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The Dynamic Impact of Crude Oil Price and Real Estate Growth on Stock Market Performance

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Abstract:
This paper examines the effect of crude oil price and real estate growth on Malaysian stock market performance by examining the monthly data from 1999-2016 using both linear and non-linear tests. These tests examine the long-run and short-run relationship among variables. Granger causality test is used to measure the short-run adjustments towards the long-run relationship among the variables. The results of Granger causality test indicates that a bidirectional relationship exists between stock market performance, crude oil price, real estate. In other words, there is a dynamic relationship among the stock market performance, crude oil and real estate.

Keywords: Crude oil price, real estate, stock market, Malaysia

1.Introduction

The stock market performance received considerable attention recently in relation to crude oil price volatility and real estate growth. As stock market is the key to a structural revolution in any economy from a traditional, rigid, insecure bank-based to a more flexible,

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secure economy that is immune to shocks, fluctuations and lack of investors' confidence (Masoud, 2013). Besides that, stock market also is known as where the industry and government can raise long-term capital. For the investor, stock market provides financial securities where they can buy or sell. Many factors can change the performance of the stock market, for example, increasing in crude oil price. More source economy can give an impact on stock market performance. Stock market is sensitive and any changes in the economy may affect stock market performance.

Crude oil is the largest commodity market in the global market. It is considered as having a significant effect on production and consumption in the whole world economy. In modern industry, it is used as an important raw material and energy. Crude oil price fluctuations can impact the global economy alongside with industrial chain (e.g., Aromi and Clements, 2019; Gogolin et al., 2018; Gong and Lin, 2017; Grigoli et al., 2019; Mohaddes and Pesaran, 2017; Nasir et al., 2018; Wei and Guo, 2016; Wen et al., 2016, 2018, 2019a, 2019b; Zhao et al., 2016). The role of crude oil has attracted numerous attention with its introduction as an alternative investment asset and significant development in crude oil future markets.

Real estate is one integral part of the economy. Real estate can be explained by property consist of land and building. The strategy of owning real estate appears to be more typical in both Asian and European market than in the USA. Another institutional factor that renders this study interesting is, compared with the real estate market in the USA, Asia is characterized by land scarcity and high population density, and thus real estate values are relatively high (Liow, 2004). Based on that, it made real estate become the most preferred investment target in Asia. Hence, this becomes an interesting topic to be explored about the relationship between the real estate growth and Malaysia stock market performance.

This study aims to investigate whether crude oil price and real estate give any impact on stock market performance in Malaysia. The previous studies in developed countries find a negative relationship between oil price shocks and stock market return (Sadorsky, 1999; Ciner, 2001). While others find a positive relationship (Chen et al.,1986: Gjerde & Saettern, 1999). According to Maghyereh and Akhtam (2004) in emerging economies stock market do not signal accordingly changes in crude oil price. Moreover, Du and Ma (2012) find that the Coalition for Racial Equality and Rights (CRER) of Chinese non-real estate firms has no significant positive impact on the abnormal returns of stocks, and even decrease those of firms in the information industry. It is therefore interesting to see whether the same finding can be found in Malaysia.

This paper comprises five sections. Following this introductory section is a brief review of crude oil prices, real estate growth and stock market performance and the hypotheses development. The next section states the data and methodology employed in this study. Section four presents the empirical results. The last section of this paper discusses the findings and concludes the study.

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2.Literature review and Hypotheses

2.1 *Crude Oil price and Stock market performance*

A large strand of previous literature examined the relationship between crude oil price and market performance after the drastic event of the second world war (Ulusoy and Ozdurak, 2018; Ojikutu et al.,2017; Cuppers and Smeets, 2015; Huang et al.,1996; Hamilton, 1983). US stock market adversely affected by the crude oil price during this crisis of war. After this, several researchers analyzed this mechanism of crude oil price with macroeconomic variables and categorized it into four major nexuses based on their findings (Iqbal and Malikarjunappa, 2010; Chen, 2010; Ghouri, 2006, Hammoudeh and Li, 2005). For example, according to Iqbal et al., (2010), the relationship between crude oil price and the capital market is negative. Contrary, some studies found that the relationship between crude oil price and capital market is positive and significant depending upon various other factors (e.g., Zhu et al.,2014; Arouri and Rault, 2011; Park and Ratti, 2008; El-Sharif et al.,2005). Other studies found no significant relationship between these two variables (Al-Janabi et al.,2010; Apergis and Miller, 2009; Henriques and Sadorsky, 2008).

