The impact of key industry-sectoral indices on islamic stock market: evidence from Malaysia

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The impact of key industry-sectoral indices on islamic stock market: evidence from Malaysia

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Abstract:

The focus of this study is to try to address the following three research questions:(a)Investors who have preference for Shariah-compliant stocks in Malaysia will need to know which relevant industry-sector is most volatile to the movement of key global price index of gold or crude oil. (b)The investors would also like to know which of the local Shariah-compliant industry-sectoral stocks will have more bearing on returns of investment (ROI) both in terms of dividends and capital gain.(c) Investors will need to know whether their investment in Shariah-compliant stocks will be impacted by the movement of the overall local stock price index. The answers to the above three research questions can be summarized as follows: (a)The most volatile industry-sector to the movement of key global price index of gold or crude oil is property index i.e. KLSEPRP as depicted from the VDCs which indicates the 2nd.lowest ranking from the bottom after Shariah-market index i.e. FTBMEMS. (b)For a Shariah-compliant Malaysian equity investor, the property index will have more bearing on returns of investment (ROI) in terms of both dividends and capital gain in view of its endogenous characteristic compared to other variables of the industry sector. (c) Shariah-compliant stocks will be impacted by the movement of the overall local stock price index as they are bound together by cointegration in their long-run relationship.

Keywords: Industry-sectoral stocks, Islamic stocks, VECM, VDC, Malaysia

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1.0 OBJECTIVE AND MOTIVATION OF RESEARCH

Information plays a vital role in the financial markets and it plays a key role in predicting the stock market behavior in Malaysia. The Islamic Malaysian stock market is of special interest as its unique features may trigger a different pattern of stock price movement and it is all about information that makes prices of financial assets fluctuate. The quality of information of the basic industry sectors and key market indicators (both local and international) will shed some light on the predictability in the movement of Islamic stock market price in Malaysia.

Thus, the objective of this research is to ascertain the extent of key industry-sector indices (both local and international) on the local Malaysian Islamic stock market. Simultaneously, it also seeks to discover the empirical evidence as to whether the local key industry-sector market indices have greater or lesser influence on the movement of the Islamic stock market in Malaysia. Finally, it also addresses the questions of which local industry-sector stock indices or international price index of gold or crude oil price index that is most influential in leading or pacesetting the movement of the Islamic stock price in Malaysia.

The motivation of this study is to try to address the following research questions:

a) Investors who have preferential on Shariah-compliant counters in Malaysia will need to know which relevant industry-sector is most volatile to the movement of key global price index of gold or crude oil.
b) The investors would also like to know which of the local Shariah-compliant counters in terms of industry-sector will have more bearing on returns of investment (ROI) both the dividends and capital gain.
c) Investors will be able know whether their investment in Shariah-compliant counters will be impacted by the movement of the overall local stock price index.

In this study, the proxy used to represent the local stock market indices/local industry-sector indices and the international price index of gold and crude oil comprise of the prevailing and commonly reported financial information indices namely:-

a) Gold Bullion LBM U$/Troy Ounce (GOLDBUL)[1].

b) S&P GSCI Crude Oil Spot – Price Index (GSCLSPT).

c) FTSE Bursa Malaysia Emas Shariah – Price Index (FTBMEMS)

d) FTSE Bursa Malaysia Top 100 - Price Index (FTBM100)

e) Kuala Lumpur SE Finance - Price Index (KLSEFIN)

f) Kuala Lumpur SE Consumer Prod. - Price Index (KLSECOP)

g) Kuala Lumpur SE Properties - Price Index (KLSEPRP)

The table below summarizes the indices and its related point of study in this research:

Index	International	Local	Price Index	Equity Index	Shariah
GOLDBUL	✓		✓		
GSCLSPT	✓		✓		
FTBMEMS		✓		✓	✓
FTBM100		✓		✓	
KLSEFIN		✓		✓	
KLSECOP		✓		✓	
KLSEPRP		✓		✓	

From the above matrix, the researcher tries to obtain a distinct proxy to represent each of the relevant information on the equity, price, international and local, Shariah and non-shariah indices. It will assist investors to decide which is more relevant as a reference point to invest in the shariah or non-shariah equity market and which industry-sector index to choose as a benchmark based on individuals appetite and preferences in anticipating the best returns of their investment.

