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Effect of Prices, Exchange Rate and Volume of Demand for Gold Price Volatility in Indonesia Stock Futures

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Abstract: ***The purpose of this study to analyze the effect of prices, exchange rates and the volume of demand to price volatility of gold. Research conducted Futures Exchange Indonesia with a population and a sample of gold investment data within a period of six years (2011-2016). Collected data were analyzed using multiple linear regression analysis with SPSS. The study found that the price, the exchange rate and the volume of demand affect the price volatility of gold in Indonesia Futures Exchange. Result showed that the price and the exchange rate had a positive influence and significant volatility Futures Exchange price of gold in Indonesia. This means that the differentiation of movements in gold prices and a stable exchange rate every year to give effect to the movement of gold price volatility. While the volume of demand and no significant negative effect on volatility, which means that the transaction is stagnant on the volume of demand control of gold price volatility in the market. Price proven has dominant positive and significant impact on the volatility of the gold price in Indonesia Futures Exchange. This means that prices are always changing every week affecting the movement of the volatility of the gold price. Volatility movement indicated movement of the gold standard that provides prospective favorable to gold investment.***

Keywords: Prices, Exchange Rate, Volume Demand and Volatility

1. Introduction

The success of national development is inseparable from the support of the economic development sector, especially with regard to aspects of trade and finance. One of the most important financial institutions as pillars of the economic strength of a country is a financial institution futures exchange. This institution is a means of sustaining and supporting the activities of the national economy, and can reduce the uncertainty situation of the financial sector and real sector. Through this futures exchange for the national economy as a platform to bring together businesses and investment to be able to manage the product, commodity, stock, currency and investing in a market called commodity futures exchange. Currently, many businesses realize the growing need to perform a variety of business activities that do not pose a risk to protect their transactions from any price changes as they occur.

Often heard there are companies that suffered loss or gain due to change in currency rates or exchange rates related to foreign exchange. Therefore the existence of gold commodity as one of commodity that has followed the trend of developments and changes in currency prices rise. Therefore the spot market(cash market) existed at the time of payment and delivery time is done, return on investment which is owned experiencing gains, due to price changes (volatility) affecting the investment. Thus, the investment can be protected and avoid the risk of price changes due to changes in prices, exchange rates and the volume of support requests.

Understanding the importance of gold price movements that may affect the exchange rate and help support gold demand volume is causing volatility increased profitable futures Indonesia then there are some previous studies that have examined it.

Below is shown the results of research on the effect of prices, exchange rates and the volume of demand volatility is studied by Mirdshan (2012), Paul G (2013), Laddy Mark (2010), Stefanus Joe (2012), Mannuel Carry (2012), Mark Gulf (2014), Hansen (2012), Dannielle (2013), Carrem Roles (2010) and MarthenStockhern (2013). All previous researchers have proven that price, exchange rate volatility and the volume of demand for no one gave a significant and positive influence, a negative influence and a significant, positive and significant impact.

Referring to previous research, it was stated about the phenomenon that correspond to the fact that in Indonesia found the Futures Exchange gold price volatility seen from gold investment returns in the past five years has decreased. The decrease was due to a result of volatility in the market price of gold is not stable or often experienced a shift that increases and decreases, where intermediaries or speculators often seek remuneration fee and profit from the difference between the price of gold fluctuated. More specifically the data show the percentage of investment in Futures Exchange Indonesia:

Table 1: Data Percentage of Investment in Futures Exchange Indonesia

Tahun	Investment (%)		
	Short-term	Medium-term	Long-term
2011	62.3	42.9	44.8
2012	59.7	41.8	41.9
2013	54.3	40.6	40.7
2014	52.8	35.7	39.4
2015	42.9	33.8	35.8

The above data shows that the percentage of return of investment in Indonesia Futures Exchange in the five-year investment period allotment of both short-term, medium-term and long-term decline. For the short term, the decline range from the achievement of 62.3% to 42.9% from 2011 to

2015, for the medium term in 2011 amounted to 42.9% to 33.8% in 2015, and long-term in 2011 amounted to 44.8% to 35.8% in 2015.

the decrease in investment is not due to the level of investor confidence declined, but as a result of government policy in the field of finance and investment within the last five years is uncertain causes of investment instruments to be unstable and ineffective, especially with regard to commodity precious metals (gold), so many investors or entrepreneurs invest funds to gold only to the needs of the transaction, to avoid the risk and precaution.