According to Babatunde et al., (2013) market stock can be affected by the movement in the price of crude oil depending on other macroeconomic factors that are vital in market stocks. The crude oil price volatility is a big issue in Malaysia after the Asian crisis (1997) and the global financial crisis (2008). According to Park and Ratti (2008), the relationship between oil price shock is different in oil-importing countries as compared to oil-exporting countries. They found a negative relationship between crude oil price shocks and market performance in oil-importing countries and positive in oil-exporting countries. However, it is still unclear whether the impact of volatility of crude oil price impact on stock market performance in Malaysia. Therefore, this study proposed the following hypothesis.

H_1: *There is a significant relationship between crude oil price and market performance.*

2.2 *Real estate and stock Market Performance*

According to Graham et al., (2002) real estate market is considered an important driver in the stock market performance during the last two decades. According to Miller et al (2011) and Schmalz et al (2016), the real estate market is considered as a booster for household wealth which ultimately leads to investment in economic growth in the country. However, recession brings a decline in household wealth which leads to a decline in investment in the economy causes low economic growth (Nneji et al.,2013). The findings on the relationship between property and equity are inconclusive in the previous strand of literature. The previous studies on the relationship between real estate (direct and indirect) with stock market performance are categorized into three streams i.e., causality, communality, and integration. The previous studies on real estate and stock markets supported this context of the notion that both markets are segmented. For example, this is supported by studies that considered segmentation between both

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markets (Schnare and Struyk, 1976; Goodman, 1978, 1981; Miles et al., 1990, Liu et al.,1990, Geltner, 1991). While other researchers found contradictory results about the integration between both markets (Liu et al.,1990; Ambrose et al.,1992; Gyourko and Keim, 1992).

In another study conducted by Liow (2011) in eight Asian countries by gathering the data from 1995 to 2009 for real estate and stock markets, it is found that there is a high correlation between real estate and stock markets. This correlation is high from other developed countries because in Asian countries property is considered the main components of the firm's assets. According to Ong (2013), the same story is for Malaysia where the real estate market is increased by 45% between 2001 to 2010. This is a huge increase in the real estate market in Malaysia. However, in the context of Malaysia, the relationship between real estate and the stock market is inconclusive. This study proposes the second hypothesis.

H_2: *There is a significant relationship between real estate and stock market performance.*

3.Methodology

3.1 *Sample selection and Variable Measurement*

This study aims to investigate the relationship between crude oil price and real estate growth on stock market performance in Malaysia. To test the above-mentioned hypotheses H1 and H2 in section 2. This study collects the sample from 1999 to 2016 (216 months' data) in Malaysia. Stock market performance is measured by using the stock market performance index (SMP) for which data is collected by using international data based CEIC and World Bank. Crude oil price is measured by using Brent crude oil price functions a proxy of crude oil price because it is traded in wider futures markets, better than WTI crude oil prices, such as IPE in London, DME in Dubai, MCX in Mumbai, and TOCOM in Tokyo (Maghyereh, 2004). Brent crude oil price data is collected from the Federal Reserve Bank of St. Lois Economic Data (FRED). Real estate is measured by using the Malaysia property index. All data used are monthly based and transformed into a natural logarithm (ln). Exchange rate, lending rate and money supply are used as control variables.

3.2 *Estimation models*

This section presents the estimation models which are used to measure the impact of crude oil price and real estate on stock market performance. The following estimation models are used in this study.

$$SMP_t = \alpha + \beta_1 CO_t + \varepsilon \quad (1)$$

$$SMP_t = \alpha + \beta_1 PI_t + \varepsilon \quad (2)$$

$$SMP_t = \alpha + \beta_1 CO_t + \beta_2 PI_t + \varepsilon \quad (3)$$

$$SMP_t = \alpha + \beta_1 CO_t + \beta_2 PI_t + \beta_3 CV_t + \varepsilon \quad (4)$$

Whereas SMP represents the stock market performance at time t, CO and PI measure the crude oil price and real estate property index at time t. CV represents control variables used in this study i.e, Exchange rate, lending rate and money supply.

