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Which islamic equity market is the leading one in Southeast Asia ? evidence from some select equity markets

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Abstract

Islamic finance has been growing well around the globe since the subprime crisis of 2007-2008. The Southeast Asia is one of the top areas of growth of Islamic finance but there has not been any research done yet as to which Islamic equity market has been the leading one in the Southeast Asia. This study makes an attempt to fill in that gap. In particular this study asks the following questions:(i)which Islamic equity market is the leading one in Southeast Asia ? (ii) whether the international and conventional equity markets had any bearing on the Islamic equity markets in South East Asia and (iii) which Islamic equity index in South East Asia could be used as the benchmark index? Our findings tend to indicate that (i) amongst the South East Asia countries, Malaysia is relatively the most leading Islamic equity market (ii) the international and conventional markets appear to have a significant impact on the Islamic markets in Southeast Asia (iii) for an investor interested in Islamic equity investment in South East Asia region, he/she could use the Malaysian Islamic market as the benchmark index.

Keywords: Islamic equity markets, Southeast Asia, VECM, VDC

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1. INTRODUCTION

This study aims to provide a Southeast Asian investor who wishes to invest in Shariah (Islamic) compliant equities with the answers to: (i) which Islamic equity market is the leading market in South East Asia? (ii) whether the international and conventional equity markets have any bearing on the Shariah compliant equity markets in South East Asia and (iii) which Islamic equity index could be considered as the benchmark index in Southeast Asia?

Since the center of this research is the Shariah (Islamic) compliant equity markets in South East Asia, the variables used represent the equity markets as follows:

No	Index	Ticker	Proxy
1	FTSE Bursa Malaysia Index	FBMS	Malaysia (Islamic)
2	Dow Jones Islamic Market World Index	DJIM	Worldwide (Islamic)
3	Dow Jones Islamic Market ASEAN Index	DJIASN	South East Asia (Islamic)
4	FSTE SGX Asia Shariah 100 Index	SGS	Singapore (Islamic)
5	Jakarta Islamic Index	JAK	Indonesia (Islamic)
6	FTSE/ASEAN	ASEAN40	South East Asia (Conventional)

The focus variable in this research would be FBMS and shall be compared against all other indices.

2. RESEARCH METHODOLOGY AND EMPIRICAL RESULTS

Intuitively and based on the authors' experiences, since the economies of the world are globally connected, to a certain level it could be argued that there is a theoretical relationship between the Islamic equity markets in Malaysia, South East Asia and internationally. There is also a relationship between the Islamic and conventional equity markets since under any economic conditions, whether it is good or bad, both markets are likely to be affected.

This study uses the standard time series techniques which involve testing the non-stationarity of the indices, cointegration test, long run structural modeling, vector error correction model, variance decompositions, impulse response functions and persistence profile. This method is better than the regression method since time series techniques test the theoretical and causality relationship amongst the indices. It lets the data determine these relationship in the long run. This technique also could establish which indices are exogenous and endogenous and also the relative exogeneity or endogeneity of the variables.

The data collected are the weekly last price of the selected indices starting from 21 November 2008 and there are a total of 160 observations. All of the data are sourced from Bloomberg

2.1. TEST NON-STATIONARITY OF THE VARIABLES

The steps begin with the test of the non-stationarity of all the variables used in this research. A variable is non-stationary when its mean, variance and covariance are not constant over time and vice versa for stationary variable. Before proceeding with the cointegration test, all of the variables should be non-stationary in their original level form and stationary in their first differenced form. The differenced form for each variable used is created by taking the difference of their log forms. The Augmented Dickey-Fuller ("ADF") tests were then conducted to each of the variable in their level and differenced forms. The results are as follows:

Variables in Level Form:

Variable	Test Statistic Value	Critical Value	Result
LFBMS	-1.7535 (SBC) -1.6499 (AIC)	-3.4396	Variable is non-stationary
LSGS	-1.6293		Variable is non-stationary
LDJIM	-1.9159		Variable is non-stationary
LDJIASN	-1.3221		Variable is non-stationary
LJAK	-1.6869		Variable is non-stationary
LASEAN40	-1.0912		Variable is non-stationary

Variables in Differenced Form:

Variable	Test Statistic Value	Critical Value	Result
DFBMS	-7.5358 (SBC) -7.4617 (AIC)	-2.8804	Variable is stationary
DSGS	-12.6968 (SBC) -7.6051		Variable is stationary
DDJIM	-11.7493 (SBC) -8.4927 (AIC)		Variable is stationary
DDJIASN	-12.7576 (SBC) -7.7233 (AIC)		Variable is stationary
DJAK	-16.0489		Variable is stationary
DASEAN40	-12.6190 (SBC) -7.5788 (AIC)		Variable is stationary

The null hypothesis in ADF test is that the variable is non-stationary. Based on the results above, for all of the variables in their level form, the test statistic value are lower than the critical value and hence we accept the null. For all of the variables in their differenced form, the test statistic values are higher than the critical value and therefore we reject the null. This proved that the variables are stationary in their differenced from. Thus it could be concluded that all of the variables to be used in this research are I(1), and so we may proceed with the next step that is determine the order of vector auto regression ("VAR") model for the cointegration test.

