The Determinants of Gold Prices in Malaysia

Siti Nurulhuda Ibrahim, Nurul Izzat Kamaruddin, and Rahayu Hasan
Universiti Teknologi MARA, Bandaraya Melaka, Malaysia
Email: {Sitinur304, nrl_izzat, rahayuhasan} @bdrmelaka.uitm.edu.my

Abstract—**This paper analysed factors that affecting the prices of gold in Malaysia. The study used Multiple Linear Regression Model to determined significant relationship between dependent and independent variables, covering data for 10 years period which are from 2003 until 2012. The researcher used three independent variables that affect the prices of gold which are crude oil prices, inflation rates and exchange rates. The empirical results have found there is negatively significant relationship between inflation rates and exchange rates on gold prices, while a crude oil price is positively significant. The results of the study are valuable for both academic and investor.**

Index Terms—**determinant, gold prices, crude oil prices, inflation rates, exchange rates**

I. INTRODUCTION

In world view, there are a lot of studies on factors that affecting the prices of gold. Recently, a broad study has been done by [1] that used the MGARCH model. According to the study, the variables that are thought to affect the gold prices are analyzed from 1992 until 2010; Oil prices, USA exchange rates, USA inflation rates, USA reel interest rates data are included in the model as variables. However, the study about factors affecting the prices of gold in Malaysia has not yet been made. As mentioned by [2] in Malaysian Reserve that price of gold has increased with widespread in the jewelry sector in recent years. According to Datuk Meer Sadik Habib, Managing Director of Habib Holdings Sdn Bhd, in early 2013 the price of 916 gold has dropped to RM141 per gram from RM156 per gram previously. As a result from the decrement of the prices of gold, many people tend to visit the gold shop to buy gold before the prices of gold rose again [3].This research paper will only specifically focus on the 916 gold. The researchers will analyze the 10 years data which is from 2003 till 2012 and will be analyzing using the Least Square Method (E-Views 7.0). Through time, gold price has its ups and down like any other investment instruments or commodities. It is impossible to deny that gold price is stable and has minimal fluctuation based on the volatility of economic and financial condition. In Malaysia, the awareness of people or investors has grown in the past few years. They started to realize the advantage of engage with gold trade.People will need to know the current gold price in order to take advantage on it where they can buy it at low

price and sell it at high price later on. Thus, this is why the factors that affect the gold price must be determined so that people may estimate the timing to buy, hold or sell the gold. This study is made to seek the proofs for the possible factors that affect the gold price in Malaysia. From this research, the most important or most influence factor can also be determined. Simply put, the findings for this research will bring benefit to individual, group as well as the government in analyzing the movement of the gold price. To discuss more about this topic, this research paper present the sensitivity of gold prices to the changes in the crude oil prices, inflation rates and exchange rates factor by taking 10 years data from 2003 until 2012.

II. DATA AND METHODOLOGY

For this research, secondary data method has been used by the researchers, e.g. journals/articles/reports, websites and newspaper. The Table I shows the dependent and independent variables that been used in this study. The data is collected for 10 years starting from 2003 until 2012. The model that has been used to achieve the objective of this study is the Least Square Method.

TABLE I. DEPENDENT AND INDEPENDENT VARIABLE

Dependent Variable	Description	Notation
Prices of Gold	A precious metal commodity that serves as a store of value and a medium of exchange.	PGP

Independent Variable	Description	Notation
Crude Oil Prices	Commodity	LOIL
Inflation Rates	CPI growth rate	LCPI
Exchange Rates	Currency exchange	LEXC

Sources from [1]

Multiple linear regression models have been used as statistical tools for this study. This model was used to

examine the real time effects of several independent variables towards the dependent variable that interval scaled. Multiple linear regression analysis aids in understanding how much of the variance in the dependent variable is explained by a set of predictors. This type of analysis is also being used to trace the previous sequential that cause the dependent variable through path analysis. This model is more appropriate to be used since it can explain the correlation between the dependent and independent variables much better. Econometric Views Software (E-Views 7.0) was used to generate the result from the data that have been collected.