2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In view of the limitation in terms of time frame in preparing this analysis, a cursory literature review was done. Masih and Masih (2001) is one of the numerous researches that have empirically

[1] Index of performance of gold price over time per troy ounce. It means 1/12 of a troy pound or exactly 31.1034 grams.

tested and found the linkages amongst stock market globally. In contrast, most researches found the growing linkages between the macroeconomic variables and the movement of stock prices for the developed countries and this has well been documented in the literature in the last several years (Fama 1981; Lee 1992; Kaneko and Lee 1995; Mukherjee and Naka 1995; Booth and Booth, 1997; Chen 2003).

Based on the limited knowledge, the author believes there has not been many research works dedicated to empirically establishing linkages between Shariah compliant stock market and the specific industry-sector both international and local market except on general influence of macroeconomic variables as stated above. Henceforth, this is the research gap that this study seeks to address.

3.0 RESEARCH METHODOLOGY, RESULTS AND INTERPRETATION

This study adopts the time series technique which address the issue of cointegration, error correction modeling and variance decomposition. This will assist to find empirical evidence of the linkages between the Shariah-compliant equity market index and the other industry-sector indices as mentioned in the introductory paragraphs. In comparison to the traditional regression method, this method is preferred for the following reasons:-

Firstly, the issue is on the non-stationary variables of most finance and equity indices including stock market and industry-sector indices. Thus, the validity of the statistical tests like t-ratios and F-Statistics may be misleading by performing the ordinary regression on these non-stationary variables. Besides, even by performing regressions on the differenced form of these variables will solve the said problem but it will lead to a more serious and catastrophic mistake. This is because when variables are regressed in their differenced form, the trend of the variables long-term pattern is removed. In fact, the regression only managed to capture the short-run, cyclical or rather seasonal effects and neglecting the most crucial long-term (theoretical) relationship of the variables.

Secondly, the traditional regression method assume or rather define which variables are dependent (endogenous) and independent (exogenous) at the onset based on some prevailing or a priori theories. In the financial sector, it is considered nascent where there is notable absence of relevant and specific theories. In contrast, the Cointegration technique used in the time series is more relevant as the endogenous and exogenous variables are not pre-determined and will only be known in the later stages of the analysis process by the pattern of the data itself. In regression technique, the causality is presumed but in the Cointegration process of the time series, it is empirically proven with the data.

Thirdly, the dynamic interaction between variables is maintained in the Cointegration technique as compared to the traditional regression method which excludes or ignores the interaction between variables. Besides, the economic intuition will tell us that such interaction between stock market and the industry-sector and price of key commodities such as gold and crude oils is dynamic in nature.

The data used in this study is the weekly closing of the selected stock market indices, the industry-sector local indices as well as the price-index of gold and crude oil in the international market from December 3, 2007 to November 28, 2011. The start date is to match the availability of data of the market index of Shariah and other available data obtained in the DataStream at INCEIF, library. Besides, the Shariah index in Malaysia was only available in October 2006 and that the author prefers to let the Shariah index runs for at least a year in its inaugural period to allow for some form of gestation period which may have a strong impact on the analysis, moving forward.
In this study, the presentation will be based on time series technique using the Microfit 4.1 software and following the eight essence steps as follows:-

1) Unit Root Testing
2) Order of theVAR
3) Cointegration Test
4) Long Run Structuring Model (LRSM)

5) Vector Error Correction Model (VECM)

6) Variance Decomposition (VDC)

7) Impulse Response Function (IRF)

8) Persistence Profile (PP)

3.1 Unit Root Testing

The first step begins with an empirical testing by determining the stationarity of the variables used. Most financial and market indices are non-stationary variables. Ideally, our variables should be I(1) meaning they are non-stationary in their original level form and in their differenced form, they should be stationary[2]. This will enable us to proceed with the testing of cointegration in the subsequent steps. The differenced form for each variable is derived by taking the difference of their log forms. For instance, DFTBMEMS = LFTBMEMS – $LFTBMEMS_{(t-1)}$. Thereafter, the Augmented Dickey-Fuller (ADF) test is done on each variable (both in level and differenced form). The table below summarizes the results:

Variable	Test Statistic	Critical Value	Implication
Variables in Level Form			
LFTBM100	-2.7469	-3.4329	Variable is non-stationary
LFTBMEMS	-2.8714 (AIC) -2.9120 (SBC)	-3.4329 -3.4329	Variable is non-stationary Variable is non-stationary
LKLSEPRP	-3.0322	-3.4329	Variable is non-stationary
LKLSEFIN	-2.1964	-3.4329	Variable is non-stationary
LKLSECOP	-2.5912	-3.4329	Variable is non-stationary
LGOLDBUL	-2.9987	-3.4329	Variable is non-stationary
LGSCLSPT	-1.8424 (AIC) -1.5805 (SBC)	-3.4329 -3.4329	Variable is non-stationary Variable is non-stationary
Variables in Differenced Form			
DFTBM100	-13.3185	-2.8759	Variable is stationary
DFTBMEMS	-12.2774	-2.8759	Variable is stationary

[2] Stationary variable is where its mean, variance and covariance are constant over time.

DKLSEPRP	-8.5623 (AIC) -13.4190 (SBC)	-2.8759 -2.8759	Variable is stationary Variable is stationary
DKLSEFIN	-8.6335 (AIC) -13.2971 (SBC)	-2.8759 -2.8759	Variable is stationary Variable is stationary
DKLSECOP	-13.1485	-2.8759	Variable is stationary
DGOLDBUL	-8.0545 (AIC) -15.1055 (SBC)	-2.8759 -2.8759	Variable is stationary Variable is stationary
DGSCLSPT	-4.3585 (AIC) -16.2164 (SBC)	-2.8759 -2.8759	Variable is stationary Variable is stationary

Based on the AIC and SBC criteria, the conclusion we can summarize is that all the variables we are using for this analysis are I(1) and thus we may proceed with testing of cointegration. The point to note is that in deciding which test statistic to compare with the 95% critical value for the ADF statistic, we have chosen the ADF regression order based on the highest computed value for AIC and SBC. In a few instance, AIC and SBC also reflects different orders such as in variables LFTBMEMS, LGSCLSPT, DKLSEPRP, DKLSEFIN, DGOLDBUL and DGSCLSPT. Nevertheless, this is not an issue as in all instances, the implications are consistent.

3.2 Order Of the VAR

In this stage, we need to first determine the order of the vector auto regression (VAR) which actually represents the number of lags to be used. As per the table below, results show that AIC recommends order of 1 as opposed to SBC in favour of order of zero lag :

	Choice Criteria	
	AIC	**SBC**
Optimal order	1	0

As there is apparent conflict between recommendation of AIC and SBC, we will have to check for serial correlation for each variable and from the Diagnostic test the result is

tabulated below.

Variable	Chi-Sq p-value	Implication (at 10%)
DFTBM100	0.249	There is no serial correlation
DFTBMEMS	0.536	There is no serial correlation
DKLSEPRP	0.764	There is no serial correlation
DKLSEFIN	0.163	There is no serial correlation
DKLSECOP	0.585	There is no serial correlation
DGOLDBUL	0.052	There is serial correlation
DGSCLSPT	0.979	There is no serial correlation

Based on the above diagnostic test of serial correlation, there is 1 out of 7 variables shows autocorrelation. This implies that if we opt for a lower order, we may encounter the effects of serial correlation. Alternatively, choosing a higher order will expose us to the risk of over-parameterization. Given in our case that we have a relatively long-time series (209 observations), this does not concern much to us. Upon considering the trade-off between the lower and higher orders, we have decided to choose the higher VAR order of 2 instead of the given optimal order of 1. This is based on our intuition and mathematical justification of our longer observations available in this study.

3.3 Cointegration Test

Now that we have ascertained that the variables are I(1) and determined the optimal VAR order of 2, we may proceed to test for cointegration. As reflected in the table appended below, the maximal Eigenvalue, indicates that there is one cointegrating vector whilst the outcome of the remaining tests is as per table below.

