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## Does the Factors Affecting Gold Price Changed During Covid-19 Period in Malaysia?

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### Abstract

This paper examines whether Covid-19 pandemic has changed the main economy factors affecting gold prices, and the relationship between KLCI and gold price in Malaysia. Gold plays an important role in an economy during normal and uncertain market situations. This research involved 62 monthly data covering the period of January 2016 to February 2021. Unit root and diagnostic tests are conducted on the data to ensure the results are valid. There are six macroeconomic variables involved, five of them are the independent variables and the remaining one is dependent variable. Multiple regression time series analysis is use to analyse the data in the perspectives of full sample, pre- Covid-19 period and during Covid-19 period. The results of this study found that few main economy factors ceased to be significant, and there is change relationship direction between exchange rate and gold price during Covid-19 period. We discovered KLCI has an inverse relationship with gold price. Future research can consider extending our analysis to neighbouring countries.

**Keywords:** Gold Price, Crude Oil Price, Consumer Price Index, Interest Rate, Klci, Exchange Rate, Covid-19, Malaysia

### Introduction

Gold is a precious material and commodity plays an important role in an economy. Gold is also served as an important financial asset such as monetary, asset reserve and financial functions within an economy (Lubis, Alfarisi, & Adrianto, 2021). Beside financial asset, gold can be used as a safer investment asset during economy uncertainties like Covid-19 pandemic (Hoong, 2021; Yousaf, et. al., 2021). Further, gold can play a greater role during several financial crises and uncertain market situations [eg. the global financial crisis (GFC) between 2007–2008, the European sovereign debt crisis (ESDC) between 2010–2013] (Yousaf, et. al., 2021). Golubova (2021) suggests that Covid-19 pandemic has changed few of the factors affecting world gold prices. On the same notion, Lubis, Alfarisi, & Adrianto (2021) suggests that many countries used gold as part of their foreign exchange reserves, hedging and portfolio diversification. For the past 12 months, gold has played its traditional role as a hedging tool to manage uncertainties, by recording gold-back exchange traded funds (ETFs) of 877 tonnes worth USD48 billion (€40 billion) in 2020 (Gopaul, 2021). These reports have

highlighted that gold has played essential roles as assets reserved and monetary functions as well as a hedging instruments in a troubled economy, particularly during the time of Covid-19 pandemic.

There are few research conducted overseas examined gold issues during Covid-19 pandemic period. Cheema, Faff & Szulczyk (2020) investigates efficacy comparison of safe haven assets in the United States (US) during Covid-19 pandemic and 2008 GFC. Similarly, Salisu, Vo & Lawal (2021) studies whether gold served as a safe haven or a hedging tool for crude oil price risks during Covid-19 pandemic. Dias et. al. in 2021 examines whether Gold, Silver and Platinum provide safe ports in rebalancing of the Asia stock markets' portfolios.

There are several studies conducted in Malaysia pertains to gold prices. Ibrahim, Kamaruddin & Hasan (2014) studied the relationship between crude oil prices, inflation rates and exchange rates with gold prices in Malaysia for the period 2003 to 2012. Sukri, Mohd Zain & Zainal Abidin in 2015 investigate the impact of macroeconomic factors (crude oil price, exchange rate, gross domestic product [GDP] and inflation rate) on gold prices in Malaysia from 2005 to 2014. In the same year, Zakaria et. al (2015) research the relationship between inflation rates, exchange rate and interest rates has on gold prices. Mat Dalam, Rashid & Padli in 2019 examine factors (GDP, inflation rates, crude oil price and exchange rates) contributing to the volatility of gold prices covering period of 1987 to 2016. Currently, there are limited studies conducted in Malaysia look at factors affecting gold price during the period of Covid-19 pandemic. Hence, we extent prior works of Cheema, Faff & Szulczyk (2020); Salisu, Vo & Lawal (2021); Dias et. al. in (2021) into the context of Malaysia, particularly factors affecting gold price during Covid-19 period. This study aims to investigate whether the relationships between main economic factors and gold price in Malaysia change during Covid-19 pandemic. Based on the literature review on Malaysian studies, there are limited findings pertains to the relationship between Malaysian KLCI and gold price, hence this study intends to examine the association between Malaysian stock exchange index and gold price.

The remainder of this paper is organised as follows. The next section (Section 2) provides literatures on main economy factors and gold prices, and hypotheses development. In section 3, we discuss the research method, data collection and tests conducted on the data. It followed by empirical results of descriptive statistics, multi regression analyses and summary of hypotheses in Section 4. The final section (Section 6) is the discussion and conclusion of the study.

