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Exploring the relationship between the Malaysian islamic index and international islamic indices

Najeeb Zada¹ and Mansur Masih²

Abstract:

This study explores the possible cointegrating relationship between the Malaysian Islamic index (EMAS) with other regional and international Islamic indices represented by Dow Jones Islamic Index. We selected five variables for the purpose of this study including EMAS and four Dow Jones Islamic indices: namely, Dow Jones Islamic index US, Dow Jones Islamic index Singapore, Dow Jones Islamic index Asia Pacific (excluding Japan) and Dow Jones Islamic index Japan. We asked firstly, is there a long-run relationship between EMAS and each of the other Islamic indices? Secondly, if there is a long-run relationship between EMAS and other Islamic indices, from which side the causality runs, i.e. which index is the leader and which are the followers? The standard time series techniques are used for the analysis. The findings tend to indicate a long-run relationship (i.e., cointegration) between the variables. However, contrary to the established theory, we found EMAS to be the most exogenous variable which leads even the Dow Jones Islamic US index. This finding is of particular importance for the investors looking for Shariah compliant indices, as well as for the Malaysian authorities who are striving to make the country a universal “brand name” in Islamic finance.

Key Words: Dow Jones Islamic Indices, EMAS, Cointegration , Malaysia

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Introduction:

One of the primary objectives of investing in different stock and regions is to hold a diversified portfolio of securities and reduce one's exposure to risk. Consequently, fund managers are always on the look-out for securities that do not correlate together and hence provide for better opportunities to hedge risk. In recent years this has meant moving beyond the confines of one's borders and investing in other countries as well. Geographic diversification generates superior risk-adjusted returns for institutional investors while capturing the higher rates of returns offered by the emerging markets. There are two main reasons for why investing across countries has been increasing. The first has to do with the global trend of liberalization of capital flows. Most developed countries eased capital controls around 1980s and 1990s (Yang, Khan and Pointer, 2003). Secondly, globalization has resulted in a better network of communication through which it has become very easy for institutional as well as individual investors to invest in international stock markets. Indeed, this desire to invest abroad and to diversify one's portfolio has resulted in a flow of capital across borders, especially from the developed to the developing economies.

The increasing mobility of capital implies that we are moving towards a more financially and economically integrated world. While this results in a more efficient global financial sphere, it also means stock markets will stop exhibiting independent price behavior and so it will not be possible to reap the benefits of diversification across borders. Consequently, we need to examine the cointegration of stock market indices using the latest data and techniques to investigate which indices are the least integrated and hence provide with the most diversification opportunity.

In the context of Islamic finance, this question becomes even more important looking at the fact that investment opportunities here are already restricted due to the restrictions laid down by Islamic law. These restrictions are manifested in the screening process that a company has to go through before it can receive the certificate of being "Shariah compliant". With narrow investment opportunities, an Islamic investor or portfolio manager has to be more cautious in his decision about investment and risk taking. A

small mistake in investment decision would mean a big loss which is not always remediable.

Motivation for the Study and Research Questions:

Although the relationship among conventional stock indices has been studied and tested a great deal in the existing literature, there is scarce literature, if any, regarding the relationship of the Islamic indices worldwide. The reason for this is very obvious: Islamic stock indices have emerged on the screen very recently and much less attention has been paid to it by academicians and researchers so far. In fact it is only after the recent economic crises that Islamic finance has received considerable attention from academicians and researchers. Therefore, it is timely to investigate this phenomenon in the light of Islamic indices. Furthermore, time series technique is a superior method of research which has overcome many limitations associated with regression analysis. Consequently, it would be interesting to see what this technique says about the issue when looked at and tested from Islamic indices perspective.

Following are the research questions that we aim to explore and answer through this study:

Firstly, is there a long-run relationship between EMAS and each of the other Islamic indices?

Secondly, if there is a relationship between EMAS and other Islamic indices, from which side the causality runs, i.e. which index is the leader and which are the followers?

Lastly, what are the important policy implications of the possible relationship among these indices for both the investors and authorities?

Literature Review:

The study of cointegration directly stems from and relates to the theory of portfolio management and diversification. Cointegration of stock markets has a direct impact on diversification opportunities. If cointegration is present, then that means that there is a long-run relationship between the two series. In other words, it indicates the presence of “common factors” which limit the amount of independent variation among the series. But what does one mean by common factors? What is the mechanism through which it is ensured that stock markets are forced to move together? Lack of barriers and free capital flows ensure that investors can exploit arbitrage opportunities in different countries.