Criteria	Number of cointegrating vectors
Maximal Eigenvalue	1
Trace	3
AIC	6
SBC	0
HQC	3

Despite the different number of cointegrating vectors, we are inclined to opt for 1 cointegrating vector based on our intuition, knowledge and familiarity of the equity market movements in tandem with the movement of other key economic and financial indices in one way or another and to varying degrees. Based on the above statistical result and our insight, we shall assume that there is one (1) cointegrating vector or relationship for the purpose of this study.

From the above statistical result, it shows that the variables we have chosen in some form of combination result in a stationary error term. In our view, the economic interpretation of the 7 variables which represent the various industry-sector indices and the international price index of key commodities and the local stock-market index are theoretically related or rather move together in the long-run. In other words, the 7 indices are cointegrated of which their relations to one another is not merely spurious or by chance.

The findings are valuable to equity investors of various preferences whether limited to Shariah-compliant counters or open to the wider conventional stock market. Given the cointegration relationship of these variables, an investor can limit losses on the downside and maximize profit at the upside based on the anticipated impact of movement of key indices to other stock market indices. A good example is an increase in crude oil price (as depicted by the S&P GSCI Crude Oil Spot-Price Index) will have a negative impact on the global stock-market indices. This scenario will augur well for investors to buy oil & gas related stock in anticipation of higher return on their investment whether from the annual dividend or short-term capital gain.

On the contrary, investors who are holding stocks which are highly dependent on oil & gas will need to dispose their stock or cut loss in anticipation of the lower return of their investment owing to the higher cost of production faced by these affected industry-sectors. A bad news to one may be good news to others where for punters and speculators, they will take this opportunity to short-sell their position and subsequently buy-back when the price stabilizes. This is normal because the cointegrated market would eventually realign itself into a long-term (theoretical) relationship with one another.

3.4 LRSM

In this step, we will try to quantify the apparent theoretical relationship between the given indices. This will enable us to make comparison between our statistical findings and that of the theoretical (or intuitive) expectations. We run the LRSM process in the Microfit 4.1 software by normalizing one of the variable i.e. FTSE Bursa Malaysia Emas (FTBMEMS) which is a Malaysian Shariah index and obtained the results in the following table By computing the t-ratios manually, we found two variables to be significant namely LFTBM100 and LKLSEFIN and the rest to be insignificant.

Variable	Coefficient	Standard Error	t-ratio	Implication
LFTBM100	- 1.5930	0.17959	-8.870	Variable is significant
LFTBMEMS	1.000	NONE	-	Normalized
LKLSEPRP	0.93653	0.053837	1.739	Variable is insignificant
LKLSEFIN	0.43587	0.10216	4.266	Variable is significant
LKLSECOP	0.023995	0.10321	0.232	Variable is insignificant
LGOLDBUL	0.080212	0.050493	1.588	Variable is insignificant
LGSCLSPT	-0.0013688	0.011679	-0.117	Variable is insignificant

From the above table, the results were generally intuitively appealing to our opinion of the implication when normalizing the variable FTBMEMS and its impact on the other six (6) variables. However, we were a bit skeptical as to why the KLSEPRP index to be insignificant. This index (stock index for property sector) should be significant based on our intuition as it will be seriously affected from the volatility in the main Shariah stock index. Thus, we run the over-identifying restrictions to verify the significance of this variable. We did this for all the variables (making one over identifying restriction at a time) and the results confirmed our earlier findings that only LFTBM100 and LKLSEFIN were significant, as detailed in the table below:

Variable	Chi-Sq p-value	Implication (at 5%)
LFTBM100	0.000	Variable is significant
LFTBMEMS	N/A - normalized	N/A - normalized
LKLSEPRP	0.061	Variable is insignificant
LKLSEFIN	0.000	Variable is significant
LKLSECOP	0.814	Variable is insignificant
LGOLDBUL	0.074	Variable is insignificant
LGSCLSPT	0.907	Variable is insignificant

From the above result after over-identifying restrictions one at a time and also after combining all the restrictions at one go that is testing the null hypothesis that KLSEPRP, KLSECOP, GOLDBUL and GSCLSPT were all insignificant, the null hypothesis cannot be rejected. Thus, this confirmed that all our restrictions under the over-identifying process are correct.