2.2. DETERMINATION OF ORDER OF THE VAR MODEL

The order of VAR or number of lags to be used must be determined before proceeding to cointegration test. Based on highest computed values for AIC and SBC after stipulating an arbitrary VAR of 6, the results indicated that AIC proposed order of 1 while SBC proposed zero lag. Since there is conflict between AIC and SBC in the proposed VAR, the serial correlation for each of the variable are to be determined before the order of VAR could be determined. Below is the result of the correlation for each variable:

Variable	**Chi-Sq p-value**	**Result (at 10%)**
DFBMS	0.070	There is no serial correlation
DSGS	0.422	There is no serial correlation
DDJIM	0.005	There is serial correlation
DDJIASN	0.084	There is no serial correlation
DJAK	0.223	There is no serial correlation
DASEAN40	0.007	There is serial correlation

The null hypothesis in the correlation test is that there is no correlation, in which, if the Chi-Sq p-value is more than 0.05 we accept the null and vice versa. Based on the result above, there are 3 autocorrelation in 3 out of 6 variables. Since the number of observations is relative high (160) and due avoid the effects of serial correlation, the higher VAR order of 2 have been chosen. It was chosen over the VAR order of 1 as proposed by AIC due to technicality issue in using the MicroFit.

2.3. COINTEGRATION TEST

In cointegration test, the author is testing whether all of the variables have moved together in the long run and this is determined based on the Maximal Eigenvalue, Trace, AIC, SBC and HQC. Below is the result of cointegration test done on the variables:

Criteria	No. of Cointegrating Vectors
Maximal Eigenvalue	1 (at 95% critical value)
Trace	2 (at 95% critical value)
AIC	6
SBC	0
HQC	1

Based on the result above and applying logic, the author inclined towards deciding that there is one cointegrating vector. This is because, logically the stock markets no matter it are conventional or Islamic equities, regionally or globally, are somehow connected. There is domino effect to a certain extend on the performance of global stocks markets especially if it cause by the main stock markets. Based on these and the statistical result above, the author has assumed that there is one cointegrating vector, or relationship.

By having one cointegration vector, it could be intuitively interpreted that all of these indices are theoretically related and in the long run tend to move together, either upward or downward. Therefore, although an investor could diversify his investments across these stock markets but in the long run he would not be able to make exponential profits since these stocks markets would eventually return to equilibrium. Nevertheless, higher short term profit is still possible depending on the individual stock market performance.

2.4. LONG RUN STRUCTURAL MODELING

In Long Run Structural Modeling ("LRSM"), the theoretical relationships between the 6 indices are quantified in order to test the theoretical expected value against the statistical results. For this purpose, the LFBMS which is the focus variable is normalized to one and below are the result:

Variable	Coefficient	Standard Error	t-ratio	Result
LSGS	0.43932	0.20583	2.13	Variable is significant
LDJIM	-0.26632	0.18313	-1.45	Variable is insignificant
LDJIASN	-1.6767	0.41712	-4.02	Variable is significant
LJAK	0.01065	0.07593	0.14	Variable is insignificant
LASEAN40	1.2763	0.38193	3.34	Variable is significant

The result above indicated that SGS, DJIASN and ASEAN40 are significant but not DJIM and JAK. Intuitively, the result seems to be logical since all of these indices with the exception of DJIM represent the stock markets in South East Asia and hence DJIM is not significant as far as this research is concern. However, it is puzzle on why JAK is found to be insignificant and hence this is verified by subjecting the estimates to over-identifying restrictions. This is done to DJIM and JAK indices and the results verified the earlier results with Chi-Sq p-value of 0.191 and 0.888 for DJIM and JAK indices respectively. Nevertheless, for the purpose of this research, the authors decided to still include both of the indices in the next steps in order to find out which indices are exogenous and endogenous.

2.5. VECTOR ERROR CORRECTION MODEL

Based on the cointegration test above, it is found out that FBMS, DJIM and ASEAN40 are cointegrated in a significant way. But it has yet to determine the causality relationship between these 6 indices. The causality relationship could be determined by applying the Vector Error Correction Model ("VECM"). In this step, the Granger-causality relationship between the indices was examined to determine the extent to which the change in one index is caused by another index in a previous period. By doing this, the author could determine which indices are exogenous and which are endogenous.