A. Model Specification

Least Square Method is the model that has been used in this study. This model is modified from [1] on studied the determination of factor affecting the price of gold. This model is used to investigate the factors that affecting the price of gold in Malaysia. The model is as follows:

$$Log_{PGP} = \beta_0 + \beta_{1LOIL} + \beta_{2LCPI} + \beta_{3LEXC} + \varepsilon \quad (1)$$

where,

Log_{PGP} - Prices of gold (Dependent Variable)
LOIL - Crude Oil Prices (Independent Variable)
LCPI - Inflation Rates (Independent Variable)
LEXC - Exchange Rates (Independent Variable)
β_1, β_2 - The coefficient for the dependent variable
β_0 - The constant value
ε - Error terms

B. Definition of Terms

Gold is a precious metal which mankind that has a long and illustrious relation and continues to do so. Gold served as money until other forms of currency were devised and even now gold is bought as an investment. [4].

The crude oil is a mixture of naturally occurring hydrocarbons that is refined into diesel, gasoline, heating oil, jet fuel, kerosene, and literally thousands of other products called petrochemicals. Crude oils are named according to their contents and origins, and classified according to their per unit weight (specific gravity).[5]

Inflation is the rate at which the level of prices for goods and services is rise and then purchasing power is fall. It usually happened annually. [6]

Exchange Rates are rates which one currency may be converted into another. The exchange rate is used when simply converting one currency to another (such as for the purposes of travel to another country), or for engaging in speculation or trading in the foreign exchange market. There are a wide variety of factors which influence the exchange rate, such as interest rates, inflation, and the state of politics and the economy in each country. It also called rate of exchange or foreign exchange rate or currency exchange rate. [7]

III. FINDINGS

This chapter will show the finding and result of the data that have been analyzed using the Econometric

Views 7.0 (E-Views). The findings are the interpretation of data that are conducted by descriptive statistic and multiple linear regression tools. As mention in the previous chapter, the objective of this study is to determine the significance relationship between the variables.

A. Descriptive Statistics

For the descriptive statistic, the researcher comes out with the range of data which include mean, median, skewness, kurtosis and probability. Table II below showed the descriptive statistics for the output which comprises of three variables data for 10 years from year 2003 until 2012.

TABLE II. DESCRIPTIVE STATISTICS FOR FACTORS AFFECTING THE PRICES OF GOLD

	Gold Prices	Crude Oil Prices	CPI	Exchange Rates
Mean	4.32	5.42	0.73	1.24
Median	4.31	5.48	0.81	1.25
Skewness	-0.00	-0.86	-0.47	-0.23
Kurtosis	1.66	2.77	2.54	1.59
Probability	0.68	0.54	0.79	0.63

The total observation includes in this study is 10 observations. The first variable is gold prices which the mean and median is 4.32 and 4.31 respectively and it near to each other according to the rule of thumb. The skewness value had shown negatively skewed with value -0.00. While the kurtosis value indicates 1.66 and probability value is 0.68, more than 0.05 of rules of thumb. Hence, probability is indicates that it is normal distribute.

Second variable is crude oil prices which the mean and median is 5.42 and 5.48 respectively. The skewness value also shown negatively skewed which are -0.86.While for kurtosis value 2.77 and probability value is 0.54, more than 0.05 rules of thumb. Hence, the probability also normal distributed.

The third variable is inflation rates (CPI). The mean and median is 0.73 and 0.81 respectively. The skewness value shown negatively skewed with the value is -0.47, while kurtosis value is 2.54. The probability value is 0.793, more than 0.05 and it followed the rules of thumb. Therefore, probability represents a normal distributed.

Lastly, the variable is exchange rates which the mean and median are 1.24 and 1.25 respectively and shown that the value is almost same. The skewness also show negatively skewed that is -0.23, while for kurtosis value is 1.59. The probability value is 0.63 and also followed the rules of thumb, which more than 0.05. Therefore, the probability is a normal distribution.

B. Multiple Linear Regressions

Below is the table that shows the result from the Multiple Linear Regression with Gold Prices as dependent variable. All results have been summarized in Table III.

