Do islamic or conventional mutual funds lead economic growth? evidence from Malaysia

Alchaar, Osama and Masih, Mansur

INCEIF, Malaysia, Business School, Universiti Kuala Lumpur, Kuala Lumpur, Malaysia

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Do islamic or conventional mutual funds lead economic growth?

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Osama Alchaar[1] and Mansur Masih[2]

Abstract

Studying the relationship between mutual funds and economic growth is not a new trend in the empirical literature. However, most of these studies were conducted using classical regression and correlation and very few studies used the cointegration techniques to address the long-run relationship yet without specifying the lead-lag nexus or causal direction that is considered to be the most important research outcome for policymakers and economists. This paper tries to test a causal direction for lead-lag relationship between conventional or Islamic mutual funds on the one hand and economic growth on the other using standard time series techniques (like VECM, VDC, IR and PP). The paper tries to identify this nexus and answer two main questions as to which leads the other, mutual funds or economic growth? And is there a difference between conventional and Islamic funds in this lead-lag relationship? It is expected that this paper will fill a gap in the literature by addressing more accurately the relationship between the two types of mutual funds and economic growth in an emerging country that is globally renowned as an Islamic finance hub (i.e. Malaysia) where 18.8 billion USD are assets under Islamic funds management. Two causal (lead-lag) chains that start from the mutual funds and end with GDP were evidenced and that both Islamic and conventional mutual funds lead economic growth, however, conventional funds have bigger role in that.

Keywords: Islamic mutual funds, conventional mutual funds, economic growth, Malaysia

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[1] INCEIF, Lorong Universiti A, 59100 Kuala Lumpur, Malaysia.

2 **Corresponding author**, Senior Professor, UniKL Business School, 50300, Kuala Lumpur, Malaysia.

Email: mansurmasih@unikl.edu.my

Introduction

Investment is considered *inter alia* a crucial determinant for economic growth according to many economic theories starting from Haroud 1939 and Domer 1947 to Solow 1956 and Lucas 1988 and many others. Many economists consider investment to be the most significant factor for achieving economic growth (Shikhah, 2015).

Mutual funds are prominent vehicles for collecting savings in financial instruments. They also induce savings by giving savers (investors) incentives to channel their money into these funds to enjoy fixed or variable returns instead of consuming these savings or keeping them unproductive (hoarding). Investment or mutual funds are not one type, they vary according to many criteria like: investing strategies (income funds, growth funds, balanced fund), the sectors they invest in (financial, industrial, infrastructure, real estate, commodities), the timeframe of their investments (short-term, long-term) and finally according to the philosophy that govern them (conventional, Islamic, ethical, green ..). Islamic mutual funds grew rapidly in the 1990s, following the ruling by the Islamic Fiqh Academy (IFA) on the legitimacy of investment in stocks. The recent growth trends in numbers and assets under management (AUM) of global Islamic funds and mutual funds exceeded 60 billion USD in 2015 (Worldbank, 2017). Malaysia ranked 2nd in the world after Saudi Arabia in terms of AUM of Islamic funds with more than 18.8 billion USD (Thomson Reuters, 2016), while the Global Infrastructure Investment Index 2016 ranks Malaysia as the second most attractive destination for infrastructure investment in Asia, and fifth in the world (Securities Commission, 2017)

These funds, regardless of their type, channel savings from different types of economic units with financial surplus into productive projects that boost economic growth by creating job opportunities, increasing supply of goods and services, increasing exports, creating income…etc. In economics words, any increase in the investment expenditure is supposed to increase income (output) more through multiplier which is the reciprocal of marginal propensity of saving (MPS). On another side, mutual funds are among the biggest investors in short and long term securities issued by the government to finance budget deficit (fiscal policy) or influencing money supply and interest rates (monetary policy).

Various empirical studies have been conducted to study the relationship between mutual funds and economic growth. Many of these studies found evidence of strong and positive relationship

between these two variables, however, only a few studied the long-term relationship that depends on the existence of cointegration but without determining the lead-lag (causal) relationship, and almost no study has looked so far at this kind of econometric relationship for the Islamic mutual funds which number increased from 756 funds in 2008 to more than 1180 funds in 2015 (World Bank, 2017) and that was the main motivation behind conducting this research that takes into consideration of these Shariah-compliant funds.