There are several phenomena that show the influence of volatility due to a decrease in investment. Usually the declining gold price movements have sharp differences with the value of foreign currencies rose significantly. The price drop is certainly a psychological influence on the investment broker in investing capital markets for commodity futures gold. Otherwise there is the readiness of investors in the event of the minimization of the gold price, where different possibilities can happen and volatility determined by speculators. Therefore, to maintain volatility for stable and not too intrusive risk investment returns, because it maintains a fixed price or normal movement. The occurrence of unstable gold movements that affect the interest rate is higher.

On this basis it is necessary to take a policy by the Indonesian Futures Exchange regarding volatility, applying the theory of change up and down from Michelle (2010: 88) states that prices are determined by market mechanisms that always changes up and down in a unit time. Mean change is always going up and down is a form of investment volatility ratings.

The phenomenon of reality regarding the volatility has decreased, from some observations and support several previous studies have shown that the influence of prices, exchange rates and the volume of demand, the decisive ones directly affect the volatility.

Some research indicates that price volatility and the effect on investment returns that Mirdshan (2012), Paul G (2013), Laddy Mark (2010) and Stefanus Joe (2012). The fourth study investigated the effect of price volatility there. Two researchers, Mirdshan and Paul G had proved that there is positive and significant relation of price and volatility. Laddy Mark proved that price has positive and no significant effect on volatility.

Observations show that the movement of the price or value of gold that can be cash out, affect the price changes up or down which also affect the investment return. The fact that seen in Indonesia Futures Exchange, pricing is uncertain, so the price changes (volatility) is also uncertain. As a result of the erratic price movements, it is necessary to take a strategy to determine the open price conditions for all people, set a high price in order to remove or sell, assign a low price to buy or store and set the price closed to stabilize the price of speculation.

An understanding of price decline to give effect to a decline in volatility and return of investment, then the Futures Exchange Indonesia needs to apply the theory of pricing of Anderson (2008: 10) that the pricing based on the value of the currency effect. Shape pricing includes open price, high price, low price and close price. This is necessary in order to provide certainty and stability to ensure that the price is an important consideration for investors to invest in Indonesia Futures Exchange.

In addition to price, exchange rate considerations are also a consideration that can directly or indirectly influence on volatility. Here shown some previous studies that looked at the exchange rate volatility which have an influence on Mannuel Carry (2012), Mark Gulf (2014) and Hansen (2012). The results showed the three studies are proving that influences the exchange rate volatility. Carry Mannuel prove that the exchange rate had a significant and negative effect on volatility, research by Mark Gulf prove that the positive effect of exchange rate and significant volatility. While Hansen proved that there is positive effect of exchange rate and no significant effect on volatility.

The phenomenon is a fact that it can be shown that the exchange rate influences the volatility can be seen from the activity of gold transactions in the currency of a country that applies. As a result of exchange rate differences in currency exchange between the two countries led to specify the differences in supply and demand of a cycle of the pricing system that have an impact on volatility.

The occurrence of the unstable exchange rate led to no difference in scores that can result in the depreciation of the exchange rate appreciation, devaluation and revaluation effect on the exchange rate of each currency in domestic and foreign. The difference in the exchange rate is used by speculators to earn huge profits, so that there should be measures to safeguard and avoid the risk of floating volatility.

On that basis it is necessary to apply the management theory of value differences Davidson (2009: 71) that each currency has a different value after exchanged between one country and another. The currency exchange rate differences due to depreciation, appreciation, evaluation and revaluation for each currency of a country. This is important in order to improve the balance point of volatility.