TABLE III. FINAL FINDING OF MULTIPLE LINEAR REGRESSIONS

R-squared = 0.969778		F-statistic = 64.1776		
Variable	**Coefficient**	**Beta (β)**	**t-Statistic**	**Prob**
Crude Oil Prices	0.718902	0.217443	3.306158	0.0163
Inflation Rates	-0.246380	0.069799	-3.529850	0.0124
Exchange Rates	-3.336433	0.776199	-4.298430	0.0051
Constant	4.749398	2.030437	2.339102	0.0579

Note: Indicate significance: ***1% Level, **5% Level, * 10% Level

From this table, the R-Squared (R^2) was 0.969778. This result indicates that 96.97% of the variance in gold prices was significantly explained by the three independent variables which are crude oil prices; inflation rates (CPI) and exchange rates. The remaining 3.03% were explained by other factor that not including in this study. The study also shown that there are strong correlations between the variance since R^2 is almost 100%.

The value of F distribution is 64.1776, whereby it more than 3 based on rules of thumb and P-value is 0.00006 < 0.01 in the table support that the relationship is significant. Thus the finding will reject the null hypothesis. The following finding and analysis will interpret the result for the independent variables and test on the hypothesis.

Based on analysis between gold prices and crude oil prices (LOIL) in Table III, this study found that there is significant relationship between gold prices and LOIL with t-stat value is 3.3061 more than 2 based on their rule of thumb. While the significant value stand at 0.0163 on 5% significant level. The finding hereby will reject the null hypothesis for crude oil prices (LOIL). It also explained that there is a significant relationship between crude oil priced and gold prices.

Meanwhile, this study found that there is significant relationship between gold prices and LCPI with t-stat value is 3.5298 more than 2 based on their rule of thumb. While the significant value stand at 0.0124 on 5% of significant level. Thus, based on the finding hereby will reject the null hypothesis for Inflation Rates (LCPI). It also explained that there is a significant relationship between inflation rates and gold prices.

Lastly, based on analysis between gold prices and exchange rates (LEXC) found that there is significant relationship between gold prices and LEXC with t-stat

value is 4.2984 more than 2 based on their rule of thumb. While the other side, significant value stand at 0.0051 on 1% of significant level. Thus, the finding shows that this will reject the null hypothesis for exchange rates (LEXC). It also explained that there is a significant relationship between exchange rates and gold prices.

This study has achieved its objectives whereby, according to the result, Crude Oil Prices (LOIL), Inflation Rates (LCPI) and Exchange Rates (LEXC) were significantly related with gold prices in Malaysia. Meaning that, any changes in these three factors can reflect the changes of gold prices. The past study also found that there are strong relationship between the LOIL, LCPI and LEXC.

The finding shows that mean, median, skewness, kurtosis and probability for all three independent variables followed the rules of thumb. According to the Table III, Crude Oil Prices have positive relationship while the Inflation Rates and Exchange Rates have inverse relationship. Positive relationship means that, when the Crude Oil Prices increase the gold prices also will be changes and increase too. This result is become stronger with the result of previous study done by [1], there are positive correlation between gold prices and oil prices. In addition, meaning negative relationship between Inflation Rates and Gold Prices is when the Inflation Rates increase, the Gold Prices will decrease. This result was supported with previous study done by [8] which is found that changes in inflation rates will cause immediate changes in gold prices.

Lastly, Exchange Rates also have inverse relationship with Gold prices. When Exchange Rates increase, Gold Prices will decrease. According to [9] found that there is negative relationship between gold prices and Exchange Rates and the data were test with different method. But in contrast, as demonstrated in [10] found that Exchange Rates and Gold Prices have positive relationship because the entire test statistic has a positive sign by use vector-autoregressive (VAR) model.