Consequently, we would expect similar yields for financial assets of similar risk and liquidity irrespective of nationality or location and thus a high degree of shared price movement. So, while cointegration implies the absence of long-run diversification opportunities, it is still possible to derive gains from portfolio diversification in the short run. (Khan, 2011)

The topic of cointegration amongst stock markets has been thoroughly explored in existing literature. Fraser and Oyefeso (2005) examined monthly data from January 1974 to January 2001. They run a Johansen multivariate cointegration test between the US, the UK, Germany, France, Italy, Germany, Belgium, Spain, Denmark and Sweden and found that there is a single common stochastic trend to which all markets have a long-run relationship. Similarly, Chiang and Wang (2008) examined the relationship between the stock markets of Taiwan, Japan, Hong Kong and Singapore. Specifically, they used daily spot and nearby futures prices for MSCI Taiwan, the Nikkei 225, the Hong Kong Hang-Seng and the Singapore Straits Times index from 1995 to 2003. They employed the Gregory and Hansen test and found that they could reject the null of no cointegration at a 95% level of confidence.

However, a considerable number of studies tested cointegrating postulate with results contradictory to the above. Narayan and Smyth (2005) examined the cointegration between the New Zealand and the G-7 economies. They chose to focus on New Zealand because it witnessed a period of major financial deregulation in the mid- 1980s. Theory tells us that financial deregulation would be accompanied by investment flows and an increase of trade. This would result in closer integration with other countries. On the contrary, they did not find any evidence of cointegration. Similarly, Lagoarde-Segot and Lucey (2007) considered the same question but they focused their study on the Middle Eastern and North African (MENA) countries. Using daily data, they used various cointegration analyses to find that the markets of MENA are not cointegrated with the European Union, a regional index or the United States.

As the overview of current literature shows, there is a lack of consensus about the presence of cointegration in international stock markets. However, the literature does seem to support the view that cointegration may exist for certain regions or certain time periods and that generally, there is a trend of moving towards increasing integration. To

conclude, the results obtained might be due to the chosen countries, data, and/or methodology used by the researchers. Hence, there is no consensus about this issue yet and the debate is still open for further exploration. Our present study will add to this debate by employing time series analysis and taking Islamic indices worldwide as the focus variables.

Data and Methodology:

Keeping in view the fact that the issue of cointegration or otherwise among the stock market (and stock indices) is yet open for discussion, and that the weakness of regression analysis has been shown in this regard, our current study will employ time series analysis to explore the possible lead/lag relationship among the five variables under study. The data used for this purpose is weekly data whereas the total number of observations is 351. The source of data was Datastream.

Following are the variables studied in this paper:

Table 1: Description of the Variables

Variable	Full Description
FTBMEMS	EMAS Islamic Index Malaysia
DJIMJAP	Dow Jones Islamic Index Japan
DJIPXJ	Dow Jones Islamic Index Asia Pacific (Excluding Japan)
DJTISGL	Dow Jones Islamic Index Singapore
DJIMUS	Dow Jones Islamic Index US

Step 1. Testing Stationarity of the Variables

In order to begin the time series analysis, it has to be ensured that all variables are I (1). In other words, the variables under study have to be non-stationary in the level form and stationary in their differenced. This is done in order to make sure that cointegration analysis at the later stages is possible. The differenced form of each variable is derived by taking the difference of their log forms. For instance, in order to take the difference form of, say, FTBMEMS:

$$DFTBMEMS = LFTBMEMS - LFTBMEMS_{t-1}$$

Proceeding ahead, we conducted the Augmented Dickey-Fuller test on each of the five variables, in both their level as well as differenced forms. We can summarize the results of this test in a snap shot as follows:

Table(s) 2: Unite Root Test Results

Variables in Level Form

Variable	Test Statistic	Critical Value	Comments
LFTBMEMS	-1.5182	-3.4245	Variable in non-Stationary
LDJIMJAP	-1.9845 (AIC)	-3.4245	Variable in non-Stationary
	-1.9535 (SBC)	-3.4245	Variable in non-Stationary
LDJIPXJ	-2.0777 (AIC)	-3.4245	Variable in non-Stationary
	-1.7773 (SBC)	-3.4245	Variable in non-Stationary
LDJTISGL	-2.0936	-3.4245	Variable in non-Stationary
LDJIMUS	-1.5328	-3.4245	Variable in non-Stationary

Variables in Differenced Form

Variable	Test Statistic	Critical Value	Implication
DFTBMEMS	-11.9258	-2.8701	Variable is Stationary
DDJIMJAP	-10.3535 (AIC)	-2.8701	Variable is Stationary
	-14.8659 (SBC)	-2.8701	Variable is Stationary
DDJIPXJ	-7.3164 (AIC)	-2.8701	Variable is Stationary

	-9.3600 (SBC)	-2.8701	Variable is Stationary
DDJTISGL	-9.0770	-2.8701	Variable is Stationary
DDJIMUS	-13.4540	-2.8701	Variable is Stationary

By taking AIC and SBC as our touchstone for stationarity or otherwise, what is visible in these results is that all the eight variables are non-stationary in their level form, but they are stationary in their differenced form. It is pertinent to note here that we took the highest value of AIC and SBC and compared their t-statistic with the critical value. As a rule of thumb, the t-state should be less than the critical value in the level form, and it should be more than the critical value in the differenced form in order for us to reject the null hypothesis. However, there were some differences in the highest values of AIC and SBC for two variables (LDJIMJAP & LDJIPXJ) in both their level and differenced form. This is why we had to take different corresponding t-statistic for them. But this is not a major issue in the sense that even if we take the different t-statistic, the results are still in harmony, i.e. the null hypothesis is still rejected which is our main concern at this stage. Therefore, once we are sure that our variables are I (1), we can easily proceed to the second step of our analysis.