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4. Empirical Results

4.1 *Overview of Malaysian Composite index, crude oil price and real estate property index (1999-2016)*

Figure 1 shows the monthly composite index for Malaysia from 1999-2016. This value of the composite index has a downward trend during the global financial crisis (2007-2008) all over the world. After 2009 there is an increasing trend in the composite index. Figure 2 shows the crude oil price for Malaysia from 1999-2016. The price of crude oil is in increasing trend expect for two years 2007 and 2014. During these two years, the Malaysian economy suffered from a global financial crisis and internal political instability. Decreasing crude oil has also affected the world oil situation because Malaysia is one of the world's largest crude oil producer. The reasons for the occurrence of a dropping in crude oil in Malaysia is due to the world economic condition and the current oil market was unstable and volatile. Figure 3 shows the property index starting from the year 1999-2016. This graph represents that PI in Malaysia is volatile over the years. The reason for the volatility of this graph is the price changes and economic conditions of Malaysia.

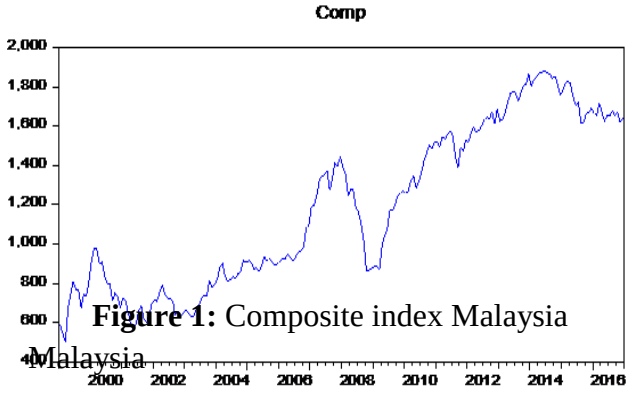

Figure 1: Composite index Malaysia

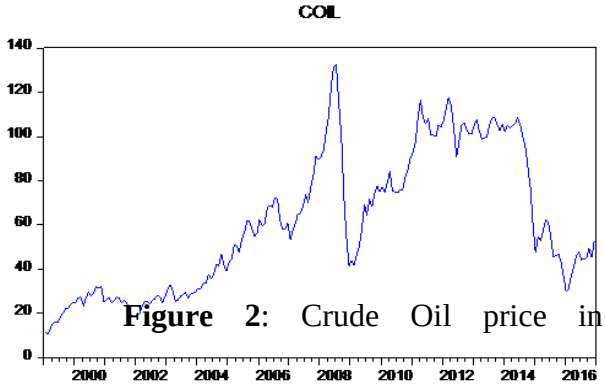

Figure 2: Crude Oil price in Malaysia

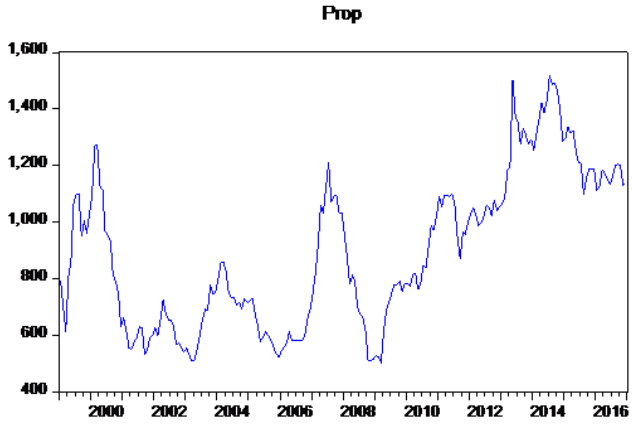

Figure 3: Property index Malaysia

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4.2 ***Descriptive statistics***

Table 1 shows the descriptive statistics for all the variables. The total monthly observations used in this study are 216. However, the minimum and maximum value of the composite index are 502.8200 and 1882.710, respectively. The average value of the crude oil price is 60.65 and the property index is 894.4957. The minimum and maximum values of control variables (Exchange rate, lending rate and money supply) are 72.12, 4.44, 30152.6 and 107.79, 9.66 and 1657809. Table 2 provides the Pearson correlation among all variables. All the variables are based on the logged data. The property index shows the highest correlation against the composite index while the lowest correlation is the lending rate. Other than that, the lending rate also shows a negative correlation between the composite index and the money supply. Besides that, the exchange rate reported the highest correlation against crude oil and property index. The exchange rate reported the highest correlation to money supply while the lending rate shows the negative correlation. The lending rate has a positive and highest correlation to the exchange rate.