Therefore, this paper tries to answer questions about the nature of relationship between the two types of mutual funds and economic growth in Malaysia like: Which is leading the other, mutual funds or economic growth? And why? Is there any difference between conventional and Islamic mutual funds in term of their lead-lag role? If yes, which is the most influencing? In other words, the major contribution of this paper is studying the lead-lag relationship between conventional or Islamic mutual funds on the one hand and economic growth on the other, which is, to our best knowledge, a gap in the current literature of this topic.

The methodology used in this study is the standard time series techniques and Malaysia is taken as a case study.

The structure of this paper begins with reviewing salient studies from the literature of economic growth and mutual funds followed by the data and methodology used to conduct the empirical study which would be explained in detail in the third section including tests and techniques used to reach the findings that will be discussed from economic perspective. Finally, a conclusion that answers our main questions accompanied by policy recommendations to the Malaysian authorities end this paper.

Literature review:

Many empirical studies have been conducted on the role of mutual funds in collecting savings and raising economic growth rate. Other studies compared between the performance of conventional and Islamic mutual funds during normal and abnormal times (crisis). The following are some salient studies which are grouped into two main strands as follows:

1-Group A: studies about the role of mutual funds in economic growth

Diaconasu (2011) conducted a study on the role of mutual funds in the US economy to explore the relationship between net assets value (NAV) of different types of mutual funds and: inflation,

balance of payments, total savings and GDP. The main findings were that there is a positive relationship between total savings and NAV of the mutual funds (without determining lead-lag nexus), while there is no direct relationship between NAV and GDP.

In his study about the relationship between macroeconomic aggregates and NAV of equity mutual funds in Hong Kong during 2001-2009 using cointegration and Granger Causality methods, Chu (2011) found that there is no cointegration between NAV of the equity mutual funds and short-term interest rates (HIBOR) and money supply (M2).

On the developing economies level, Mishra (2012) used the Granger Causality and VECM techniques to the study the relationship between mutual funds and real GDP in India (as a proxy for the economic growth) during 1970-2009, he found that there is a strong correlation between economic growth and collecting savings via mutual funds, moreover, he argues that on the long run, the economic growth leads to collecting more savings through mutual funds. The main recommendation he provided was that through investing savings via mutual funds, the cycle of poverty could be broken. On the other hand, Jani & Jain (2013) conducted their study using data from India too during 1998-2010 and they found that there is a very strong correlation between assets under management by the mutual funds and GDP.

1-Group B: studies about the comparison between performance of conventional and Islamic mutual funds

This group could be sub-categorized into three sections according to which type of mutual fund outperformed the other (conventional or Islamic). For example, Hoepener et al (2009) found that the performance of Islamic mutual funds in Malaysia is better than those in GCC because of governmental support for Islamic finance and the better religious consciousness. Ali et al (2010), Mansour (2012) found the same in their results in Pakistan and Malaysia respectively. Ashraf (2013) found that the Islamic funds performed better especially in the Global crisis of 2008. Shaikh (2012) argues that Islamic mutual funds could have a better performance if it has a unique philosophy that is taken from Islamic Shariah and not by acting like the conventional ones.

On the other hand, other studies found that conventional mutual funds perform better than the Islamic. Mansour & Bhatti (2011) argue that Islamic funds perform less in terms of return during the period 1996-2009 and that there is a significant difference between the standard deviation of

both types so that the Islamic funds are riskier. Bashir & Nawang (2011) found the same but within shorter period (2002-2006).

Other studies found mixed results that depend on the situation of the markets, for example, Elfakhani et al (2005) found that during 2000-2002 the performance of the Islamic funds was better, while during the economic boom between 1997-2000 the conventional was better. Abdullah et al (2007), Abdurrezak (2008) and Merdad et al (2010) agree with that, they found that the conventional funds' performance is better during good times while the Islamic ones is better in the hard times. Other studies found no differences between the two types.

The gap that this study is trying to fill is about the lead-lag relationship between the two types of mutual funds and economic growth in Malaysia, which is well-known for its developed Islamic financial sector.