It should be noted that by ensuring that our variables are I (1), we have succeeded in keeping our variables maintain the theoretical or long term information. This was one of the main obligations against the proponents of regression analysis which we have successfully avoided in step one.

Step 2. Determining order of the VAR Model

After confirming the status of our variables (their being from I (1) category), our concern at the second step is to determine the order of the Vector Auto Regression (VAR). In other words, we need to determine how many numbers of lags we need to use. For this purpose, we took the differenced form of our variables, since they contain the stationarity characteristic. We utilized the unrestricted VAR post estimation menu and inserted an arbitrary order for estimation focusing on AIC and SBC as the touchstone.

According to our results, AIC recommends that 3 lags should be used but SBC recommends only one lag. Apparently, there is a contradiction in these results. But here, we can use our own logic because it is not necessary that we should always be following the numbers blindly. Hence, if we follow SBC, we might be faced with the problem of serial correlation. On the other hand, following AIC might also lead to the issue of over-parameterization. However, our intuition tells us that this might not be a real problem for us due to the fact that the number of our observation is quite considerable (351). Furthermore, we did an interesting experiment in this situation. As a trial and error, we first of all chose 3 and then 4 lags and proceeded to the next step, i.e. co-integration test. However, we faced some problems when we opted for 3 as an order of lag. On the other hand, we found some interesting figures when we selected 4 as the order of lags. Since we are not bound to follow these numbers always, we decided to select 4 lags and proceed to the next step.

Step 3. Testing for Cointegration

After we have established at the initial two steps that our variables are I (1) and that our order of VAR is 4, we are in a position to test whether there is any co-integrating relationship among our variables. This step is extremely important, as it tells us whether our variables are theoretically related or not. If they are, it means that they move together. Once again, we do not assume any relationship among variables based on some already established theory, as is done by the supporters of regression analysis. Instead, we let the data decide for us if there is any relationship among the variables. The results of the step three are summarized as follows:

Table(s) 3

1. Results for Cointegration Test based on Maximal Eigenvalue

Null	Alternative	Statistics	95% Critical Value	90% Critical Value
$r = 0$	$r \geq 1$	37.0239	37.8600	35.0400
$r \leq 1$	$r \geq 2$	26.7616	31.7900	29.1300

2. Results for Cointegration Test based on Trace

Null	Alternative	Statistics	95% Critical Value	90% Critical Value
$r = 0$	$r \geq 1$	97.6246	87.1700	82.8800
$r \leq 1$	$r \geq 2$	60.6008	63.0000	59.1600

The results of the Eigenvalue test are interesting. According to these results, the t-statistic value is almost equal to the critical value (t-stat = 37.0239 and critical value = 37.8600). We know that for rejecting the null hypothesis ¹ at this step, the t-stat should be greater than the critical value. However, looking at the very minute difference between the two values, intuition might guide us to reject the null even at 95% confidence level, although it might not be statistically correct. However, we must not be following and relying blindly on these numbers because they are, after all, numbers. When our intuition is guiding us that there must be one co integration relationship among our selected variables, we can comprise at such a small difference between the two numbers. Our intuition is also supported by the results of Trace test which we shall see soon in the coming paragraph. Nevertheless, if someone blindly believes in statistical values and numbers and he challenges our rejection of the null hypothesis at this point, we may take shelter in the 90% confidence level where the null is easily rejected (at 90% confidence level, t-stat = 37.0239 and critical value = 35.0400).

When we look at the results of Trace test, we easily reject the null hypothesis ($r=0$) at both 90% and 95% confidence level whereas the alternative hypothesis ($r \neq 1$) can not be rejected and it stands true. This is a kind of supportive of our stand in the case of Eigenvalue test results where we rejected the null at 95% confidence level. To conclude this step, there is one co integrating relationship among our variables. Hence, it is possible for us to move forward to other steps of our analysis.

Step 4. Long Run Structural Modeling (LRSM)

¹ The null hypothesis at this step is: there is no cointegration.

We have successfully detected the existence of a theoretical relationship among our variable in step three above. However, we also need to quantify this relationship now. This is primarily needed to compare our statistical findings with theoretical expectations. In fact this is a step where we bring both the theory based regression analysis and our data driven approach in the court of justice to which approach is correct. We also want to testify at this stage whether the coefficients of our variables are statistically significant or not?

Using the Long Run Structural Modelling (LRSM) component of MicroFit, we normalize our variable of interest, i.e. EMAS Shariah Index. We do this by giving the value of 1 to this variable (A=1). The results we obtained through this process are summarized below in table 4. Calculating the t-ratios manually, we found two variables (indices) to be insignificant.