From the above analysis, the following cointegrating equation (numbers in parentheses are the standard deviations) is derived as summarized below:-

$$\underset{}{FTBMEMS} - \underset{(0.18)}{1.59FTBM100} + \underset{(0.10)}{0.44KLSEFIN} \sim I(0)$$

3.5 VECM

All the above four (4) steps thus far is testing theory and to check if there is any cointegration among the variables in the long-run. Our analysis reveals that at least two (2) variables are cointegrated to a significant degree namely FTBM100 and KLSEFIN. Nevertheless, the cointegrating equation reveals nothing about causality i.e. which index is the leading variable (leader) and which is the most laggard variable (follower). The information on whether the variable is exogenous or endogenous will assist investor to forecast the return of their investment. An exogenous variable will be of interest to investor who will monitor the movement of this index as its movement or volatility pattern will

have an impact on other variables which have shown strong correlation to a certain degree.

Thus, the Vector Error Correction Model (VECM) will be able to ascertain which variables are exogenous and which are endogenous. The Granger-causality – a form of temporal causality will determine the extent to which the change in one variable is caused by another variable in a previous period. This is done by examining the error correction term, e_{t-1}, for each variable and checking whether it is significant or not. Consequently, we found that there are five (5) exogenous variables as depicted in the table below. The other remaining variables were found to be endogenous.

Variable	ECM(-1) t-ratio p-value	Implication (at 10%)
LFTBM100	0.540	Variable is exogenous
LFTBMEMS	0.000	Variable is endogenous
LKLSEPRP	0.007	Variable is endogenous
LKLSEFIN	0.652	Variable is exogenous
LKLSECOP	0.125	Variable is exogenous
LGOLDBUL	0.230	Variable is exogenous
LGSCLSPT	0.481	Variable is exogenous

From the above results, the indices of interest are the five exogenous variables namely FTBM100, KLSEFIN, KLSECOP, GOLDBUL and GSCLSPT. Being the independent variables, it will transmit any impact of market shocks to the remaining endogenous variables and other related indices in the market. An investor in Shariah counter as indicated in above index under FTBMEMS (endogenous variables) will be affected by the impact the other five (5) indices since this variable i.e. FTBMEMS will be highly dependent or is also known as the follower to the exogenous variables.

Furthermore, the VECM also produces some form of statistical information that may be of interest to the investor. The coefficient of e_{t-1} will tell us how long it will take to get back

to the long-term equilibrium if that particular variable is shocked. This coefficient will represent the proportion of imbalance corrected in each period. In the case of FTBMEMS, the coefficient is -0.50407 which implies that when there is a shock applied to this index, it would take on average of about 5.0 weeks for the index to get back into equilibrium with the other indices.

3.6 VDC

The VECM step above will not reflect the relative endogeneity of the remaining indices though we have already established the five (5) exogenous variables. It will not determine the most dominant/weakest leader dominant/weakest follower in terms of their respective degree of influence or ranking. Thus, the VDC process is used where it will decompose the variance of forecast error or each variable into proportions attributable to shocks from each variable in the system, including its own The least endogenous variable is the one in which its variation is explained mostly by its own past variations and not by other related variables.

There are two (2) types of VDCs namely the Orthogonalized VDCs and Generalized VDCs. We have chosen the latter i.e. Generalized VDCs since the former has its own shortcomings where it assumes all other variables are switched off when a particular is shocked. Also, in Orthogonalized VDCs the proportions will ad up to 100% and that it is not unique in the sense that it depends on particular ordering of variables in the VAR.

By using the Generalized VDCs, the proportions do not add up to 100% and that it needs to be manually adjusted in the Excel for computation. However, it does not make such a restrictive assumption that all other variables are switched off when a particular variable is shocked. Finally, the Generalized VDCs is invariant to ordering of variables where it will get same results only if variance-covariance matrix of residuals is diagonal (or near diagonal), i.e. error co-variances are near zero.

