Journal of Academia Vol. 11, Issue 2 (2023) 96 – 103

UNCERTAINTY AND MALAYSIAN FINANCIAL MARKETS

Joel Raj Francis[1]

[1]lLabuan Faculty of International Finance
Universiti Malaysia Sabah, Labuan International Campus, Jalan Sungai Pagar, 87000, Federal Territory of Labuan

*Corresponding author: joelrajfrancis@gmail.com

Abstract

This study examines the long run cointegration relationship of two uncertainty indices namely the Global Economic Policy Uncertainty (GEPU) and Geopolitical Risk (GPR) on the returns of Malaysian stock and commodity market for the period from January 2000 to December 2022. The Malaysian stock market is represented by the Bursa Malaysia Kuala Lumpur Composite Index (KLCI) whilst the Malaysian commodity market is represented by the Bursa Malaysia Crude Palm Oil Futures (FCPO). The Autoregressive Distributed Lag (ARDL) approach is used to analyze the possible long-run cointegration between the uncertainty indices and the stock and commodity market's return. Our findings show that GEPU has a significant impact on the stock market and commodity market returns. We discover that GEPU has a significantly negative impact on the returns of the stock and commodity market over the long run. GPR, on the other hand, positively affects the return of stock market and negatively affects the return of commodity market in the long run. According to the findings, it is strongly advised that investment managers and investors in the Malaysian stock and commodity markets pay greater attention to the volatility of GEPU and GPR both in the short run and in the long run in order to control the risk of return in the stock and commodity market. In addition, policymakers should be strongly encouraged to keep a careful eye on the movement of the GEPU and GPR index, since this indicator is a significant factor in determining the returns of the Malaysian financial markets.

Keywords: Uncertainty, Stock, Commodity, ARDL, Malaysia

Article History:- Received: 06 September 2023; Revised: 20 September 2023; Accepted: 21 September 2023; Published: 31 October 2023

Introduction

Over the decade, researchers and experts have attempted to measure, forecast, and model the performance of financial market instruments by employing various techniques and approaches. Among the variables used in the past were macroeconomic variables, financial variables, and several others. In these recent years, another type of variable had emerged and gained much popularity. These variables are known as the uncertainty indices. To date there are several uncertainty indices readily available in the worldwide web which has been used extensively to measure the performance of financial market instruments. For instance, the study of Mo et al., (2019) analyzed the relationship between News-based Implied Volatility (NVIX) and the volatility of US stock market, Gursoy (2021), investigated the impact of Monetary Policy Uncertainty (MPU) from the US and Japan on the performance of Bitcoin. The study of Dutta et al., (2021) examined the impact of Equity Market Uncertainty (EMU) on crude oil volatility.

Aside from the uncertainty measures mentioned above, there are two others that are often used namely the Global Economic Policy Uncertainty (GEPU) and Geopolitical Risk (GPR). Several studies had documented that GEPU and GPR has significant relationship and able to predict the returns and volatility of financial market instruments such as stocks and commodities. For instance, the study of Balcilar et al., (2019) examined the predictability of GEPU on the stock market of Hong Kong, Malaysia, and South Korea and found out that the GEPU index was able to predict the returns and volatility of the

stock markets under observation. Similarly, in terms of commodity markets, the study of Wei et al., (2020) concluded that GEPU significantly affects the future oil price volatility. Meanwhile for GPR, the study of Sahin and Arslan (2021) examined the effects of GPR on 18 emerging countries stock market and reported that GPR affects both the returns as well as the volatility of the stocks. Similarly, in terms of commodity market, the study of Cunado et al., (2019) investigated the influence GPR has on oil returns from the period 1974 to 2017. The results of the study indicated that GPR negatively affects the oil returns.

The GEPU index was developed by Davis (2016) by employing the methodology of Baker et al., (2016). The GEPU index was developed based on aggregating the Economic Policy Uncertainty (EPU) of 21 countries that accounts to 75% of the global gross domestic product (GDP). The EPU index is a news-based index where specific terms such as "economic", "policy", "uncertainty" and several others that appears in 10 large newspapers in the United States (US) are text-mined and transformed into an index. On the other hand, GPR index was developed by Caldara and Iacoviello (2018) by employing the similar methodology of Baker et al., (2016), however, this index is formed by text-mining a different set of terms such as "geopolitics", "military tension", "nuclear tension", "terrorist threats", "war threats", and several others.