## **Literature Review & Hypotheses Development**

### **Literature Review**

Gold is a liquid commodity which can be practical mean to trade for cash or exchange for other items (Sekar, et. al., 2017). The authors found that oil price, Indian Nifty Index, CPI (cost of price index), exchange rate (USD/INR) and interest rate were influencing the gold price. Long term gold prices is negatively correlated in proportionate with interest rates in the US (Levin, Montagnoli & Wright, 2006). Shafiee & Topal in 2010 studies the world gold market, they found that gold price is highly correlated to oil price, and on the other hand, there is no significant relationship between gold price and inflation (CPI). An Indian research found that exchange rate, fiscal deficit, forex reserves and inflation rate (CPI) have strong direct relationship with gold price, and GDP and Indian National Stock Exchange Index (INEI) have

weaker direct relationship with gold price (Bapna, et. al., 2012). Manoj & Suresh (2019) found that gold demand, exchange rate (USD/INR), S&P index, Indian Nifty Index, oil price and US dollar index is a good predictor for gold price in India.

There are few research conducted in Malaysia related to gold price. Ibrahim, Kamaruddin & Hasan (2014) found that there is direct relationship between crude oil price and gold price, and inflation (CPI) and exchange rates have indirect relationship with gold price. Similarly, Sukri, Zain & Abidin (2015) discovered that crude oil price and real GDP are positively related to gold price, and exchange rate is negatively related to gold price. In the same year, Zakaria et. al (2015) found that inflation rate (CPI) has direct relationship with gold price, and interest and exchange rates have inverse relationship with gold prices. The study by Mat Dalam, Rashid & Padli in 2019 revealed that GDP and crude oil price have direct relationship with gold prices.

COVID-19 pandemic, also known as the coronavirus pandemic, is first identified in December 2019 in Wuhan, China. The first wave of this pandemic happened between the middle of January and middle of February 2020, when several cases were reported in Malaysia and its neighbouring countries when the individuals arrived from China (Wan, 2020). The fast-spreading rate of COVID-19 virus has led to the introduction of Malaysia's Movement Control Order (MCO), which was enforced on 18 March 2020 (Prime Minister's Office of Malaysia, 2020). The Covid-19 pandemic have brought uncertainties to the Malaysian economy and the world economies at large. In this context, gold can play an increasing role as a safer investment asset (Hoong, 2021; Yousaf, et. al., 2021). Covid-19 pandemic has changed the drivers for world gold prices, which include private sector debts and deficit, and government fiscal policies (Golubova, 2021). Cheema, Faff & Szulczyk (2020) found that conventional assets like gold do not protect investors' wealth during Covid-19 crisis in the context of US. On the contrary, Dias et. al. in 2021 discovered gold could be a safe harbor for Asian stock markets in rebalancing their portfolios during Covid-19 pandemic crisis. Similarly, the results of Yousaf, et. al.'s (2021) study reveals that gold protects investor from losses in the major Asian stock markets during this pandemic crisis. On the same notion, Salisu, Vo & Lawal (2021) found that gold can be a useful tool in managing fluctuating oil returns risk in global perspective.

### **Hypothesis Development**

Based on the empirical findings discussed above, the following hypotheses are developed. Sekar, et. al. (2017) suggests that interest rate is influencing gold price, and Levin, Montagnoli & Wright (2006) found that interest rates has a negative relationship with long term gold prices, and similarly, Zakaria et. at. (2015) also discovered interest rates is inversely related with gold prices. Hence, we hypothesize that:

H1 : Interest rate is inversely related to gold price before Covid-19 period.

The studies of Shafiee & Topal (2010) and Sekar, et. al (2017) reveals that crude oil price is correlated with gold price, and the results of Ibrahim, Kamaruddin & Hasan (2014), Sukri, Mohd Zain & Zainal Abidin (2015) and Mat Dalam, Rashid & Padli (2019) research shows that crude oil prices are positively related to gold prices. Hence, we hypothesize that:

H2 : Crude oil price is directly related to gold price before Covid-19 period.

Sekar, et. al (2017) and Manoj & Suresh (2019) found that Indian Nifty Index is a good predictor for gold price, and Bapna, et. al. (2012) found that Indian National Stock Exchange Index is directly related to gold price and Lubis, Alfarisi & Adrianto (2021) recorded a positive relationship between gold price and Jakarta Composite Stock Price Index. The findings of these studies implies that stock exchange moved in the same direction with gold price. Hence, we hypothesize that:

H3 : KLCI is directly related to gold price before Covid-19 period.