IV. CONCLUSION

As an overall conclusion from the findings result, this study achieve the objective and research question where to determine the effect of crude oil prices on the gold prices, to analyze the effect of inflation rates on the gold prices and to identify the effect of exchange rates on the gold prices. Even though all variable is significant with the Gold Prices, the result and the trend will become more reliable if researcher increases the sample such as for 20 years or 30 years. This suggestion was support by [11] that shows the larger data taken will give more accuracy of the result. In addition, researcher also recommended research on gold prices can be conduct in large scale such as adding other Macroeconomic Factor. This study is focus on inflation rates, crude oil prices, and exchange rates. Therefore, the researcher suggests adding more factors such as unemployment rate, political risk, gross domestic product and etc. This suggestion was support by [12] that unemployment rate, political risk, gross domestic product, and gold demand-supply could

influence gold price as the price has been float in the international market.

REFERENCES

[1] C. Toraman, C. Basarir, and M. F. Bayramoglu, "Determination of factors affecting the price of gold: A study of MGARCH model," *Business and Economics Research Journal*, vol. 2, no. 4, pp. 37-50, 2011.
[2] S. Morgan and S. Goldman, "Gold bull run," *Malaysian Reserve*, 2013.
[3] N. N. Nadzari. (April 23, 2013). [Online]. Available: http://www.utusan.com.my
[4] A. H. Michael, *International Monetary Economics*, Longman, Green & Co. Ltd, 2007.
[5] K. S. Jomo, F. Greg, and R. Rajah, "Industrial technology development in Malaysia: Industry and firm studies," *Rouledge Studies in the Growth Economies of Asia*, p. 389, 1999.
[6] G. S. Gupta, *Macroeconomics Theory and Application*, Tata Mcgraw, Hill Publishing Company Limited, 2004.
[7] D. D. E. Martin, *Exchange-Rate Dynamics*, New Jersey: Princeton University Press, 2011.
[8] L. E. Blose, "Gold prices, cost of carry, and expected inflation," *Journal of Economic and Business*, vol. 62, pp. 35-47, 2010.
[9] H. Shahzadi and M. N. Chohan, "Impact of gold prices on stock exchange: A case study of Pakistan," in *Proc. 3rd SAICON International Conference on Management, Business Ethics and Economics*, Pakistan, 2011.
[10] M. Massimiliano and Z. Paolo, "Gold and the U.S Dollar: Tales from the turmoil," Department of Economics, University Bologna and Rimini Centre for Economic Analysis (RCEA), 2010.
[11] D. M. Martiani and K. Rahfiani, "The effect of financial ratio, firm size and cash flow from operating activities in the interim report to the stock return," *Chinese Business Review*, vol. 8, no.6, pp. 44-55, 2009
[12] S. M. H. Fauzi, "Gold price and it relationship with U.S. macroeconomic variable," Faculty of Business Management, pp. 1-33, 2012.

Siti Nurulhuda Ibrahim was born in Pasir Mas, Kelantan on the 23rd of February 1983. She holds Master in Business Administration (Entrepreneurship) from Universiti Malaysia Sabah, Malaysia (2007) and a Bachelor of Business Administration (Islamic Banking) from University Teknologi Mara, Dungun, Malaysia (2005). She has been a lecturer since 2008 at UiTM, Bandaraya Melaka and has published a research in her area of specialization. Her main areas of research interests are Islamic banking, Microfinance and Islamic entrepreneurship.

Nurul Izzat Kamaruddin was born in Kuala Lipis, Pahang on the 23rd of February 1982. She holds Master in Business Administration from Universiti Teknologi Mara, Malaysia (2008) and a Bachelor of Business Administration (Finance) from University Teknologi Mara, Malaysia (2006). She has been a lecturer since 2009 at UiTM, Bandaraya Melaka and she has produced an academic research paper related to the finance industry. Her main areas of research interests are Corporate Finance, Microfinance and Social Science.

Rahayu Hasan was born in Batang Tiga, Melaka on the 8th of May 1968. She was conferred Master in Business Administration (Management) from Universiti Kebangsaan Malaysia (UKM) in August,2007 and Bachelor of Commerce (Accounting) from Dalhousie University, Halifax, Canada. She worked as a lecturer in Kolej Teknologi Islam Melaka, Malaysia after her graduation from Canada before continuing her studies from 2005 to 2007 in UKM Bangi. Now she is working as a lecturer in Universiti Teknologi Mara (UiTM), Melaka since July 2009.