It also includes things that affect the volatility and declining investment returns that the volume of demand. The volume of declining demand led to the assumption or consideration of investors declined because there was no guarantee of the quality of the commodity, the sale value is low, profits are uncertain and risks are not guaranteed.

It was once observed by some researchers previously among others by Dannielle (2013), Carrem Roles (2010) and Marthen Stockhern (2013). Three studies prove that the sales volume effect on volatility. Dannielle and Marthen Stockhern proved that the sales volume has a positive influence and no significant effect on volatility. While Carrem Roles proves that the sales volume has a significant negative effect on volatility.

The phenomenon is a fact that volume of declining demand affected volatility and return of these investments can be seen from the low level of trust investment broker to demand for stocks by using gold as a medium of exchange for influencing volatility. Besides volume decreased demand from investors for the sale value that is not too large, so that the representation of the volatility that occurs tends to be constant. Investors are also not too expensive aspects of advantage, because in fact the demand volume for changes in the exchange rate of the domestic currency to foreign currencies does not provide the benefits prospectively. Including no guarantee of the invested capital, which led to volume demand decreases and this affects the decrease in volatility.

Understanding these phenomena, then the management should apply the theory of value judgment of Dominique (2010: 82) that the increased level of demand is determined by the quality, the value of sales, profits and low risks. That is, the volume of demand always increases when any product or commodity is offered four such value judgments. Understanding this theory is certainly a consideration that should be able to grow the volume of demand for insurance against commodity community, selling price increases, there is a significant advantage and risk minimization effort.

Based on the description that has been stated above, to understand the views of the importance of economic empowerment-based investment by providing opportunities for communities to invest in institutions futures exchange Indonesia, subsequently supported by several studies previous research that examines each of these variables, then the phenomenon is based on the fact that can be expressed and supported the theory, the researchers interested in studying the Influence of Price, Exchange Rate and Volume Demand for Gold Price Volatility in Stock Futures Indonesia.

2. Material and Methods

This study was designed to address problems that have been formulated and the goals to be achieved and to test the hypothesis. The type of data in this study consisted of primary and secondary data. Primary data is data obtained from interviews confirm. Secondary data is data obtained in Indonesia Futures Exchange rate for data collection was credible form of searching for data on gold price, exchange rates, the volume of demand and volatility. Sources of data obtained from the parties associated with this research. The population in this study is the data gold price, exchange rates, the volume of demand, volatility and investment returns of companies listed on the Stock Futures Indonesia. Based on the existing population, the selected samples were taken using purposive sample, a report for the last six years (2011-2016). Data analysis techniques used in this research was multiple regression which explained the relation between variables.

3. Result and Discussion

collected data were subsequently incorporated into the analysis of test *validity* and *reliability* study variables using SPSS 18.0 indicates that the test validity and reliability of the questionnaire is done to ensure that the instruments used in this research is accurate and trustworthy, and reliable when used as a tool in data collection.

3.1. Test of Validity

Testing the validity of a questionnaire can be used SPSS statistical methods. The results of data processing, obtained results that in general the average instrument very valid questionnaires. This is indicated by the value of r *Product Moment* wherer table is greater than 0.170 (positive). Condition of validity instrument has been qualified at a minimum of 0.170 as an instrument that is considered to be valid. For clarity, a summary of the test results can be seen in the table validity test.

Table 2: Summary of Test Validity

Instrumen Penelitian	Pearson Correlation	r Product Moment r tabel	Keterangan
X11	1.000	0.170	Valid
X12	1.000	0.170	Valid
X13	1.000	0.170	Valid
X14	0.999	0.170	Valid
X21	0.998	0.170	Valid
X22	0.987	0.170	Valid
X23	0.998	0.170	Valid
X24	0.998	0.170	Valid
X31	0.999	0.170	Valid
X32	1.000	0.170	Valid
X33	0.246	0.170	Valid
X34	0.257	0.170	Valid
Y11	0.999	0.170	Valid
Y12	0.999	0.170	Valid
Y13	0.999	0.170	Valid