Table 1: Descriptive statistics

Variables	Observations	Mean	Median	Maximum	Minimum	Std. Dev.
Index	216	1185.273	1168.680	1882.710	502.8200	415.1230
Oil	216	60.65023	56.42000	132.5500	10.75000	31.56111
PI	216	894.4957	832.2550	1517.390	504.3700	271.0267
Exg	216	90.71894	87.51350	107.7900	72.12520	8.542617
Lr	216	5.848882	5.975000	9.660000	4.443820	1.164839
Ms	216	864311.3	812513.0	1657809.	301526.0	447597.2

Table 1 shows the descriptive statistics for all variables used in this study. Index is composite index to measure stock performance. Whereas oil=Crude oil price, PI = property index, Exg= exchange rate, Lr = lending rate, and MS = money supply. This table provides mean, median, minimum and Maximum values for variables.

Table 2: Correlation Matrix

	Log index	Log Oil	Log PI	Log MS	Log LR	Log EXG
Log Index	1					
Log Oil	0.169951	1				
Log PI	0.825954	0.15437	1			
Log MS	0.138225	0.09223	0.09312	1		
Log LR	-0.094181	0.03442	0.00787	-0.0564	1	
Log EXG	0.177624	0.23257	0.22395	0.0148	0.14723	1

Table 2 shows the correlation matrix among all variables. All variables are transformed into natural logarithm. Index measures the stock performance whereas, oil is the crude oil price, PI is property index, MS is money supply, LR is the lending rate and Exg is the exchange rate.

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4.3 **Regression Results**

Table 3 shows the results of the impact of crude oil price and property index on stock performance by estimating equation 1,2, 3 and 4 and the results are presented in Columns-1, II, III and IV. The results are positive and significant at 1% level of significance in all models. These results further indicate that when the price of crude oil and property index increases it has a significant and positive impact on stock market performance. The coefficients of control variables are in accordance with previous studies. According to Gavin (1989), the justification for the negative exchange rate with the stock price could be due to different conditions. Investment and consumption can be lower as the interest rate would be negative with the exchange rate. In addition, positive inflation can make the exchange rate become increase (Semuel & Nurina, 2015).

Table 3: Crude oil price, property index and stock market performance

Variables	Model I	Model II	Model III	Model IV
LnOil	0.4825 ***		0.3407 ***	0.2821 ***
LnPI		0.9519 ***	0.6765 ***	0.5285 ***
LnExg				-0.6776 ***
LnLR				-0.5025 ***
LnMS				-0.05801 ***
Intercept	5.0651***	0.5627	0.9973***	6.4216***
Observations	216	216	216	216
R-squared	0.6203	0.6393	0.8975	0.9837
Adj.R-Square	0.6185	0.6376	0.8965	0.9833

Table 3 presents the results of regression model among independent and dependent variables. Model-I, II, III and IV shows the results of equation 1,2,3 and 4 respectively. Stock market performance is the dependent variable while crude oil price, property index are independent variables. Exchange rate, lending rate and money supply are used as control variables. Note: (*), (**) and (***) donates 10%, 5% and 1% of significance, respectively.

4.4 Unit root test:

Table 4 and 5 show the results of the Augmented Dickey-Fuller test (ADF) and Phillips Perron test (PP) to examine whether data is stationary or non-stationary. Both tests are performed on the composite index, crude oil price, property index, exchange rate, lending rate and money supply on log level and at first difference. The results of ADF indicates that at 5% level all variables are non-stationary at level. However, at first difference, all variables are stationary except lending rate. For the PP test, all variables are non-stationary at level, 5% and stationary at first difference. Besides that, since all the series are non-stationary at level and integrated of the same order one this would suggest the possibility of existing the cointegrating relationship between all the variables.