Though a vast amount of literature exists on relationship between these uncertainty variables and stock and commodity returns for developed markets, the literature on this relationship for major developing markets is scant. Most of the existing studies that utilized both the GEPU and GPR index focused mainly on the financial markets in the major developed economies such as US, United Kingdom (UK), Europe, Japan and less research paid attention to developing and emerging economies such as Malaysia. Henceforth, in this study we analyzed the long run cointegration relationship of these indexes on the returns of Malaysian stock and commodity markets by employing a distinguished econometric methodology known as the Auto Regressive Distributed Lag (ARDL) model.

Literature Review

As mentioned earlier, to date there are many studies that examined the impact and predictability of GEPU and GPR on various financial market instruments including stocks and commodities. Within the GEPU-Stock Market literature, the recent study of Irani et al., (2021) examined the impact of GEPU on the Tourism Stocks of Turkey. The authors employed Borsa Istanbul Tourism Index (TSI), and by applying the ARDL methodologies, the authors found out that the GEPU significantly affects the TSI negatively in the long run. To be precise, the authors concluded that for every 1% increase in GEPU, TSI decreases by 0.687%. In another study, Yu et al., (2018) examined the impact of GEPU on the volatility of Chinese stock market. In this study, the authors focused mainly on the predictive power of GEPU on the Shanghai Composite Index. By using the stock market data from January 2001 to March 2016 and by employing the GARCH-MIDAS approach, the authors confirmed that GEPU has predictive power on the Chinese stock market.

Within the GEPU-Commodity Market literature, the study of Ma et al., (2020), explored the impact of GEPU on the volatility of gold futures market. The authors employed the Markov regime-switching GARCH-MIDAS models, and based on their empirical analysis, the authors concluded that GEPU has predictive information for gold futures volatility. Similarly, a more recent study by Raza et al., (2023) investigated the influence of GEPU on gold, palladium, platinum, and silver during pre-Covid-19 (1997-2019) and through Covid-19 (2020-2022). The authors employed the GARCH-MIDAS approach and discovered a significant nexus between GEPU and metals price volatility. The authors found that whenever there is a spike in the GEPU index the price volatility of the precious metals tends to escalate as well.

Within the GPR-Stock Market literature, the study of Salisu et al., (2022) examined the predictability of GPR on the stock volatility in emerging markets. By employing the GARCH-MIDAS technique and by using the data from January 1975 to May 2020, the authors revealed that emerging stock market volatility responded positively to GPR. The authors concluded that increased GPR has tendency to

instill volatility in stock market. Similarly, the study of Zhang et al., (2023) which investigated the relationship between GPR and the stock market volatility of 32countries evidenced that GPR has a significant positive effect on stock market volatility. The authors also concluded that the effects of GPR on stock market volatility is more significant in developing countries.

Within the GPR-Commodity Market literature, the study of Micallef et al., (2023), investigated the Granger causality between GPR and 10 agricultural commodities. By using the data from 31 March 2000 to 31 March 2022, the authors revealed that GPR Threat and Act Granger-causes the changes in wheat and oat prices. Meanwhile GPR Threat specifically was found to be affecting the price of soybean oil, coffee, wheat, and oat whilst GPR Act specifically affects the future price of oats. In another study, Abid et al., (2023) examined the effects of GPR on five types of commodities namely energy, precious metal, agriculture, industrial metals, and livestock products. By employing the Markov-switching model with two regimes and data spanning from 2013 to 2023, the authors identified that the energy components were more sensitive to GPR whilst livestock components exhibit less sensitivity to GPR.

As discussed, despite numerous studies in existing literature, there are extremely limited studies that have investigated the Malaysian stock and commodity markets. Therefore, in light of these knowledge gaps, this study intends to contribute to the literature by investigating the long run cointegration between GEPU, GPR and the Malaysian stock and commodity market returns using monthly data from 2000 to 2022.