Data & Methodology:

The objective of this paper is to determine leads-lag relationship between mutual funds (both conventional and Islamic) and economic growth in Malaysia and to see if there's a difference among the two types of mutual funds. One of the major shortcomings of traditional regression analysis to determine lead-lag relationship is that it cannot capture the dynamics of the variables. It assumes that parameters across units/countries remain constant which is not realistic in practice. Moreover, traditional regression presumes theoretical relationship between variables. Furthermore, it presets the causality direction without testing. Therefore, the time-series analysis is more appropriate to testing the temporal or lead-lag relationship between variables (Masih et al. 2009).

Our model depends on data of conventional and Islamic mutual funds (unit trusts) in Malaysia and three macroeconomic variables which are the GDP, the total savings and interest rates in Malaysia. All data are on quarterly basis and covers a period of seven years starting 2010, so the total observations for each variable are 28. Therefore, the five variables used in our model are:

1- LGDP: the logarithm of GDP as a proxy for economic growth.

2-LIMF: the logarithm of net asset value (NAV)[1] for the Islamic unit trusts in Malaysia.

3- LMF: the logarithm of net asset value (NAV) for the conventional unit trusts in Malaysia.

4- LTS: the logarithm of total savings[2] in Malaysia.

5- LINT: the logarithm of interest rates in Malaysia represented by the BNM overnight rates.

We took the logarithm of the variables to make variance stable and get rid of inconsistency in units used to measure these variables.

Mutual funds (unit trusts) data were collected from Securities Commission of Malaysia while other macroeconomic data (GDP, total savings, interest) were collected form Bank Negara Malaysia and World Bank databases.

Estimated Model:
Following is the general model specification that has been used in this study to empirically examine the long run relationship between economic growth and mutual funds.

$$LGDP = C_1 + C_2 * \text{LIMF} + C_3 * \text{LMF} + C_4 * \text{LTS} + C_5 * \text{LINT} + \mathcal{E}_t$$

It's important to mention here that the equal sign (=) in the previous equation doesn't assume or represent a lead-lag or dependent-independent variables relationship.

1-Testing for stationarity/non-stationarity of the variables

Empirical studies that use the time series analysis assumes that the variables are stationary, otherwise the results will be misleading (i.e. spurious regression). In other words, when the time series of the variables are stationary it means that the mean and the variance are constant. In other words, it is well established that most economic time series are non-stationary in their original ''level'' form (Yule 1926). If the variables are nonstationary, the conventional statistical tests (such as *R2, t*, etc.) are not valid. Therefore, mean variance and covariance of each variables need to be constant to ensure stationarity.

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[1] NAV is calculated by deducting the total liabilities of the unit trust out of its total assets.
[2] Total savings is calculated by deducting the public and private consumption out of GDP.

A stationary series has a mean to which it tends to return, a finite variance shocks are transitory, autocorrelation coefficients die out as the number of lags grows, whereas a non-stationary series has an infinite variance (grows over time), shocks are permanent on the series and its autocorrelations tend to be unity (Masih et al. 2009). The non-stationarity of the data means that there is a unit root among different variables and that requires conducting certain tests. Therefore, the Unit root testing procedure is performed in order to discover if the variables under examination are stationary or non-stationary and determine their type (if they are the I(0) type - non-stationary at the level form and stationary at the first differenced form). Three tests are performed, namely: Augmented Dickey-Fuller (ADF), Phillips-Perron (PP). The test of stationarity/non-stationarity is important step to testing the cointegration between variables.

For the ADF-test, the Dickey-Fuller regressions include an intercept and a linear trend for the level form of the variables and an intercept but not a trend for a differenced form of the variables. The ADF regression order is selected based on the highest computed values for Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC). The null hypothesis of the subsequent variable to be **non-stationary** is tested.

For the PP-test, computations include an intercept and a linear trend for the level form of the variables and intercept but not a trend for a differenced form of the variables. The null hypothesis of the subsequent variable to be non-stationary is tested.

The summary result of each of the three tests performed for the determination of the stationarity/non-stationarity of variables is given in the Table 1.