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Table 4: Augmented Dickey-Fuller Test

	Without Trend		With Trend	
Variables	Level	First difference	Level	First difference
lnINDEX	-1.459480**	-13.37653*	-2.492667**	-13.35552*
lnOIL	-2.822236**	-10.99054*	-2.397200**	-11.14697*
lnPI	-1.781791**	-12.54312*	-2.515553**	-12.52010*
lnEXG	-0.764890**	-9.942111*	-0.033794**	-10.13041*
lnLI	-2.945925	-11.92154*	-3.133617**	-12.16718*
lnMS	-1.202664**	-13.03885*	-0.034161**	-13.08127*

Table 4 shows the results of Augmented Dickey-Fuller to analyze the series whether it is stationary and non-stationary Note: Note: (*), (**) and (***) donates 10%, 5% and 1% of significance, respectively.

Table 5: Phillips Perron Test

	Without Trend		With Trend	
Variables	Level	First difference	Level	First difference
lnINDEX	-1.506831**	-13.36489*	-2.790298**	-13.34224*
lnOIL	-2.720520**	-10.98885*	-2.149837**	-11.20478*
lnPI	-1.934402**	-12.68025*	-2.693304**	-12.65832*
lnEXG	-0.596929**	-9.856563*	0.310948**	-10.03251*
lnLI	-2.830722**	-12.32105*	-3.205658**	-12.49893*
lnMS	-1.051906**	-13.19304*	-0.413297**	-13.22949*

Table 4 shows the results of Phillips Perron test to analyze the series whether it is stationary and non-stationary Note: Note: (*), (**) and (***) donates 10%, 5% and 1% of significance, respectively.

4.5 VAR Model Results

This section presents the results of the VAR approach for lag selection and the results are presented in Table 6. This study determines 8 lags in the calculations of the VAR model for the estimation of the equation I, II and III.

Table 6: AIC and SC statistics from VAR (1) until (8)

Lag-Interval	Log Index = log Oil (I)		Log index =log PI (II)		Log index = log Oil + log Pi (III)	
	AIC	**SC**	**AIC**	**SC**	**AIC**	**SC**
1	-5.241816	-5.148058	-6.824278	**-6.730520***	-8.926027	**-8.738511***
2	-5.311548	**-5.155285***	-6.829507	-6.673244	**-8.983067***	-8.654915
3	-5.282157	-5.063389	-6.817656	-6.598888	-8.939295	-8.470507

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4	-5.281635	-5.000362	-6.847496	-6.566222	-8.945855	-8.33643
5	-5.285699	-4.94192	-6.823683	-6.479904	-8.908084	-8.158022
6	-5.284096	-4.877812	-6.811092	-6.404808	-8.875462	-7.984764
7	-5.295449	-4.82666	-6.811361	-6.342573	-8.87182	-7.840485
8	**-5.334588***	-4.803294	**-6.859834***	-6.32854	-8.913066	-7.741094

Table 6 shows the results of the VAR model estimation for equation 1,2 and 3. Model-1 indicates the estimation between the composite index and crude oil price. Model-II shows the estimation between the composite index and property index. Model 3 shows the estimation combined with the crude oil price and property index. Notes: value in bold represents optimal lag length selected by the respective criterion.

Table 4 report the AIC and SC from lag 1 until lag 8 in the VAR. Each model has a different number of lags because each model is different from the other model. For model I, the optimal lag length for AIC is 8 and for SC is 2. followed by model II, the optimal lag length for AIC is the same as the first model and for the SC the lag is 1. AIC for model III shows the lag is 2 and the SC is the same with model II, respectively.

4.6 Co-Integration Test Results

This section tests the cointegration relationship among variables for this purpose Johansen cointegration test is employed and results are presented in Table 7 panel A, B, C and D. This test is categorized into two parts which are trace test and maximum eigenvalue test. Panel A, B, C and D are for models I, II, III and IV. The results of panel A, B, C, indicates that there is no cointegration at 5% level between the models. It can be said that there is no long-run relationship between the three models, however, a short-run relation could exist. On the contrary, Panel D result shows that cointegration exists among variables at 5% level and this can be interpreted as there is a long-run relationship among variables and it can be estimated by using vector error correction model (VECM). In the case of Panel A, B and C as there is no cointegration we can proceed with the VAR model.