Methods

The frequency of the current study is on monthly basis and the period of the study is 2000: M1 to 2022:M12. The data consists of two uncertainty indexes namely the GEPU and GPR, and three control variables which is the Malaysian Treasury Bill (MTB), Exchange Rate (EXR), and the Consumer Price Index (CPI). Meanwhile for the dependent variables we selected the Kuala Lumpur Composite Index (KLCI) to represent the Malaysian stock market and the Crude Palm Oil Futures (FCPO) to represent the commodity market. The data description is provided in the Table 1 below.

Table 1. Data Description

No	Variables	Symbol	Time Period	Source
1	Global Economic Policy Uncertainty	GEPU	2000:M1 – 2022M12	Policyuncertainty.com
2	Geopolitical Risk	GPR	2000:M1 – 2022M12	Policyuncertainty.com
3	Kuala Lumpur Composite Index	KLCI	2000:M1 – 2022M12	Bursa Malaysia
4	Crude Palm Oil Futures	FCPO	2000:M1 – 2022M12	Bursa Malaysia
5	Malaysia Treasury Bill	MTB	2000:M1 – 2022M12	Bloomberg
6	Exchange Rate	EXR	2000:M1 – 2022M12	Bloomberg
7	Consumer Price Index	CPI	2000:M1 – 2022M12	Bloomberg

Unit Root Test

One of the main prerequisite to apply the ARDL model is to ensure that the data is stationary at level I (0) or stationary at I(1). In this study we employed the Augmented Dickey Fuller (ADF) to test for the presence of unit root.

ARDL Model

The ARDL model was first introduced by Pesaran and Shin (1995). I applied the ARDL model in my study to analyze long-run cointegration relationship between stock return, commodity return, and

uncertainty indexes. The ARDL models for this study is given below.

$$KLCI\ RET_t = a_0 + a_1 GEPU_t + a_2 GPR_t + a_3 MTB_t + a_4 EXR_t + a_5 CPI_t + e_t \ldots\ldots\ldots\ldots (1)$$

$$FCPO\ RET_t = a_0 + a_1 GEPU_t + a_2 GPR_t + a_3 MTB_t + a_4 EXR_t + a_5 CPI_t + e_t \ldots\ldots\ldots\ldots (2)$$

$KLCI\ RET_t$	=	Return of Kuala Lumpur Composite Index at time t
$FCPO\ RET_t$	=	Return of Crude Palm Oil Futures at time t
$GEPU_t$	=	Global Economic Policy Uncertainty index at time t
GPR_t	=	Geopolitical Risk index at time t
MTB_t	=	Malaysian Treasury Bill at time t
EXR_t	=	Exchange Rate at time t
CPI_t	=	Consumer Price Index at time t
e_t	=	Error term at time t

At level, the logarithmic values of KLCI, FCPO, GEPU, GPR, MTB, and CPI were found to be stationary as per the ADF unit root test results whilst, EXR was only found to be stationary at first difference.

Result and Discussion

ARDL Bounds Testing

Table 2 below reports the outcome of the ARDL Bounds test. The purpose of the ARDL Bounds test is to identify the existence of a long-run relationship between the variables of interest. The long-run relationship can only be confirmed once the null hypothesis is rejected.

Table 2. ARDL Bounds Test Results

Critical Value	**Lower Bound I(0)**	**Upper Bound I(1)**
1%	3.06	4.15
5%	2.39	3.38
10%	2.08	3
Model	**KLCI**	**FCPO**
F-statistics	19.6525 ***	24.9682 ***
k	5	5
Result	Cointegrated	Cointegrated

*Notes: *** indicates the rejection of the null hypothesis at 1% significance level. The optimal lag length selection for KLCI is (4,1,2,1,4,2) and FCPO is (2,0,3,1,3,0).*

The ARDL Bounds test results in Table 2 clearly shows that the F-Statistics for both the KLCI and FCPO models are greater than the critical value's upper bound at 1% significant level which resulted in the rejection of the null hypothesis which then concludes that the models are cointegrated in the long-run.