From the Generalized VDCs, we obtained results In interpreting the numbers generated by

the Generalized VDCs, we need to do some manual computations which we have done using the Excel. This is because the numbers do not add up .to 1.0 as in the case of Orthogonalized VDCs. For a given variable and at a specified horizon, we total up the numbers of the given row and we divide the number for that variable (representing magnitude of variance explained by its own past) by the computed total. As such, the numbers in a row will now add up to 1.0 or 100%. The tables below illustrate the result.

Forecast at Horizon = 50 weeks

	LFTBM100	LFTBMEMS	LKLSEPRP	LKLSEFIN	LKLSECOP	LGOLDBUL	LGSCLSPT	Total
LFTBM100	0.978	0.629	0.662	0.808	0.618	0.029	0.112	3.836
LFTBMEMS	0.933	0.65	0.605	0.668	0.627	0.159	0.109	3.751
LKLSEPRP	0.828	0.416	0.858	0.67	0.555	0.001	0.075	3.403
LKLSEFIN	0.874	0.52	0.596	0.971	0.501	0.017	0.084	3.563
LKLSECOP	0.861	0.499	0.625	0.649	0.927	0.018	0.092	3.671
LGOLDBUL	0.071	0.065	0.02	0.028	0.014	0.958	0.105	1.261
LGSCLSPT	0.143	0.248	0.145	0.086	0.112	0.079	0.979	1.792

	LFTBM100	LFTBMEMS	LKLSEPRP	LKLSEFIN	LKLSECOP	LGOLDBUL	LGSCLSPT	Total
LFTBM100	0.25	0.16	0.17	0.21	0.16	0.01	0.03	1
LFTBMEMS	0.25	0.17	0.16	0.18	0.17	0.04	0.03	1
LKLSEPRP	0.24	0.12	0.25	0.20	0.16	0.00	0.02	1
LKLSEFIN	0.25	0.15	0.17	0.27	0.14	0.00	0.02	1
LKLSECOP	0.23	0.14	0.17	0.18	0.25	0.00	0.03	1
LGOLDBUL	0.06	0.05	0.02	0.02	0.01	0.76	0.08	1
LGSCLSPT	0.08	0.14	0.08	0.05	0.06	0.04	0.55	1

From the above table, we can rank the indices by the respective exogeneity of the variables as depicted in the table below:-

Ranking	Variables
1	GOLDBUL
2	GSCLSPT
3	KLSEFIN
4	FTBM100
5	KLSECOP
6	KLSEPRP
7	FTBMEMS

LEADER	FOLLOWER
FTBM100	FTBMEMS
KLSEFIN	KLSEPRP
KLSECOP	
GOLDBUL	
GSCLSPT	

From the above results, we can infer the following:-

a) The most exogenous variable is GOLDBUL – the price index of Gold in the

international market. Thus, any impact or market shock on this index will have a spiraling impact on other variables.

b) The second most exogenous variable is GSCLSPT – the price index of crude oil in the international market.

c) The most endogenous variable is FTBMEMS followed by KLSEPRP. The index of each variable will depend a lot on the movement of the price index of gold and crude oil as a benchmark for investors to make prediction as to their return on investment in the Shariah stock market and the property sector.

d) The difference in exogeneity between the most exogenous variable GOLDBUL (0.76) and FTBMEMS (0.17) in the 50-week Horizon is quite significant at 0.59 or equialent to 59%.

From the above result, it appears that GOLDBUL is the leading index in terms of its exogeneity followed by GSCLSPT. The result is considered logical as most stock market index whether its Shariah-index or conventional index will be impacted by the variation of prices of gold and also crude oil. These two indices will be closely monitoed by investors in order to forecast the movement of the local stock market.