Table 7: Co-integration test

Panel A: Model I: Log Index = Log Oil

trace test				Maximum Eigenvalue test			
Ho	H_1	$\lambda trace$	*P-value*	*Ho*	H_1	λ max	*P-value*
r = 0	r > 0	7.507148	0.5195	r = 0	r > 0	5.989072	0.6146
r ≤ 1	r > 1	1.518075	0.2179	r ≤ 1	r > 1	1.518075	0.2179

Note: r = number of cointegrating vector, λ max = maximum eigenvalue statistics and $\lambda trace$ = trace statistics

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Panel B: Model II: Log Index = Log PI

trace test				Maximum Eigenvalue test			
Ho	H_1	$\lambda trace$	*P-value*	*Ho*	H_1	λ max	*P-value*
r = 0	r > 0	12.99020	0.1152	r = 0	r > 0	9.809519	0.2247
r ≤ 1	r > 1	3.180685	0.0745	r ≤ 1	r > 1	3.180685	0.0745

Note: r = number of cointegrating vector, λ max = maximum eigenvalue statistics and $\lambda trace$ = trace statistics

Panel C: Model III: Log Index = Log oil + Log PI

trace test				Maximum Eigenvalue test			
Ho	H_1	$\lambda trace$	*P-value*	*Ho*	H_1	λ max	*P-value*
r = 0	r > 0	21.53000	0.3254	r = 0	r > 0	12.64956	0.4850
r ≤ 1	r > 1	0.031876	0.3766	r ≤ 1	r > 1	6.997429	0.4895
r ≥ 2	r = 2	0.008680	0.1700	r ≥ 2	r > 2	1.883014	0.1700

Note: r = number of cointegrating vector, λ max = maximum eigenvalue statistics and $\lambda trace$ = trace statistics

Panel D: Model IV: Log Index = Log Oil + Log PI + log EXG + Log LR + Log MS

trace test				Maximum Eigenvalue test			
Ho	H_1	$\lambda trace$	*P-value*	*Ho*	H_1	λ max	*P-value*
r = 0	r > 0	131.8713*	0.0000	r = 0	r > 0	60.23169*	0.0001
r ≤ 1	r > 1	71.63956*	0.0355	r ≤ 1	r > 1	35.98464*	0.0276
r ≥ 2	r = 2	35.65492	0.4139	r ≥ 2	r > 2	19.81123	0.3543

Notes: * denotes rejection of the hypotheses at 5% level

4.7 Granger Causality result

This section presents the results of the Granger Causality test and pairwise Granger causality test and results are reported in Table 8 and Table 9. The VAR approach is usually used when we have an econometric hypothesis that χ □ Granger cause γ □ but γ □ does not Granger cause χ □. Table 9 results indicate that the Pairwise Granger causality test with a corresponding lag length is lag 2. This could be interpreted as at 5% level stock market performance does not granger cause exchange rate. In this scenario, we reject the null hypothesis which means stock market performance can cause exchange rate.

Similar results are obtained for the money supply. In addition, the exchange rate can cause the crude oil in Malaysia since the currency plays an important role in the country. Finally, the property index shows that it can give cause for the exchange rate in Malaysia. Real estate

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also important to make our property in Malaysia become more precious and the price would be controlled properly.

Table 8: Granger Causality Test

Variables	ΔINDEX	ΔOIL	ΔPI	ΔEXG	ΔLR	ΔMS
ΔINDEX		2.487078	2.207085	2.910158	0.860168	14.94418
		[0.2884]	[0.3317]	[0.2334]	[0.6505]	[0.0006]
ΔOIL	0.829951		0.121712	2.338529	0.24458	3.197487
	[0.6604]		[0.9410]	[0.3106]	[0.8849]	[0.2022]
ΔPI	0.515015	1.084082		0.174246	2.240976	10.14422
	[0.7730]	[0.5816]		[0.9166]	[0.3261]	[0.0063]
ΔEXG	0.213233	1.511527	0.635783		0.447371	3.311713
	[0.8989]	[0.4697]	[0.7277]		[0.7996]	[0.1909]
ΔLR	2.403472	3.434349	6.425427	3.610581		2.183661
	[0.3007]	[0.1796]	[0.0402]	[0.1644]		[0.3356]
ΔMS	5.469298	2.919895	2.654763	3.38711	0.162138	
	[0.0649]	[0.2322]	[0.2652]	[0.1839]	[0.9221]	