Table 1. Testing for stationarity/non-stationarity of the variables

		ADF			PP		
	Variable	T-Stat.	CV	Result	T-Stat.	CV	Result
	LGDP	-1.4473	-37328	NS	-0.403	-2.9750	**NS**
	LIMF	-1.8893	-3.7328	NS	0.13894	-2.9750	**NS**
	LMF	-2.5719	-3.6074	NS	-0.9172	-2.9750	**NS**
	LINT	-1.4356	-3.7128	NS	-6.6894	-2.9750	**S**
Level form	LTS	-1.7061	-3.7328	NS	-5.2722	-2.9750	S

1.

	DGDP	-2.3549	-3.1153	S	-10.885	-2.9798	S
	DIMF	-3.7094	-3.0817	S	-4.706	-2.9798	S
	DMF	-4.6668	-3.0817	S	-3.10	-2.998	S
	DINT	-3.1723	-1.9171	S	-5.6262	-2.9798	S
Diff. form	DTS	-6.2362	-2.9911	S	-10.7356	-2.9798	S

Notes: NS – Non-Stationary; S – Stationary. CV – 95% simulated critical value c

ADF test showed non-stationarity for all variables in the level form, and stationarity in the differenced form, while two variables were stationary in PP test at the level form (INT, TS). We will depend on ADF test results as it's more suitable for time series data and, more consistent with the objectives of this paper.

2-Determination of the order of the VAR model.

In order to conduct the cointegration test, the lag length of VAR (Vector Autoregressive) model needs to be determined.

Table 2 Determination of the order of the VAR model

Order	LL	AIC	SBC
0	297.82	262.82	259.88
1	285.91	255.91	238.23
2	224.31	-269.31	236.91
3	**294.08**	**314.08**	**266.96**

AIC selects the maximum lag (selects higher order), whereas SBC selects the minimum lag (selects lower order). Depending on the results we will take 3 lag order.

3-Testing cointegration

The following step is to see if the variables are cointegrated and at the same time to determine, if there is theoretical relationship among the variables and if they are in the equilibrium in the long run. The Engle-Granger and Johansen tests were applied.

According to Engle-Granger test, the variables will be cointegrated if variables are in same order, contain a liner relationship and residual of those variables are stationary. ADF test has been applied on residuals to test the presence of unit root. The residuals were found to be stationary (t-statistic > C.V) which indicates the presence of one or more cointegrating vectors. The limitation of E-G test is that it can identify the presence of cointegration but unable to specify the number of cointegrating vectors.

Table 3: Engle Granger Test.

	T. Statistic	Critical Value	Result
ADF (1)	-6.5613	-5.0823	Cointegration exist

Note: Null is residuals are non-stationary

        Alternative is residuals are stationary

After that we conducted Johannsen test for cointegration (based on Maximal Eigenvalue and Trace of the Stochastic Matrix).

Table 4 Testing cointegration - Johansen test

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix				
Null	**Alternative**	**Statistic**	**95% Critical Value**	**Result**
r = 0	r = 1	124.27	37.8600	2 cointegrations
r<= 1	r = 2	49.85	31.7900	
r<= 2	**r = 3**	**19.45**	**25.4200**	

Cointegration LR Test Based on Trace of the Stochastic Matrix				
Null	**Alternative**	**Statistic**	**95% Critical Value**	**Result**
r = 0	r>= 1	215.69	87.1700	2 cointegrations
r<= 1	r>= 2	91.41	63.0000	
r<= 2	**r>= 3**	**41.56**	**42.3400**	

According to Johansen cointegration test performed, there are two cointegrating vector representing the theoretical relationship among the variables in the long run (Both of Johansen tests claim the presence of two cointegrating vector, which describes the co-movement of the variables). It can be seen from the Table 4 that the tested null hypothesis of "no cointegration" is rejected on the first level of the steps (first hypothesis pair r=0 and r=1 as alternative hypothesis for the Maximal Eigenvalue statistics and r=0 and r>=1 for the Trace statistics and in the second level as well) with 95% of confidence level based on the comparison of Computed statistic and critical value of the tests.

However, we believe that variables of our model (which represent economic grow, savings, interest rate and the mutual funds) usually move together in the long run and this means that their movement must be logically in one route and that is common description of the presence of one cointegration which was found in E-G test. Therefore, we will assume that there is one cointegration only between the variables of our model.