4.1. Test of Reliability

Reliability test performed by using the coefficient of reliability*(CronbachAlpha)*, Reliability test results questionnaire as contained in the attachment can be summarized in Table 3 below:

Table 3: Summary of Test Reliability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
x11	3827418,5939	2,536E11	,999	,999	,933
x12	3826909,3925	2,534E11	,999	,999	,933
x13	3825836,9967	2,530E11	,999	1,000	,933
x14	3828414,7744	2,539E11	,999	1,000	,933
x21	4304967,4182	3,206E11	,737	,997	,948
x22	4304967,2071	3,206E11	,742	,959	,948
x23	4304967,3900	3,206E11	,732	1,000	,948
x24	4304967,3900	3,206E11	,732	1,000	,948
x31	3827125,8856	2,535E11	1,000	1,000	,933
x32	3825836,9967	2,530E11	,999	1,000	,933
x33	4303687,4307	3,201E11	,209	1,000	,948
x34	4304377,5626	3,203E11	,120	,961	,948
y11	3825118,7675	2,532E11	,997	,998	,933
y12	3828625,8856	2,534E11	,999	,999	,933
y13	3826479,7050	2,531E11	,996	,998	,933

Table 3 above, indicates that the alpha value of research instruments for each variable is greater than the value implied, is equal to 0.60 or greater than 0.60. Thus, the

entire questionnaire in this study is *reliable* (trustworthy) because it has met the minimum requirements.

To analyze the data obtained from the results of research in the field, used qualitative and quantitative analysis. Quantitative analysis is used to prove the hypothesis by using multiple linear regression analysis model, while the qualitative analysis is used to assess the quantitative analysis of evidence.

Proof of this is intended to test a variation of the regression model used in explaining the independent variable (X) on the dependent variable (Y) by examining the significance of the regression coefficients. The result using regression models (Full Model Regression) were obtained with regression coefficient on the influence of prices, artuk value and volume of demand volatility:

Table 4: Summary of Results-F Test Regression Analysis (Full Model Regression)

Variable Regresi	Koefisien Regresi	R	R Square	F-ratio	F-table	Sig.	Konstanta (Y)
X_1	1.032						
X_2	341.466	0.998	0.996	21723.919	3.11	0.000	-1110.883
X_3	-0.074						

Based on calculations using SPSS Regression Model Full multiple linear regression equation is as follows:
$Y = -110\ 883 + 1{,}032\ X_1 + 341.466X_2 - 0.074X_2$

above regression equations containedvalue β_0 or the constant value of -110 883. This suggests that if the independent variables are considered altogether is 0, then the volatility (Y) is approximately -110 883. This is an indication of the influence of other variables not studied the effect of price, exchange rates and the volume of demand to price volatility of gold in Indonesia Futures Exchange.

In addition to the multiple linear regression equation above, there are the regression coefficient independent variable X is positive. X positive coefficient values means in the event of changes in the variables X, will cause a change in the direction of the variable Y.

Based on the analysis, then: 1) price ($X_{1)}$in the form of an open price, high price, low price and close price determined in accordance the value of the gold standard, providing a positive and significant impact on the gold price volatility; 2) the exchange rate ($X_{2)}$in the form of depreciation, appreciation, devaluation and revaluation in accordance with the prevailing exchange rate, giving a positive and significant influence on the gold price volatility; and 3) the volume of demand ($X_{3)}$in the form of quality products, the value of sales, profits and low risk are not in accordance with the amount of gold terinvestasi order transactions, had a negative impact and no significant effect on the gold price volatility.

Based on the result above, we can conclude that the prices, exchange rates and the volume of demand affect the price volatility of gold. Price and exchange rate provides a positive and significant influence on the gold price volatility, while the volume of demand had a negative impact and no significant effect on the gold price volatility.

Analysis of F test is intended to test the research hypothesis that "prices, exchange rates and the volume of demand positively and significantly to the volatility of the gold price in Indonesia Futures Exchange".