ARDL Cointegration and Long-Run Coefficients

Table 3 below presents the results of the long run cointegration between the variables examined in this study.

Table 3. Long-Run Coefficient of ARDL Approach Result

Model	KLCI	FCPO
GEPU	-1.6890 ***	-5.2348 ***
GPR	1.2514 **	-2.8705 *
EXR	-0.3780	12.2651 ***
MTB	-6.2760 ***	-20.5376 ***
CPI	-24.7415 **	-42.7218
Constant	12.3699 ***	52.1602 ***

*Notes: *, **, ***, indicates the rejection of null hypothesis at 10%, 5%, and 1% significance level. The optimal lag length selection for KLCI is (4,1,2,1,4,2) and for FCPO is (2,0,3,1,3,0).*

The results in Table 3 indicates that GEPU affects the Malaysian stock market (KLCI) and commodity market (FCPO) returns negatively in the long-run with a significance level of 1%. For every 1% increase in GEPU, on average, *ceteris paribus*, the KLCI returns will decrease by 1.6890% whilst FCPO will shed 5.2348%. The findings are consistent with the study of Chen et al., (2017) in which the authors found that higher economic policy uncertainty leads to lower stock market return.

GPR on the other hand affects the return of the stock market positively and commodity market negatively in the long run. For every 1% increase in GPR, on average, *ceteris paribus*, the returns of KLCI increases by 1.2514% whilst the returns of FCPO decreases by 2.8705% for every 1% increase in GPR. The findings are consistent with the study of Kyriazis (2021).

Meanwhile, EXR has no significant impact on the returns KLCI whilst on one hand whilst on the other, EXR has significant impact on the returns of FCPO. EXR was found to be having positive impact on FCPO. For every 1% increase in EXR, on average, ceteris paribus, FCPO increases by 12.2651%. MTB was found to be having negative impact on both KLCI and FCPO. For every 1% increase in MTB, on average, ceteris paribus, KLCI drops by 6.2760% whilst FCPO drops by 20.5376%. CPI has significant impact on KLCI but not on FCPO. For every 1% increase in CPI, the KLCI is expected to drop by 24.7415%.

The finding indicates that, the measure of uncertainty represented by GEPU and GPR can be used as a guidance to determine the directions of both the stock and commodity markets. For instance, if the GEPU index is on the rise, investors should anticipate that the returns from KLCI and FCPO will drop and when the GPR is on the rise investors should anticipate that FCPO will drop whilst stock returns in the Malaysia stock market will rise.

Error Correction Term (ECT) and Diagnostic Checking

The results of the Error Correction Model (ECM) and diagnostic checking is reported in Table 4 below. The diagnostic checking consists of Breusch-Godfrey Lagrange Multiplier (LM) test, Breusch-Pagan-Godfrey Heteroscedasticity test, Ramsey RESET test, CUSUM, and CUSUMSQ test.

Table 4. Error Correction Term (ECT) and Diagnostic Checking

Model	KLCI	FCPO
ECT (-1)	-1.3835 ***	-1.1837 ***
LM (2)	1.1388	0.9196
B-P-G	1.1830	0.9086
RESET (1)	0.1690	1.7797
CUSUM	S	S
CUSUMSQ	S	S

Notes: The lag length for LM test is 2 whilst the lag length for the RESET test is 1. The letter 'S' denotes 'Stable'.

The Error Correction Term (ECT) indicates the rate at which the adjustment process takes place to