Table 4: LRSM Results

Variable	Coefficient	Standard Error	T-ratio	Comments
LFTBMEMS	-	-	-	-
LDJIMJAP	.50305	(.50591)	.99434	Insignificant
LDJIPXJ	-.45267	(.21651)	2.09075	Significant
LDJTISGL	-.062975	(.28909)	.217838	Insignificant
LDJIMUS	-.88937	(.32624)	2.72612	Significant

These results are quite convincing and encouraging for us. The reason being that the variable of our interest LFTBMES is significant (as we double checked it ourself). Overall, two more variables are found to be significant which are LDJIMUS and LDJIPXJ. The other two variables are not significant.

Although we can proceed to the next step with these kind of convincing results, we want to be as cautious as possible in our estimate. For this purpose, we decided to double check the significance or non significance of our variable through over identifying restriction. We will apply this method to all the variables, irrespective of the fact that they

are significant or not. We did this by, as before, giving the value of 1 to our variable of interest (LFTBMES) and giving the value of 0 to the other four variables one by one. Fortunately, our results are perfect again and we are able to testify the initial results that only LFTBMES, LDJIPXJ and LDJIMUS are significant whereas the other two variables (LDJIMJAP and LDJTISGL) are insignificant:

Variable	Chi-square P-value	Implication
LDJIMJAP	[.283]	Insignificant
LDJTISGL	[.829]	Insignificant

From the above analysis, we arrive at the following *cointegrating equation* (numbers in parentheses are standard deviations):

$$\text{LFTBMEMS} + 0.50305 \text{LDJIMJAP} - 0.45267 \text{LDJIPXJ} - 0.062975 \text{LDJTISGL} - 0.88937 \text{LDJIMUS}$$

$$(0.50591) \quad (0.21651) \quad (0.28909) \quad (0.32624)$$

Step 5. Vector Error Correction Model (VECM)

This is second phase of our research. So far, we have established the fact that there is one co integrating relationship among the variables. However, we have not yet indicated anything about causality among the variables. In other words, so far we have not used equality sign anywhere. Therefore, we do not know which variable is the leader and which one is the follower. This is why the tests we conducted so far are not of real interest for the practical man, the investor. An investor or the fund manager is interested to know which variable he should hit in order to get the maximum result with minimum input. Therefore, we need to investigate which variable here is the leader (exogenous) which is driving the others behind it. This will help the decision maker or investor a great deal. Henceforth, we will elaborate the steps which talk about causality and which are of practical interest for decision makers.

For this purpose, we start with fifth step which is Vector Error Correction Model (VECM). This step will tell us which variable is exogenous and which one is

endogenous. We arrive at this conclusion based on the principle of Granger-causality. It is a form of temporal causality where we determine the extent to which the change in one variable is caused by another variable in a previous period, by examining the error correction term, $et-1$, for each variable, and checking whether it is significant or not.

Table 5: VECM Results

Variable	ECM (-1) t-ratio p-value	Implication
dLFTBMEMS	[.730]	Exogenous
dLDJIMJAP	[.029]	Endogenous
dLDJIPXJ	[.000]	Endogenous
dLDJTISGL	[.000]	Endogenous
dLDJIMUS	[.000]	Endogenous

As can be seen in the table above, the results are quite unexpected and contradictory to what theory would say. We find in the table that it is the Shariah EMAS Index of Malaysia that leads the other Islamic indices, both regional and international. What this means for the investors especially those looking to invest in Islamic stock index is that they should look at the Malaysian Islamic index and decides accordingly. This index, being the only exogenous variable according to our results, would receive market shocks and transmit the effects of those shocks to other indices. On the one hand, this result seems logical for local and regional Islamic indices like that of Singapore and Japan. However, common sense would suggest that the US Islamic should be the leader and EMAS Malaysia should be the follower. Nevertheless, we would still continue with our analysis and see if there are some changes in our results at later stages of the analysis. If there are no changes, then we will decide whether to go with the commonly held theory or support our empirical results with the help of logical arguments.

Step 6. Variance Decompositions

Although we now know that EMAS is exogenous/leader and the other four variables are the followers, we do not know yet which of the remaining four variables is the most

endogenous and which one is the least. The answer to this question will make the task of decision maker easier, looking at the fact that sometimes the resources are very scarce and it is not possible to avail all the options in the existing budget. Thus, an indication that which single variable may give the highest reward is always welcomed and valued by the decision maker. For this purpose, we apply Variance Decomposition which decomposes the variance of forecast error of each variable into proportions attributable to shocks from each variable in the system, including its own. The least endogenous variable is thus the variable whose variation is explained mostly by its own past variations. VDC can either be orthogonalized or generalized. There is crucial difference between the two and even the results are mostly different. The orthogonalized VDC assumes that when a particular variable is shocked, all other variables are “switched off”. More importantly, the generated results of orthogonalized VDC are dependent upon the ordering of variables in the VAR. Hence, the first variable will have the highest percentage and would probably be the most exogenous variable.