Sekar, et. al (2017) suggests that CPI is influencing gold price, and Bapna, et. al. (2012), Ibrahim, Kamaruddin & Hasan (2014) and Zakaria et. at. (2015) found that CPIs are positively correlated with gold prices. Hence, we hypothesize that:

H4 : CPI is directly related to gold price before Covid-19 period.

Sekar, et. al (2017) and Manoj & Suresh (2019) discovered that exchange rate is influencing gold price, and Ibrahim, Kamaruddin & Hasan (2014), Sukri, Mohd Zain & Zainal Abidin (2015) and Zakaria et. at. (2015) exchange rates have indirect relationship with gold price. Hence, we hypothesize that:

H5 : Exchange rate is indirectly related to gold price before Covid-19 period.

Due to Covid-19 pandemic happen at the beginning of 2020 and Malaysia has started its MCO on 18 March 2020, which has changed some of the economic fundamentals. Hoong (2021) and Yousaf, et. al (2021) suggest that gold plays a greater role as save investment asset during economy uncertainties such as Covid-19 pandemic, and further Golubova (2021) has the view that some factors affecting gold prices has changed. Hence, we hypothesize that the relationship between the macroeconomic factors and gold prices changed during this pandemic period in the context of Malaysia.

H6 : There are at least one macro economy factor changes in their relationship direction with gold price during Covid-19 period.

Based on the hypotheses above, gold price model estimation is as follows:

$$GP_t = \beta_0 + \beta_1 IR_t + \beta_2 COP_t + \beta_3 KLCI_t + \beta_4 XR_t + \beta_5 CPI_t + e_t$$

Where:

- GP = Gold price (MYR per troy ounce)
- IR = Interest rate
- COP = Crude oil price (MYR per barrel)
- KLCI = Kuala Lumpur Composite Index
- XR = exchange rate (USD/MYR)
- CPI = consumer price index (2010 = 100)
- e = error term

### Research Methodology

This study uses quantitative method to investigate the relationships between main economic factors and gold price. This study is based on the monthly data from January 2016 to February 2021 yielded 62 data points. The economic factors are represented by interest rate, crude oil price, KLCI (Malaysian stock market index) and consumer price index (CPI). The data are collected from various sources, the interest rates is collected from



<https://www.fxempire.com/> website, and crude oil prices and gold prices are gathered from <https://www.indexmundi.com/>. KLCI data is collected from Yahoo Finance, exchange rate (USD/MYR) data is obtained from <https://www.x-rates.com/> and CPI is gathered from <https://www.theglobaleconomy.com/>. The variables were adopted from Bapna, et. al. (2012), Zakaria et. at. (2015) and Mat Dalam, Rashid & Padli (2019). This study employed multiple regression time series analysis in generating the results for pre-Covid-19 and during Covid-19 pandemic periods. Unit root and diagnostic tests have been performed on the data by using Augmented Dickey-Fuller, Jarque-Bera, Breusch-Pagan and Breusch-Godfrey tests.

## Empirical Results

Table 1: Descriptive Statistics

| Variable | N  | Mean  | Min   | Max   | Std Dev |
|----------|----|-------|-------|-------|---------|
| GP       | 62 | 5,835 | 4,770 | 8,250 | 959.1   |
| IR       | 62 | 2.871 | 1.750 | 3.250 | 0.504   |
| COP      | 62 | 221.8 | 91.64 | 319.1 | 48.65   |
| KLCI     | 62 | 1,661 | 1,351 | 1,870 | 111.3   |
| CPI      | 62 | 119.5 | 113.8 | 122.5 | 2.409   |
| XR       | 62 | 4.160 | 3.886 | 4.459 | 0.140   |

GP = gold price; IR = interest rate; COP = crude oil price; KLCI = Kuala Lumpur Composite Index; CP = consumer price index; XR = exchange rate

Table 1 shows the descriptive statistics for the dependent and independent variables, which include mean, minimum, maximum and standard deviation. The mean value for the dependent variable, gold price is RM5,835 per troy ounce with a standard deviation of RM959.1 per troy ounce, and gold have the minimum and maximum value of RM4,770 per troy ounce and RM5,835 per troy ounce respectively. Interest rate has an average of 2.871% with a standard deviation of 0.504%, and the minimum and maximum interest are 1.750% and 3.250% respectively. Crude oil price has the mean value of RM221.8 per barrel with a standard deviation of RM48.65 per barrel, and it have the minimum and maximum price of RM91.64 per barrel and RM319.1 per barrel respectively.