4-Long Run Structural Modelling (LRSM)

The fact that there is cointegration among the variables stands for the presence of theoretical relationship among the variables. Further on, in order to make the coefficients of cointegrating vector match the theoretical expectations and information, the Long Run Structural Modelling (LRSM) is performed. LRSM aims to estimate theoretically meaningful long-run relations by imposing identifying and over-identifying restrictions on these relations based on theoretical and economic overview (Table 5). LRSM allows testing if the estimated relations and variables brought into consideration in the study complies to the 1. Expectations of the theoretical background 2. Statistical significance 3. Logic and common sense (the pioneers of time series technique are blamed to be mechanical in their approach by those who are called "regression econometricians", so this stage is to help time series professionals to connect the outcome of data and time-series technique results to the theoretical framework and economic knowledge).

As the main focus of this study is to identify the direction of causality between mutual funds (conventional and Islamic) and economic growth, we normalized the coefficient of economic growth (LGDP) by imposing the restriction equal to 1 (A1=1) in Exact Identification as shown in Panel A.

The coefficients and standard errors have been used to calculate the t-statistic to determine statistically significant variables.

Table 5 Long Run Structural Modelling (LRSM) results

VARIABLE	PANEL A
LGDP	1.0000
	(*NONE*)
LIMF	-0.0023
	(0.001)*
LMF	-0.00684
	(0.0014)*
LTS	0.0301
	(0.0032)*
LINT	-0.0587
	(0.0063)*
CHSQ(1)	NONE

*Standard errors in parentheses, p-values in brackets. *Indicates significance at the 5% level or less.*

Panel A represents the result of exact identifying restriction imposed on the relations among the variables in the study. Testing the significance of the variables by comparing t-statistics with critical value for 95% confidence level allows stating that all coefficients of the variables are statistically significant. Therefore, there's no need to do the over-identification to test the insignificance of variables.

Thus, testing the statistical significance of the estimated relations resulted in justifying the prudence of the estimation as the coefficients are statistically significant. That means that Panel A is the basis of estimation the connection between mutual funds and economic growth.

5. __Vector Error Correction Model (VECM)__

Cointegration, however, cannot tell state the direction of causality – it cannot claim which variable is leading and which variable is lagging in their co-movement (i.e., which variable is exogenous and which variable is endogenous). In order to determine the endogeneity/exogeneity of the variables, the vector error-correction modeling (VECM) technique is applied.

Table 6 Vector Error Correction Model

ECM(-1)	**dLGDP**	**dLIMF**	**dLMF**	**dLTS**	**dLINT**
Coefficient	-3.8377	0.2048	12.39	20.46	2.50
(St. error)	(0.533)	(4.86)	(6.52)	(5.91)	(0.94)
T-ratio	-7.200	0.042	1.900	3.46	2.64
(Prob)	[0.00]*	[0.967]	[0.08]	[0.004]*	[0.02]*
Result	Endogenous	**Exogenous**	**Exogenous**	Endogenous	Endogenous

*Notes: Standard errors in parentheses, p-values in brackets. *Indicates significance at the 5% level or less.*

Inspecting the significance or otherwise of the error-correction coefficients, the LGDP, LTS, LINT variables are found to be endogenous while the two proxies of investment funds (both Islamic and conventional) are exogenous (if based on p-value it is statistically significant to reject the null hypothesis of "exogenous"). According to that empirical result, it means that the LGDP, LTS, LINT depend on the LIMF and IMF (i.e. mutual funds affect savings, interest rate, GDP).

6. __Variance Decompositions (VDCs)__

The weakness of VECM is that it cannot tell which variable has more leading power than others and which follows the leader the most, and that motivated us to conduct VDC analysis. The Variance Decomposition (VDC) enables to indicate relative endogeneity and erogeneity among variables by "decomposing or partitioning the variance of the forecast error of a given variable into proportions attributable to shocks or innovations in each variable in the system including its own". The VDC can determine relative endogeneity and erogeneity of any variable through the

proportion of the variance by its own past shocks. The variable which explained, mostly, by its own shocks is considered to be the most exogenous.

