted in the Indonesia's property index.

The results of this study are in line with the theory of Purchasing Power Parity (PPP), Interest Rate Parity (IRP), and International Fisher Effect (IFE). PPP, IRP, and IFE theories explain the relationship between inflation, interest rates, and exchange rates. Various theories of differences in interest rates and inflation explain if the performance in the capital market is also influenced by changes in exchange rates. If the exchange rate is high and uncertain, it will affect the uncertainty of return on investment in the capital market. This situation causes performance in the capital market to decline and has an impact on the uncertainty of the stock market prices in various sectors (Yusuf, 2012).

A countrys currency exchange rate against world currencies influences the performance and profitability of industries and companies as large importers. For a country that is still dominated by imports, the decline in the value of the domestic currency would have a

negative impact, this would also have an impact on the countrys stock market. The price of imported products will increase, so if the demand for goods is elastic, the volume of imports will rise, this will cause cash flow to be lower, both profitability and the companys share price in the country (Nkoro & Uko, 2016).

CONCLUSION AND RECOMMENDATION

For prospective investors who want to invest their shares and investors who have already invested shares in property indexes of Indonesia, Philippines, and Thailand, could pay attention to listed trading volume when considering and make investment decisions. In this study, the trading volume variable has a positive effect on the return volatility on three property indexes, which means that when trading volume is recorded high, return volatility will increase, and vice versa, when trading volume shows a decrease, return volatility will also decrease.

For prospective investors who want to invest their shares and investors who have already invested shares in property indexes of Indonesia, Philippines, and Thailand, could pay attention to macroeconomic variables such as interest rates and exchange rates. The results of this study indicate that macro economic variables such as interest rates and exchange rates have an influence on trading volume and return volatility.

This study has several limitations, namely: this study uses monthly data from January 2012 to December 2019. However, in general, investors use daily data to make investment decisions as a material consideration in making stock trading decisions. Investors use daily data because it is considered more able to provide a picture of the actual situation that is happening at that time. Besides, some variables are not significant in this study, because they cannot meet the assumptions. Also, this study only focuses on property indexes in four countries: Indonesia, Malaysia, Philippines, and Thailand, and the macroeconomic variables used

in this study are limited to interest rates and exchange rates only.

Based on the limitations of this study, future studies are recommended using data at daily intervals, to obtain more detailed and optimal results, expand the indexes and countries studied, and add macroeconomic variables outside of interest rates and exchange rates into the study which will come to obtain new findings of the variables that affect the trading volume and return volatility.

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