KLCI has the average of 1,661 points with a standard deviation of 111.3 points, and the minimum and maximum index of 1,351 points and 1,870 points respectively. The mean for consumer price index is 119.5 with a standard deviation of 2.409, and the minimum and maximum values are 113.8 and 122.5 respectively. The exchange rate (USD/MYR) has the average value of 4.160 with a standard deviation of 0.140, and the minimum and maximum rate are 3.886 and 4.459 respectively. Augmented Dickey-Fuller test shows that all the variables are stationery with gold price's Z(t) value is slightly below its critical value, which do not post any serious unit root problem. The results of Jarque-Bera, Breusch-Pagan and Breusch-Godfrey tests have indicated that the data are normally distributed, and no heteroscedasticity and no autocorrelation presence in the data.

Table 2: Relationship between main economic factors and gold price

| Type of analysis / variables | Full sample                | Pre- Covid-19 period       | During Covid-19 period  |
|------------------------------|----------------------------|----------------------------|-------------------------|
| IR                           | -0.0901***<br>(0.00515)    | -0.113***<br>(0.0179)      | -0.126***<br>(0.0324)   |
| LnCOP                        | -0.108***<br>(0.0322)      | -0.0979**<br>(0.0400)      | -0.204<br>(0.133)       |
| KLCI                         | -0.000133***<br>(2.43e-05) | -0.000141***<br>(2.56e-05) | -2.81e-05<br>(9.91e-05) |
| CPI                          | 0.00789***<br>(0.00121)    | 0.00782***<br>(0.00136)    | 0.00470<br>(0.00803)    |
| XR                           | -0.0172<br>(0.0138)        | -0.0342**<br>(0.0151)      | 0.0424<br>(0.0694)      |
| Constant                     | 3.621***<br>(0.131)        | 3.762***<br>(0.158)        | 3.875***<br>(0.982)     |
| Observations                 | 62                         | 50                         | 12                      |
| Adjusted R-squared           | 0.9532                     | 0.8270                     | 0.6496                  |

\*\*\*, \*\*, \* statistically significant at the <1%, <5%, <10% level respectively; standard errors in parentheses.

Since the first introduction of Malaysia's MCO is in March 2020, this study has partitioned the data into pre-Covid-19 period from January 2016 to February 2020, and during the Covid-19 period from March 2020 to February 2021. The result under full sample show interest rate, crude oil price and KLCI are negatively related to gold price at significant levels of 1%. On the other hand, for the same analysis, consumer price index is positively related to gold price at significant level of 1%, and there is no significant result for exchange rate in relation to the gold price.

In pre-Covid-19 period, there are inverse relationships between interest rate, crude oil price and KLCI, and gold price, which remained the same as the full sample analysis. However, the significant level for crude oil price has drop from 1% (under full sample) to 5% (under pre-Covid-19 period) with the same significant levels for interest rate and KLCI under both analyses. Similarly, consumer price index maintained same relationship direction and significant level in both full sample and pre-Covid-19 period analyses. On the contrary, the relationship between exchange rate and gold price has become significant in pre-Covid-19 period at 5% level in comparison with full sample analysis (insignificant result).

The result during Covid-19 period reveals that interest rate is inversely related to gold price with a significant level at 1%, which is consistent with the results under full sample and pre-Covid-19 analyses. Conversely, the remaining variables, crude oil price, KLCI, consumer price index and exchange rate do not have significant results in relation to the gold price under the analysis during Covid-19 period. The insignificant results for crude oil price, KLCI and consumer price index during Covid-19 period are not consistent in comparison with full sample and pre- Covid-19 period analyses in terms of significant levels (between 1% to 5%), but their relationship directions remained the same. The results during Covid-19 period indicates that they are some economy factors changes affecting gold prices, particularly crude

oil price, KLCI and consumer price index. Further, during Covid-19 period, the relationship direction between exchange rate and gold price has change to positive (insignificant) in comparison with the relationships of the same variables under full sample and pre- Covid-19 analyses (negative relationship).