Table 9: Pairwise Granger Causality Test – sample 1999 (M1) 2016 (M12) Lag (2)

Null Hypothesis	Obs.	F-statistics	Probability	Decision**
LCOIL does not Granger Cause LCOMP	216	0.11813	0.8886	Accepted
LCOMP does not Granger Cause LCOIL	216	2.93208	0.0555	Accepted
LPROP does not Granger Cause LCOMP	216	0.58331	0.5589	Accepted
LCOMP does not Granger Cause LPROP	216	1.29337	0.2765	Accepted
LEXG does not Granger Cause LCOMP	216	0.07112	0.9314	Accepted
LCOMP does not Granger Cause LEXG	216	3.52708	0.0311	Rejected
LLR does not Granger Cause LCOMP	216	1.68047	0.1888	Accepted
LCOMP does not Granger Cause LLR	216	1.14776	0.3193	Accepted
LM2 does not Granger Cause LCOMP	216	7.07531	0.0011	Rejected
LCOMP does not Granger Cause LM2	216	1.53999	0.2168	Accepted

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LPROP does not Granger Cause LCOIL	216	1.98387	0.1401	Accepted
LCOIL does not Granger Cause LPROP	216	0.15799	0.8540	Accepted
LEXG does not Granger Cause LCOIL	216	3.32084	0.0380	Rejected
LCOIL does not Granger Cause LEXG	216	0.57562	0.5632	Accepted
LLR does not Granger Cause LCOIL	216	0.44011	0.6446	Accepted
LCOIL does not Granger Cause LLR	216	0.54573	0.5802	Accepted
LM2 does not Granger Cause LCOIL	216	1.07690	0.3425	Accepted
LCOIL does not Granger Cause LM2	216	2.85897	0.0596	Accepted
LEXG does not Granger Cause LPROP	216	0.59923	0.5502	Accepted
LPROP does not Granger Cause LEXG	216	3.33283	0.0376	Rejected
LLR does not Granger Cause LPROP	216	1.15628	0.3166	Accepted
LPROP does not Granger Cause LLR	216	2.44237	0.0894	Accepted
LM2 does not Granger Cause LPROP	216	2.34341	0.0985	Accepted
LPROP does not Granger Cause LM2	216	1.10091	0.3345	Accepted
LLR does not Granger Cause LEXG	216	1.75215	0.1759	Accepted
LEXG does not Granger Cause LLR	216	0.44514	0.6413	Accepted
LM2 does not Granger Cause LEXG	216	1.96009	0.1434	Accepted
LEXG does not Granger Cause LM2	216	0.59369	0.5532	Accepted
LM2 does not Granger Cause LLR	216	2.58168	0.0780	Accepted
LLR does not Granger Cause LM2	216	0.38971	0.6777	Accepted

5. Conclusion:

This study examines the effect of crude oil price and real estate property on stock market performance by using monthly data of composite index, crude oil price and real estate property index for 1999-2016. This study also investigates the Granger causality among all variables which is stock market performance, crude oil, real estate, exchange rate, money supply and lending rate by using time series data. Furthermore, based on the results of the Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test this study used VAR and VECM approaches. These approaches are used to examine the long-run and short-run relationship

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among variables. Finally, the Granger causality test is used to measure the short-run adjustments towards the long-run relationship among the variables. The results of the Granger causality test indicates that a bidirectional relationship exists between stock market performance, crude oil price, real estate, money supply, and exchange rate. In addition, this study also investigates the control variables which consists of money supply, exchange rate and lending rate. Only the exchange rate and money supply explained the Granger causality against other variables. In other words, a dynamic relationship does exist among the stock market performance, crude oil, real estate, exchange rate and money supply.

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