From economic view, by knowing which indices is exogenous and endogenous, the Islamic equities investors can better forecast or predict expected results of their investment. When the investors could determine which index is the exogenous, the investor could closely monitor the performance of that index because its movement would have significant impact on the expected movement of other indices involves in this research. The results of VECM are as follows:

Variable	ECM(-1) p-value	Result (at 10%)
LFBMS	0.590	Variable is exogenous
LSGS	0.645	Variable is exogenous
LDJIM	0.210	Variable is exogenous
LDJIASN	0.001	Variable is endogenous
LJAK	0.001	Variable is endogenous
LASEAN40	0.275	Variable is exogenous

Based on the result above, the investors who wish to invest in the Islamic equities in Malaysia and ASEAN countries would be interested to monitor the performance of FBMS, SGS, DJIM and ASEAN40. These exogenous indices would receive market shocks and transmit the effects of those shocks to other indices. Any news and developments related to these indices would be of interest to the investor. However, it would be more efficient for the investor to monitor only one index instead of having to monitor these four indices to measure the performance of Islamic equity markets particularly in the ASEAN region. To do this, the relative of exogeneity of these four indices need to be determines and this could be done in the next step.

2.6. VARIANCE DECOMPOSITIONS

Basically the relative exogeneity can be ascertained by applying Variance Decompositions ("VDCs"), in which it decomposes the variance of forecast error of each variable into proportions attributable to shocks from each variable in the system, including its own. The most exogenous index is the index whose variation is explained mostly by its own past variations. There are two methods in VDCs which are orthogonalized VDCs and generalised VDCs. The limitations of orthogonalized VDCs are it assumes that when a particular variable is shocked, all other variables are "switched off" and it does not produce a unique solution. The generated results are dependent upon the ordering of variables in the VAR and normally the first variable would report the highest percentage and thus would likely to be specified as the most exogenous variable. As such the result tends to be biased based on this and so the authors decided to proceed with only the generalised VDCs. Under this generalised VDCs, the authors decided to use two time horizons, that are week 25 for short-term period and week 50 for long term period. The results of the VDCs are as follows:

Forecast at Week 25:

	FBMS	SGS	DJIM	DJIASN	JAK	ASEAN40
FBMS	9.75%	4.01%	4.00%	5.53%	2.58%	6.00%
SGS	2.89%	7.29%	5.54%	4.88%	2.08%	4.98%
DJIM	3.72%	5.53%	9.94%	5.15%	1.84%	5.94%
DJIASN	4.20%	4.19%	3.57%	4.77%	2.40%	5.58%
JAK	4.73%	4.12%	3.03%	4.76%	6.39%	6.18%
ASEAN40	3.40%	4.17%	4.22%	5.02%	2.57%	6.37%

Forecast at Week 50:

	FBMS	SGS	DJIM	DJIASN	JAK	ASEAN40
FBMS	30.59%	12.58%	12.56%	17.34%	8.10%	18.83%
SGS	10.45%	26.36%	20.03%	17.63%	7.54%	18.00%
DJIM	11.58%	17.23%	30.95%	16.03%	5.72%	18.49%
DJIASN	16.99%	16.94%	14.45%	19.32%	9.71%	22.58%
JAK	16.20%	14.10%	10.37%	16.30%	21.87%	21.15%
ASEAN40	13.22%	16.19%	16.39%	19.49%	9.98%	24.73%

No	**The Relative Exogeneity of Variables**	
	At Week 25	**At Week 50**
1	DJIM	DJIM
2	FBMS	FBMS
3	SGS	SGS
4	JAK	ASEAN40
5	ASEAN40	JAK
6	DJIASN	DJIASN

From the results above, it affirmed that in the long run DJIM, FBMS, SGS and ASEAN40 are the exogenous indices in the research, with DJIM is the most exogenous. The relative rank in the exogeneity changed over time with a change in ranking between JAK and ASEAN40. Despite DJIM being the most exogenous index, FBMS is most explained by ASEAN40 and DJIASN, which make sense since these indices made of the stocks from South East Asia countries. The result also shows that in South East Asia region, FBMS is the leader index followed by SGS and JAK. In a way, for an investor who is looking for an investment in Islamic equity market, he should first consider Malaysia followed by Singapore and then Jakarta. It also indicated that these stock markets are closely cointegrated due to the small difference in the relative exogeneity between the indices.

2.7. IMPULSE RESPONSE FUNCTIONS

The impulse response functions ("IRFs") also uses variable-specific shock as in the VDCs and produce the same information but in IRFs, the results are shown in graphical form.

2.8. PERSISTENCE PROFILE

The persistence profile uses system-wide shock in order to find out how long it would take for the variables to return to equilibrium. The graph shows the persistence profile for the indices involves in this research. It indicates approximately 6 weeks is required for the cointegrating relationship among the indices to return to equilibrium following a system-wide shock.

3. CONCLUSION

In conclusion, based on the purpose of this research and the empirical results it could be concluded that (i) amongst the South East Asia countries, Malaysia is the leading Islamic equity market (ii) the international and conventional markets have a significant bearing on the southeast Asian Islamic markets (iii) for an investor interested in Islamic equity investment in South East Asia region, he/she could use FBMS (Malaysia, Islamic) as the benchmark index.

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