Table 3: Summary of Hypothesis

| Hypothesis   | Full sample & Pre- Covid-19's Findings | During Covid-19's Findings |
|--|--|----------------------------|
| H1 : Interest rate is inversely related to gold price before Covid-19 period.  | Supported                              | NA                         |
| H2 : Crude oil price is directly related to gold price before Covid-19 period.   | Not supported                          | NA                         |
| H3 : KLCI is directly related to gold price before Covid-19 period.  | Not supported                          | NA                         |
| H4 : CPI is directly related to gold price before Covid-19 period.   | Supported                              | NA                         |
| H5 : Exchange rate is indirectly related to gold price before Covid-19 period.   | Supported                              | NA                         |
| H6 : There are at least one macro economy factor changes in their relationship direction with gold price during Covid-19 period. | NA                                     | Supported                  |

NA = Not applicable

Table 3 above reveals the results of full sample and pre- Covid-19 period analyses have supported H1, H4 and H5, which indicates that interest rate, CPI and exchange rate remains relevant in affecting the gold price as highlighted by the previous Malaysian studies [see (Ibrahim, Kamaruddin & Hasan, 2014; Sukri, Mohd Zain & Zainal Abidin, 2015; Zakaria et. at., 2015)]. However, H2 and H3 are not supported by the same analyses ie. full sample and pre-Covid-19 period, suggests crude oil price is inversely related with gold price, which is the opposite findings with previous research conducted in Malaysia [see (Ibrahim, Kamaruddin & Hasan, 2014; Sukri, Mohd Zain & Zainal Abidin, 2015; Mat Dalam, Rashid & Padli, 2019)]. Crude oil price has been dropped over 60% from its peak in 2014 (PriceWaterhouseCoopers, 2016), indicates that crude oil price has been in its low point might have affected the relationship between oil and gold prices. Further, the relationship between crude oil price and gold price during Covid-19 period became insignificant suggests that crude oil ceased to be significant influencing factor on gold price temporary during uncertain during Covid-19 period.

Full sample and pre- Covid-19 period analyses has shown that KLCI is negatively related to gold price, which do not support our H3 which predicted they have positive relationship [see (Bapna, et. al., 2012; Lubis, Alfarisi & Adrianto, 2021)]. Perhaps, it is due to different country context, where Bapna, et. al. (2012) conducted their study based on Indian National Stock Exchange Index and Lubis, Alfarisi & Adrianto (2021) has their research based on Jakarta Composite Stock Price Index, might not directly applicable to Malaysian Stock Index. The result during Covid-19 period has supported H6, where there is at least one macro economy factor change in their relationship direction with gold price. The exchange rate is positively (not significant) related with gold price, has change its relationship direction from negatively related with gold price (under full sample [no significant] and pre- Covid-19 period [significant



at 5% level]). This situation implies that Covid-19 pandemic might temporary change the economic factors affecting gold price, particularly exchange rate.

### Discussion and Conclusion

The study analyses the relationship between main economic factors and gold price in the context of full sample, pre- Covid-19 period and during Covid-19 period. There are consistent results for the relationship between interest rate, crude oil price, KLCI, consumer price index and exchange, and gold price under the analyses of full sample and pre- Covid-19 period with changes in significant levels for crude oil price and exchange rate. The directional relationship between crude oil price and gold price is the opposite in comparison with previous Malaysian studies. This could due to fall in crude oil price starting from 2014 might have impact the relationship direction between crude oil price and gold price. Similarly, the directional relationship between KLCI and gold price differs when compared with the past studies conducted in India and Indonesia. This finding implies Malaysian stock exchange index react differently with gold price in comparison with Indian and Indonesian stock exchanges' index.

There is a change in relationship direction to positive between exchange rate and gold price under during Covid-19 period analysis, when compared with full sample and pre- Covid-19 analyses (negative relationships), which could due to Covid-19 pandemic effecting the Malaysian economy. The results during Covid-19 shows that crude oil price, KLCI and consumer price index ceased to be significant when compared its findings under full sample and pre- Covid-19 analyses. This indicates that there are changes in main economy factors influencing gold prices in Malaysia. Covid-19 pandemic can bring factor change in influencing world gold price (Golubova, 2021) and gold play an important roles as monetary and hedging tools in the times of uncertain economy like Covid-19 pandemic (Lubis, Alfarisi & Adrianto, 2021; Gopaul, 2021).

Based on our findings, the government, policy makers, financial institutions, stock exchanges and investors are more informed about the relationship changes of few macroeconomic factors on gold price in the context of Malaysia, not only during normal period, but also during Covid-19 pandemic. This paper has some limitations. This paper covers five main economic variables affecting gold price and other economic factors are not included in this study. At the time of data collection, there are 12 monthly data available for Covid-19 pandemic period. Future studies could consider to extend our analysis to neighbouring countries like Singapore and Indonesia.

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