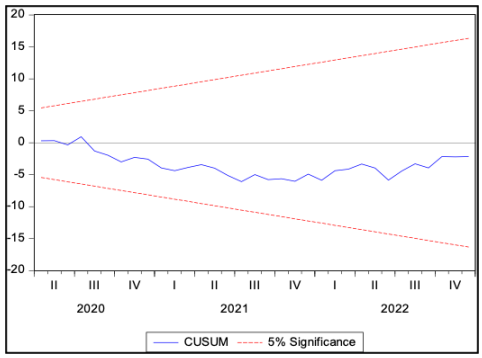
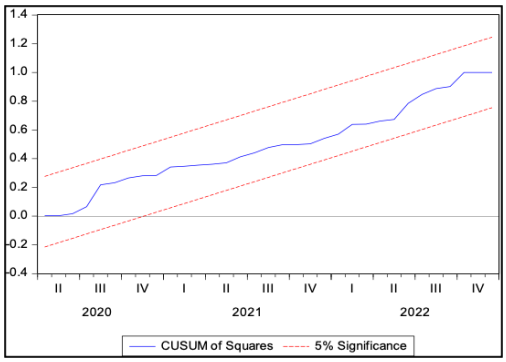
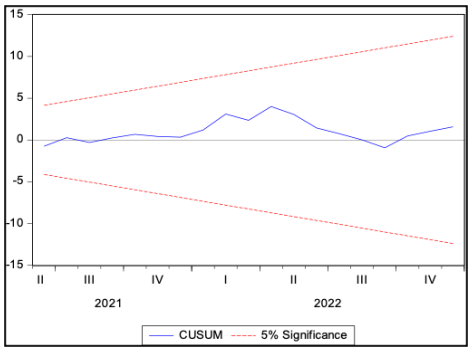
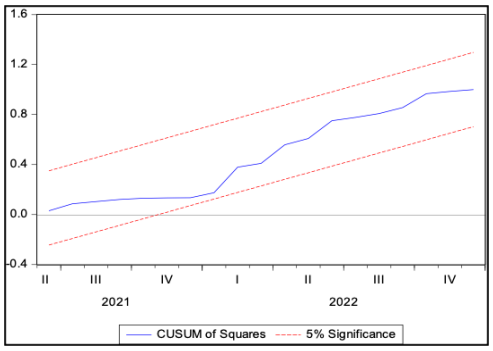
restore equilibrium in the event a disturbance occurs in the long run equilibrium relationship. In this study, the generated ECT is expressed in negative sign and statistically significant at 1% significance level. The results of the ECT can be interpreted as per below:

- KLCI will be corrected based on 101.3835% per period and it will take 1/1.385 = 0.7228 months for the model to move back into the long run relationship.

- FCPO will be corrected based on 101.1837% per period and it will take 1/1.1837 = 0.8448 months for the model to move back into long run relationship.

The results of the LM test suggest that both the models are free from serial correlation and the results of B-P-G indicates that none of the models suffer from heteroscedasticity problems. On top of that, the results of the RESET test indicates that the models are free from specification errors. Meanwhile the results of CUSUM and CUSUMSQ indicate that both the models are stable since the statistics fall within the line of 5% significance level (see Table 5 below)

Table 5. CUSUM and CUSUMSQ Result

	CUSUM	**CUSUMSQ**
KLCI		
FCPO		

Conclusion

This study examined whether uncertainty indexes namely Global Economic Policy Uncertainty (GEPU) and Geopolitical Risk (GPR) has any long run cointegration relationship with the returns of Malaysian stock (KLCI) and commodity (FCPO) markets. This study applies the Auto Regressive Distributed Lag (ARDL) model on the uncertainty, stock and commodity return data for the period from January 2000 to December 2022 and tested for the long run dynamic relationship between these variables. The result from the experiment suggests that GEPU negatively affects both the stock and commodity market

returns in the long run whilst GPR positively affects the returns of stock market and negatively affects the commodity market returns in the long run. Aside from being useful to policymakers, regulators, and the investment community, this study would be welcome addition to the expanding body of empirical literature on the relationship between uncertainty variables, stock and commodity returns in emerging markets. Future studies should look into analyzing the impact of these uncertainty indexes on stock markets based on sectors for instance, IT, Finance, Tourism, and Plantation.

Acknowledgement/Funding

The author received no financial support for the research.

Author Contribution

Joel Raj Francis – Data Analysis and Write-Up

Conflict of Interest

Author declares no conflict of interest.

References

Abid, I., Dhaoui, A., Kaabia, O., & Tarchella, S. (2023). Geopolitical risk on energy, agriculture, livestock, precious and industrial metals: New insights from a Markov Switching model. *Resources Policy, 85*, 103925.