The statistical test F or simultaneous significance test, basically indicates whether all the independent variables included in the model have jointly influence on the dependent variable Y. F test is done by comparing the$F_{arithmetic}$ value ofwithF_{table} on the real level □ = 0.05 , Test F has significant influence if F_{count} larger than F_{table} or a probability of error of less than 5% (P <0.05).

analysis of the calculation results *FullRegression models* with SPSS obtained F_{count} equal to 21723.919 with a probability level of 0.000 (significant). While the F_{table} at 3:11 so the F_{count} larger than F_{table} (21723.919> 3.11) and also the probability of much less than 0.05, meaning that the **first hypothesis of this study can be accepted as true.**

The results of the regression calculation for the value of R (correlation coefficient) to see the effect of simultaneous and R^2 (coefficient determinant) to see the partial effect variables studied. It is known that the correlation coefficient (R) = 0998 means that the independent variable prices, exchange rates and the volume of demand effect simultaneously on the dependent variable of volatility, after obtained yield was 99.8%, and the remaining 2% is influenced by other variables not examined ,
The magnitude of the influence of the independent variables (three variables) can be known from the value of the determinant coefficient ($R^{2)}$.Determinant coefficient value corresponding linear regression calculation results are R^2 = 0.996 or 99.6%. This suggests that the independent variables consisting of price, exchange rate and volume jointly affect the dependent variable amounted to 99.6%, while the remaining 4% is influenced by other variables that doesn't explained within the model.

T-test is for significant or partial regression. It is compare $t_{arithmetic}$ with t_{table} on the real level □ = 0:05. The t-test shows significant effect on the calculation if $_t$ is greater than $t_{table(t>t_{table})}$or the error probability less than 5% (P <0.05). More details are shown in Table 5 are presented the results of the calculation of the t test and correlation coefficients partialnya as follows:

Table 5: Student Test Results Calculation (t-test)

Variable Regresi	Koefisien Regresi	t-hitung	Sig.	Keterangan
X_1	1.032	11.543	0.000	Significant
X_2	341.466	8.746	0.022	Significant
X_3	-0.074	-0.416	0.678	Insignificant

testing results for the price, the exchange rate and the volume of demand on volatility are as follows: 1) a price variable ($X_{1)}$show the regression coefficient (B) of 1,032 with t-test = 11 543 greater than the standard t-table 1.99, which means it has a significant influence to the level of Sig. = 0.000 to volatility (Y); 2) The exchange rate variable

(X_2)shows the regression coefficient (B) of 341 466 t-count = 8746 bigger than the standard t-table 1.99, which means it has a significant influence to the level of Sig. = 0.022 to volatility (Y); and 3) a variable volume of demand (X_3)shows the regression coefficient (B) of -0074 with t-test = -0416 is smaller than the standard t-table 1.99, which means it has no significant influence to the level of Sig. = 0678 to volatility (Y).

Based on these results, we can conclude that the independent variable price has a dominant influence and significant volatility in the price of gold on the Futures Exchange Indonesia in accordance with the value of B is 1.032, thus the **second hypothesis is accepted, which means that H_0 is rejected and H_1 accepted** it shows that prices set has effect on the gold price volatility.

4. Conclusion

Based on the research and discussion above, be summarized as follows: 1) the price, the exchange rate and the volume of demand affect the price volatility of gold in Indonesia Futures Exchange. Regression analysis showed that the price and the exchange rate had a positive influence and significant volatility Futures Exchange price of gold in Indonesia. This means that the differentiation of movements in gold prices and a stable exchange rate every year to give effect to the movement of gold price volatility. While the volume of demand and no significant negative effect on volatility, which means that the transaction is stagnant on the volume of requests that controls on the market gold price volatility; and 2) the dominant positive and significant impact on the volatility of the gold price in Indonesia Futures Exchange. This means that prices are always changing every week affecting the movement of the volatility of the gold price. Volatility movement indicated movement of the gold standard that provides prospective favorable to gold investment.

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