The results of the orthogonalized VDC are reported below:

Table 6: Orthogonalized VDC

Orthogonalized Forecast Error Variance Decomposition for variable						
	DAYS	LFTBMEMS	LDJIMJAP	LDJIPXJ	LDJTISGL	LDJIMUS
LFTBMEMS	7	162.20%	480.22%	1196.18%	1894.41%	2575.34%
LDJIMJAP	7	10468.50%	105.36%	75517.58%	13468.97%	3069.85%
LDJIPXJ	7	1366.72%	197.57%	269.09%	5988.75%	3089.95%
LDJTISGL	7	2912.20%	205.54%	535.30%	396.77%	2480.75%
LDJIMUS	7	2599.57%	217.07%	1262.04%	3016.51%	257.43%

As can be seen in the above table, the results of orthogonalized VDC are quite contradictory to our results in the previous step (VECM). Whereas EMAS was the most exogenous variable according to the results of VECM, we find in the above table that it is LDJTISGL (Singapore Islamic index) which is the most exogenous. This result is not only contradicting the previous result but is also against our intuition. How can the

Singapore Islamic index be the leader for Malaysian or US Islamic index? Hence, we are forced to check the results through generalized VDC. This approach will help us remove the problems associated in orthogonalized VDC and we may have results which are confirmatory with the previous steps as well as our intuition. The following table presents the result of generalized VDC:

Table 6 (b): Generalized VDC

Generalized Forecast Error Variance Decomposition for variables						
	DAYS	LFTBMEMS	LDJIMJAP	LDJIPXJ	LDJTISGL	LDJIMUS
LFTBMEMS	7	77.58%	177.86%	116.95%	113.56%	127.46%
LDJIMJAP	7	4622.63%	46.26%	97.33%	108.25%	100.59%
LDJIPXJ	7	478.87%	65.81%	38.55%	47.18%	58.71%
LDJTISGL	7	1099.93%	75.03%	58.60%	41.58%	67.81%
LDJIMUS	7	1109.65%	89.30%	92.79%	94.37%	46.71%

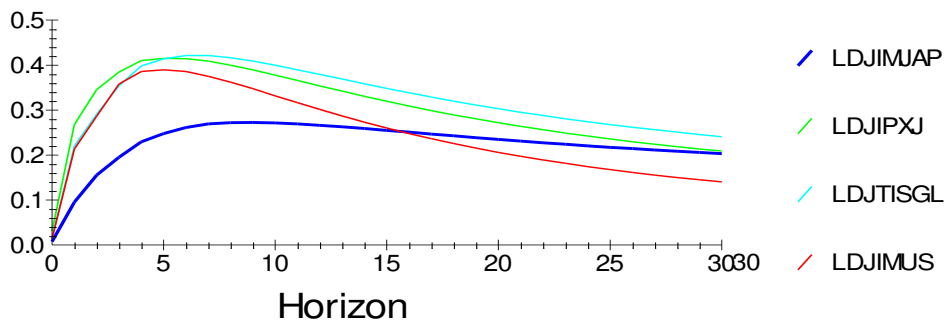
As is evident from the above table, we can see that, as per our previous results and our intuitional expectation, it is EMAS which is the most exogenous variable in our series with 77.58% of it being dependent on its own past. Singapore Islamic index, which was shown to be the leader in orthogonalized VDC, is far away from being a leader in the list. In fact it is the US Islamic index which comes second in the list (46.71%) followed by Japan Islamic index (46.26%). Thus, our results confirm that orthogonalized VDC is not a reliable estimate to forecast error and it must not replace generalized VDC which is the most reliable one. The VDC results are also in harmony with the results of VECM.

The practical implications of these results are many and interesting for the decision makers and investors. EMAS being the leader, one must not be bothered much by the changes in regional as well as US Islamic indices. On the contrary, the changes, positive or negative, in EMAS should be a source of concern for the relevant persons and institutions. Whereas investors in Islamic index Malaysia (EMAS) would be safe from what is happening in other Islamic indices, this would not hold true for others. We would explain later how EMAS can be a leader over US Islamic index.

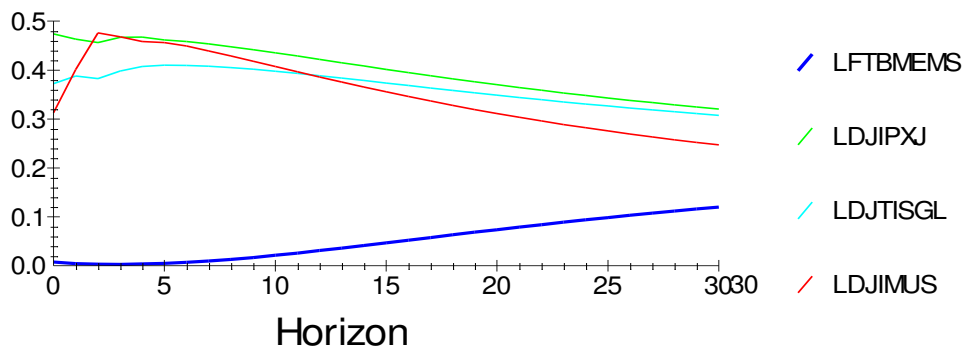
Step 7. Impulse Response Functions

In general, impulse response function does not give us any extra information over and above VDC. The only advantage it gives is that the results of VDC are presented to us in a graphical form. Following are the graph produced by IRF.