Baker , S. R., Bloom, N., & Davis , S. J. (2016). Measuring Economic Policy Uncertainty. *The Quarterly Journal of Economics, 131*(4), 1593-1636.

Balcilar , M., Gupta , R., Kim, W. J., & Kyei, C. (2019). The role of economic policy uncertainty in predicting stock returns and their volatility for Hong Kong, Malaysia, and South Korea. *International Review of Economics and Finance, 59*, 150-163.

Caldara, D., & Iacoviello, M. (2018). Measuring Geopolitical Risk. *International Finance Discussion Paper, 2018*(1222), 1-66.

Chen, J., Jiang, F., & Tong, G. (2017). Economic policy uncertainty in China and stock market expected returns. *Accounting and Finance, 57*(5), 1265-1286

Cunado, J., Gupta, R., Lau, C. M., & Sheng, X. (2019). Time-varying impact of geopolitical risk on oil prices. *Defence and Peace Economics, 31*(6), 692-706.

Davis, S. J. (2016). Index of Global Economic Policy Uncertainty . *National Bureau of Economic Research*, w22740.

Dutta, A., Bouri, E., & Saeed, T. (2021). News-based equity market uncertainty and crude oil volatility. *Energy, 222*, 119930.

Gursoy, S. (2021). The Effects of Monetary Policy Uncertainty of US and Japan on Bitcoin Price. *Yalova Sosyal Bilimler Dergisi, 11*(1), 7-16.

Irani, F., Athari, S. A., & Hadood, A. A. (2021). The Impacts of Country Risk, Global Economic Policy Uncertainty, and Macroeconomic Factors on the Turkish Tourism Industry. *International Journal of Hospitality & Tourism Administration, 23*(6), 1242-1265.

Kyriazis , N. A. (2021). The effects of geopolitical uncertainty on cryptocurrencies and other financial assets. *SN Business & Economics, 1*(1), 5.

Ma, F., Lu, X., Wang, L., & Chevallier, J. (2021). Global economic policy uncertainty and gold futures market volatility: Evidence from Markov regime-switching GARCH-MIDAS models. *Journal of Forecasting, 40*(6), 1070-1085.

Micallef, J., Grima, S., Spiteri, J., & Apoga, R. R. (2023). Assessing the Causality Relationship between the Geopolitical Risk Index and the Agricultural Commodity Markets. *Risks, 11*(5), 84.

Mo, B., Mu, J., & Zhang, B. (2019). The relationship between news-based implied volatility and volatility of US stock market: What can we learn from multiscale perspective. *Physcia A: Statistical Mechanics and its Applications, 526*, 121003.

Pesaran, M. H., & Shin, Y. (1995). *An autoregressive distributed lag modelling approach to cointegration analysis* (Vol. 9514). Cambridge, UK: Department of Applied Economics, University of Cambridge.

Raza, S. A., Masood, A., Benkraiem, R., & Urom, C. (2023). Forecasting the volatility of precious metals prices with global economic policy uncertainty in pre and during the Covid-19 period: Novel evidence from the GARCH-MIDAS approach. *Energy Economics, 120*, 106591.

Sahin, E. E., & Arslan , H. (2021). An Analysis of the Effects of Geopolitical Risks on Stock Returns and Exchange Rates Using a Nonparametric Method. *The Journal of Accounting and Finance, 89*, 237-250.

Salisu, A. A., Ogbonna, A. E., Lasisi, L., & Olaniran, A. (2022). Geopolitical risk and stock market volatility in emerging markets: A GARCH – MIDAS approach. *The North American Journal of Economics and Finance, 62*, 101755.

Yu, H., Fang, L., & Sun, W. (2018). Forecasting performance of global economic policy uncertainty for volatility of Chinese stock market. *Physica A: Statistical Mechanics and Its Applications, 505*, 931-940.

Zhang, Y., He, J., He, M., & Li, S. (2023). Geopolitical risk and stock market volatility: A global perspective. *Finance Research Letters, 53*, 103620.