Two approaches are used within VDC: Orthogonalized (Table 7) and Generalized (Table 8). There are differences between them, which make preference to the Generalized approach, so the main interpretation of the results is focused on the Generalized VDC.

Firstly, the order of variable influence the result in Orthogonalized approach but not in the generalized approach (which is not the case for the generalized approach – it is order indifferent). Secondly, in case of shock to a variable, the Orthogonalized approach assume the rest of the variables are "switched off", however, Generalized approach allows them to change.

Table 7 Orthogonalized approach to VDC

	Horizon	LGDP	LIMF	LMF	LTS	LINT	Ranking
LGDP	3	35.26%	8.63%	3.88%	13.10%	39.13%	4
LIMF	3	26.61%	43.98%	17.22%	3.85%	8.36%	3
LMF	3	14.85%	2.55%	61.56%	17.46%	3.57%	2
LTS	3	17.95%	0.55%	1.21%	72.96%	7.33%	1
LINT	3	5.20%	83.48%	0.72%	1.67%	8.93%	5

	Horizon	LGDP	LIMF	LMF	LTS	LINT	Ranking
LGDP	6	32.69%	7.80%	3.02%	14.51%	41.98%	4
LIMF	6	5.76%	56.82%	19.50%	6.32%	11.60%	3
LMF	6	20.34%	4.16%	61.86%	11.63%	2.01%	2
LTS	6	14.98%	0.46%	1.56%	77.61%	5.38%	1
LINT	6	3.36%	87.34%	0.84%	1.12%	7.34%	5

	Horizon	LGDP	LIMF	LMF	LTS	LINT	Ranking
LGDP	10	29.39%	7.44%	2.64%	15.23%	45.30%	4
LIMF	10	5.76%	57.84%	18.20%	6.09%	12.11%	3
LMF	10	23.27%	4.71%	61.00%	9.33%	1.70%	2
LTS	10	20.36%	0.37%	1.22%	74.25%	3.80%	1
LINT	10	3.29%	85.53%	0.66%	1.78%	8.75%	5

Notes: Horizon-years, Ranking is given based on the self-explanatory part

Table 8 Generalized approach to VDC

	Horizon	LGDP	LIMF	LMF	LTS	LINT	Ranking
LGDP	3	35.25%	8.66%	3.88%	13.10%	39.12%	5
LIMF	3	5.53%	48.76%	19.42%	2.89%	23.39%	2
LMF	3	7.54%	24.02%	51.69%	7.44%	9.31%	1
LTS	3	23.16%	2.00%	2.97%	48.71%	23.16%	3
LINT	3	21.26%	24.50%	11.33%	6.30%	36.61%	4

	Horizon	LGDP	LIMF	LMF	LTS	LINT	Ranking
LGDP	6	32.61%	7.78%	3.06%	14.47%	42.09%	5
LIMF	6	9.91%	48.10%	15.61%	4.21%	25.18%	2
LMF	6	9.24%	21.38%	54.49%	5.48%	9.41%	1
LTS	6	21.88%	1.90%	4.87%	45.24%	23.10%	3
LINT	6	22.50%	22.99%	9.25%	5.90%	39.35%	4

	Horizon	LGDP	LIMF	LMF	LTS	LINT	Ranking

LGDP	10	27.57%	7.63%	2.71%	15.62%	46.47%	5
LIMF	10	9.36%	48.36%	14.64%	3.82%	25.81%	2
LMF	10	9.58%	19.76%	56.37%	4.18%	10.11%	1
LTS	10	21.43%	1.99%	5.34%	46.88%	22.36%	3
LINT	10	20.59%	23.41%	8.71%	5.22%	42.07%	4

Notes: Horizon-years, Ranking is given based on the self-explanatory part

Both analysis give the relative endogeneity and erogeneity among variables. However, Generalized VDC is more appropriate than Orthogonalized for various reasons. Orthogonalized is generally biased towards the first variable. It also assumes that the effect of other variables is switched off when any variable is shocked, while the generalized allows other variables to interact with the shocked variable, moreover, the results of the generalized are more sense from economic perspective.