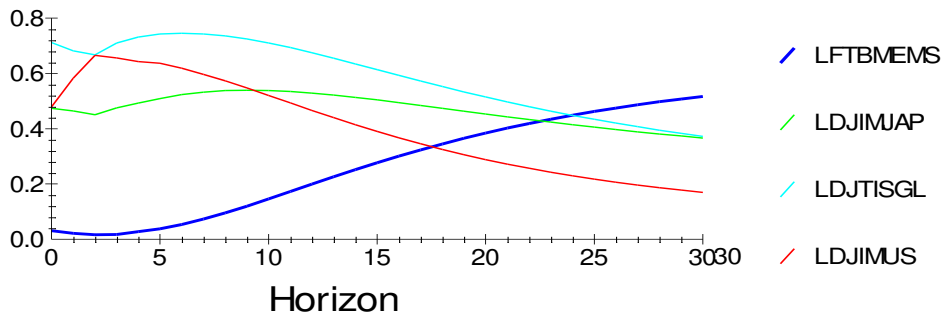
Generalized Forecast Error Variance Decomposition for variable LFTBMEMS



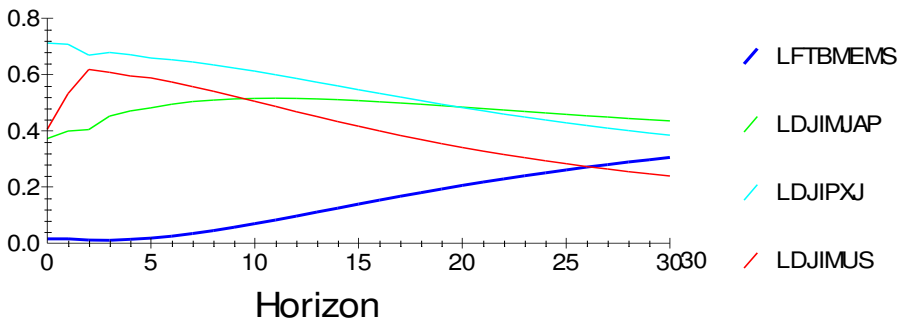
Generalized Forecast Error Variance Decomposition for variable LDJIMJAP



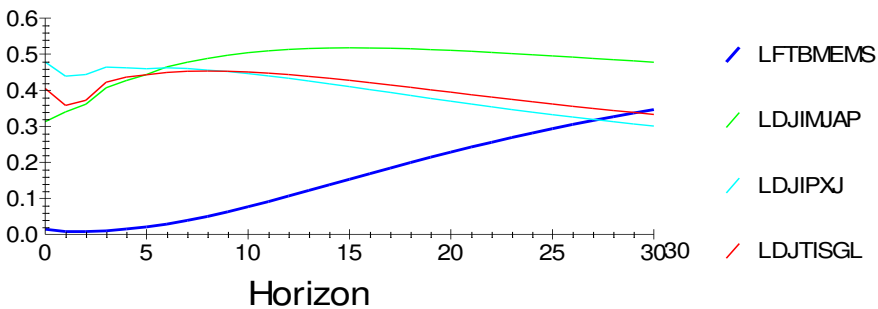
Generalized Forecast Error Variance Decomposition for variable LDJIPXJ



Generalized Forecast Error Variance Decomposition for variable LDJTISGL



Generalized Forecast Error Variance Decomposition for variable LDJIMUS



The above graphs are self explanatory. We can see that the shock to EMAS (with blue color) affects the whole system. However, shocks to other variables do not really make

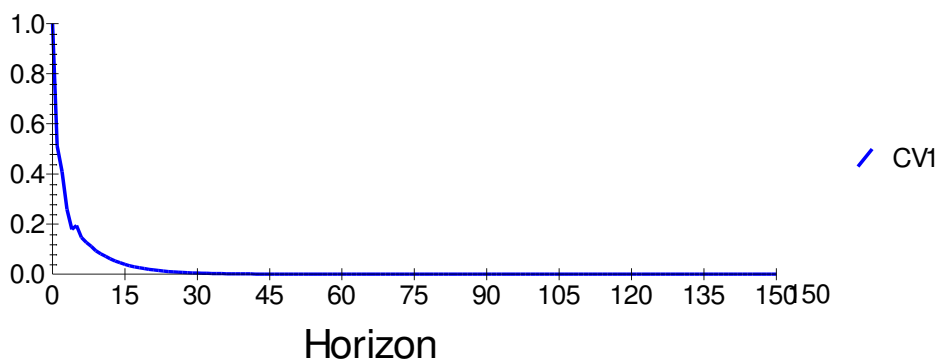
EMAS stir a lot. It also shows that our previous results (EMAS being the most exogenous) are robust.