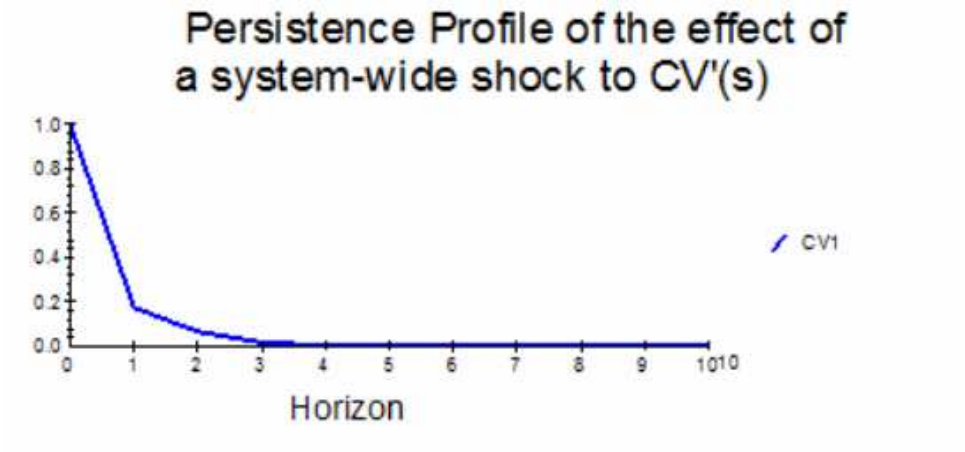
IRF

The Impulse Response Functions (IRFs) will give the same information as the VDCs, except that it is can be presented in graphical form. For easier reference and completeness, the various graphs of IRFs are as per **Appendix 7A to 7G**.

3.7 PP

Persistence Profile is the final step which will illustrate the situation when the entire cointegrating equation is shocked and also indicate the time frame it would take for the relationship to get back to equilibrium. In other words, PP will show the impact of a system-wide shock on the long-run relations as opposed to IRF where it is based on shock of a specific variable. To illustrate, the chart below shows the persistence profile for the

cointegrating equation in this study.



The above chart indicates that it would take approximately 4 weeks for the cointegrating relationship to return to equilibrium following a system-wide shock.

4.0 CONCLUSIONS / FINDINGS

To conclude, the answer to the three (3) research questions posed at the onset of this study can be summarized as follows:

a) The most volatile industry-sector to the movement of key global price index of gold or crude oil is property index i.e. KLSEPRP as depicted from the VDCs which indicate the 2nd.lowest ranking from the bottom after Shariah-market index i.e. FTBMEMS.

b) For a Shariah-compliant Malaysian equity investor, the property index will have more bearing on returns of investment (ROI) both the dividends and capital gain in view of its endogenous characteristic compared to other variables of the industry sector.

c) Shariah-compliant counters will be impacted by the movement of the overall local stock price index as depicted from the there is a cointegration amongst the variables in their long-run relationship.

5.0 LIMITATIONS AND SUGGESTION FOR FUTURE RESEARCH

From this study, we can summarize some conceivable limitations and simultaneously presents opportunities for future research.

We have selected some indices based on our intuition of the possible long-run relationship among them and also the availability of relevant data to match the time-frame of all other variables selected for this study. Many other available indices could have been considered and may even produced significant results or different from what we have already obtained. In fact, we may also use the FBM Hijrah to represent Shariah-compliant index in Malaysia. Nevertheless, the FTBMEMS was chosen because more data were available.

The choice made on property, finance and consumer products indices was based on our intuition and issues of interest. Property, finance and consumer products are amongst the most volatile in the Malaysian market as opposed to maybe plantation, tin and mining or industrial indices. Any significant movement of the key global comodities suc as gold or even crude oil price index had in the past affecting the local stock market because of the correlation and cointegration amongst global price and stock market indices. We believe property and consumer products indices will be the most sensitive to changes in the price of gold and crude oil which affect the investment motivation worldwide and also the local industry.

We could have also used other commodities index such as the Crude Palm Oil (CPO), Rubber, tin etc but we have based our choice on issues of interest and availability of data in this study. Results could have been biased or affected by the different indices used.

Finally, the theoretical foundation and framework of this study also leave something to be further

explored. The underlying theory is very significant or otherwise this study may be accused of purely intuitive prediction, number crunching or even statistical data mining. We hope that the developing theory in this area would be a challenge to future researches in Islamic finance.

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