Step 8. Persistence Profile

The persistence profile step illustrates the situation when the entire cointegrating equation is shocked, and it also indicates the time it would take for the relationship to get back to equilibrium. Here the effect of a system-wide shock on the long-run relations is the focus (instead of variable-specific shocks as in the case of IRFs) whereby this shock comes from external factor outside our equation or our system. The chart below shows the persistence profile for the cointegrating equation of this study.

Persistence profile illustrates how much it would take the entire system to come back to equilibrium in case the whole the whole system is shocked. Therefore, it focuses on the effects of a system-wide shock on the long-run relationship of the variables. This is in contrast to the previous step (IRF) where we shock only one variable. The below graph shows the persistence profile for our co integration relation:

Persistence Profile of the effect of a system-wide shock to CV'(s)



As can be seen here, it would take about almost 30 periods for the co integrating relation to get back to the equilibrium if a system wide shock from outside occurs at any point.

Once we are finished with the eight steps, the decision maker will be in a position to make the most appropriate decision in terms of investment etc. His task is much easier now and he can maximize his profit with minimum possible input.

Discussion of the Results:

However, our task is not finished at the end of step eight. This is because our eight steps, although quite carefully applied, are giving us results that might not be acceptable to many. The reason being that in our analysis we found that out of the five variables that we have, EMAS was the most exogenous. The exogeneity of EMAS can be acceptable in comparison to regional indices like that of Singapore, Japan and Asian Pacific. This is due to the fact that Malaysia has a good name when it comes to Islamic finance. It has a long history and a well established operational and legal structure for the promotion of Islamic finance. So it is logically appealing to say that it leads the other regional markets at least in terms of Islamic finance. However, it is quite astonishing that Malaysia can be leading even the US Islamic index. This is because the superiority of US in terms of almost everything is an established fact. The crises of 2007-2008 that primarily started in US and then spread worldwide is a glaring example of the leading role of US economy in general and US financial market in particular. Based on this, theory would predict that the Dow Jones Islamic US index should be the leader for EMAS and not vice versa as our results have concluded. Therefore, we can simply reject our results and stick to the theory, or we need to interpret these results in a logical manner. But the question is that how can we believe that US Islamic index is following the Malaysian Islamic index which is very small?

The answer to this question lies in the following illustration:

(1) Technical Approach:

Based on the study that we did for the sake of answering this query, it was found that there is a technical difference between the two indices which might have led to the leading role of EMAS. Although both of stock indices have a certain screening criteria (recall that both are Shariah compliant and both have to follow strict conditions in selection and acceptance/listing of the companies) there are significant differences in the

screening process of both the indices. For instance, Bacha & Mirakhor (2013) argue that the screening process of Malaysian Islamic index is much more liberal and flexible as compared to the Dow Jones Islamic index screening process which is very strict. In fact when Malaysia allows that small part of the commercial activities of the Shariah compliant companies may even consist of haram, such companies are not accepted by Dow Jones Islamic. Even more, Dow Jones Islamic is so strict in its selection of the stocks that it has a benchmark for debt to equity ratio which is not to be found in the case of EMAS. This automatically leads to the result that the choice or option available with Dow Jones Islamic index is limited as compared to EMAS Malaysia Islamic index. Whereas it is something good for Dow Jones Islamic index to be as much Shariah compliant as possible, it also has its cons. The very difference of strict versus lenient screening process and the consequent freedom and flexibility that it provides may possibly be the first reason why Malaysian Islamic index leads its counterpart. It is established in finance that each decision has its “cost” and “benefit”. Whereas the benefit of strict screening criteria may be more compliance, the “cost” is perhaps explained by our results (wherein US Islamic index lags behind EMAS).

A second possible answer from technical perspective may lay in the fact that the two markets are regulated differently. In other words, the US financial market is more liberal and the government intervention is very less. On the other hand, the government restrictions and intervention in Malaysia is high. Possibly, this is one reason why Emas does not behave in a natural way. On the contrary, it assumes to be a leader with respect to US Islamic index whereas it is supposed to be a follower.

(2) Behavioral Finance Approach:

Perhaps a more convincing interpretation of our results comes from the perspective of behavioral finance approach. Behavioral finance has made advances in explaining the behavior of markets. It focuses on the irrational behavior of the individuals in the economy. Studies in this field have found that culture and beliefs influence how individuals make economic decision as well as investment decisions. Religious beliefs and ethnic origins significantly affect life time income risk, maximization, confidence and trust. For example, Guiso et al. (2003) and Arrunada (2009) argue that religion has

significant influence on the financial choices individuals make. These choices range from consumption, investment, risk taking and risk aversion etc.

Keeping in view this scenario as well as the fact that Islamic indices were originally established to attract the Muslim investors, it is logical to argue that the Muslims would trust, invest, and follow the Malaysian Islamic index more than the US Islamic index. The reason is that Malaysia is a predominantly Muslim country. It has a well established and regulated market of Islamic finance and Islamic investment. The very fact that Malaysia is a Muslim state and that the index is “Islamic” makes it appealing to us that the investors and fund managers would be more concerned and attracted by the Malaysian Islamic index. They would take this index as a benchmark for their decisions and predictions regarding investment in Shariah compliant indices. On the other hand, US is not a Muslim majority country in the first place. Furthermore, we also feel that some steps taken by the US government in the recent past are not very much liked by the majority of the Muslims around the world, including the Muslim investors. In fact it was the very event of 9/11 and the subsequent steps taken by US against Muslims that widened the bridge between Muslims and the US. Indeed, it is the same time (after 9/11) that the Muslim investors withdraw the bulk of their investment from US and invested it in the Arab/Muslim countries which led to a boom of the Islamic finance industry. Keeping in mind this background, one feels inclined to think that the Malaysian Islamic index should be the leader when it comes to “Islamic finance” and it should not be affected much by the Dow Jones Islamic stock index.

(3) Geo Political View:

As previously hinted, the gulf between Muslims and US is widening with every passing day. On the one hand, we find countries like UK which is trying to attract the Muslim investors by issuing the first sovereign sukuk in the country. This is because countries like UK realized the fact that Shariah compliance is important for attracting Muslim investors and they tried to cash the Islamic market by taking positive and friendly steps towards Islamic finance development. On the other hand, there is hardly any substantial development of Islamic finance visible in the USA. The result is that US is surpassed by other non Muslim, Western and well as Islamic countries like Malaysia and the GCC in the field of Islamic finance. We should also remember that this is a hard financial time

that the US is going through these days which is also one reason of why it is lagging behind with respect to the development of Islamic finance. In fact a report by BBC ² in the start of this month reported that for the first time in the last 50 years, majority of the US citizens opined that USA is loosing its leadership of the world. In such a situation when the very citizens of US think this way, we need not be too much surprised about our results in this paper which reveal that the US based Dow Jones Islamic index is no more the leader for EMAS Islamic index of Malaysia. Just as US is loosing its leadership in the eyes of its own people, US Islamic indices are lagging behind EMAS as supported by our results.

Policy Implications:

Our findings have very important implications for both the investors as well as the Malaysian authorities. These days, there is a battle going on among the Islamic countries (like Malaysia and the GCC) on the one hand, and between non Muslim countries like UK, Singapore etc on the other hand to become the hub of Islamic finance all over the world. However, our results indicated that so far Malaysia is not only leading the local region but it is also compatible with the huge international market like USA. Thus, this study is an empirical proof of the claim of Malaysia that it is a leader and trademark in Islamic finance. It also shows that Malaysia needs to market itself with more rigor now as there is empirical evidence available to support its claim of being a “global leader in Islamic finance.”

As for the investors, individual and managers, our study should be a positive indication for those who are interested and inclined, based on their religious or ethical motives, to invest in Islamic stocks of Malaysia and not be worried about the events happening in the Dow Jones Islamic stock market. The regional investors living near Malaysia can also take the EMAS Islamic index as an indication of the possible movements of the Islamic stock markets in the region and they may decide, invest and predict on its basis. However, our results also suggest that since there is cointegration in these indices (i.e. they move together), the probability to gain through arbitrage and diversification is less in the long run, although it is possible to gain profit through diversification in the short run.

² www.bbc.co.uk

Limitations of the Study:

In this study, we used only the time series technique to explore the lead/lag relationship among different Islamic indices of the world. Although a modern and advanced technique in itself and much superior to regression analysis, time series analysis is not free of some shortcomings. Therefore, we recommend that our results should be reported and applied with caution. Furthermore, there are more advanced techniques which can and should be applied to test the same hypothesis and judge its validity.

Conclusion:

In this study, we attempted the time series technique to analyze the cointegration relationship among five Islamic indices, namely FTSE BURSA Malaysia EMAS index, Dow Jones Islamic index US, Dow Jones Islamic index Singapore, Dow Jones Islamic index Asia Pacific (excluding Japan) and Dow Jones Islamic index Japan. We found that there is one cointegrating relationship among these five variables wherein EMAS leads the other four other Islamic indices, including the Dow Jones Islamic index of the US. These results are contrary to our expectations as well as the established theory that a well advanced economy of the world like US should play the leading role. However, we also saw that there is room for our result and it can be accepted based on the technical analysis of Shariah screening, the behavioral finance approach, and the changing geo political and strategic situation of the world. Our findings have important implications for investors interested in Shariah compliant securities, as well as for the Malaysian authorities which are striving to represent themselves as a brand name of Islamic finance in the world.

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