According to the generalized VDC, approximately 51-56% variation of conventional mutual funds can be explained by its own past shocks which showed to be the most exogenous variable across different horizon periods. The Islamic mutual funds follow the conventional and come second in the raking while GDP showed to be the most endogenous variable (the last ranking).

These out-of-sample variances forecast results given by the VDC proves the impact of mutual funds (both conventional and Islamic) on economic growth, however, the mutual funds have more influence and this could be explained by their larger number, their larger amount of assets and their longer existence in the economy.

To put it in two simple causal chains (according to the type of mutual funds):

Conventional mutual funds ⟶ **Total savings** ⟶ **Interest rates** ⟶ **GDP**

Islamic mutual funds ⟶ **Total savings** ⟶ **Interest rates** ⟶ **GDP**

The economic interpretation for these two causal chain is as follow:

The mutual funds (both conventional and Islamic) have effects on the total savings in the economy (i.e. the more mutual funds, the more attracted savings by these funds instead of consuming them

or keeping them in nonproductive money hoarding), this agrees with Diaconasu (2011) who found that there is a positive relationship between total savings and NAV of the mutual funds without specifying the lead-lag relationship between them. And this can be more clear in the Islamic mutual funds which may tap religiously conscious savers (either individuals or businesses) and encourage them channeling their savings into these funds for a return instead of keeping these savings idle or direct them into consumption.

Hypothetically, when savings increase *citrus paribus*, interest rates (which represent the cost of capital) are supposed to decrease because more money are available to be loaned/invested. The decline in interest rates is supposed to boost investments *citrus paribus* due to the cheaper cost of capital and this will enhance GDP growth over time.

Our result as a whole agrees with Jani & Jain (2013) who found that there is a very strong correlation between assets under management by the mutual funds and GDP, although the study didn't mention the lead-lag relationship.

## 7. <u>Impulse Response Functions (IRFs)</u>

The graphical form of VDC test is Impulse response functions plot – IRFs map out the dynamic response path of a variable owing to a one-period standard deviation shock to another variable. So when the function reaches zero-this is the steady-state value of the responsible variable.
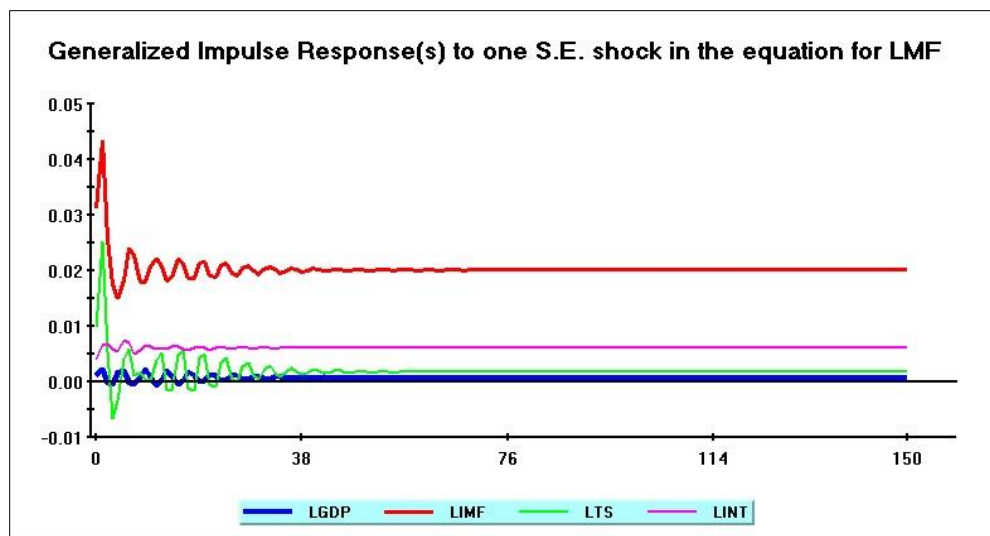

Generalized Impulse Response(s) to one S.E. shock in the equation for LMF

Generalized Impulse Response(s) to one S.E. shock in the equation for LIMF

LGDP — LMF — LTS — LINT

Generalized Impulse Response(s) to one S.E. shock in the equation for LGDP

LIMF — LMF — LTS — LINT

Generalized Impulse Response(s) to one S.E. shock in the equation for LTS
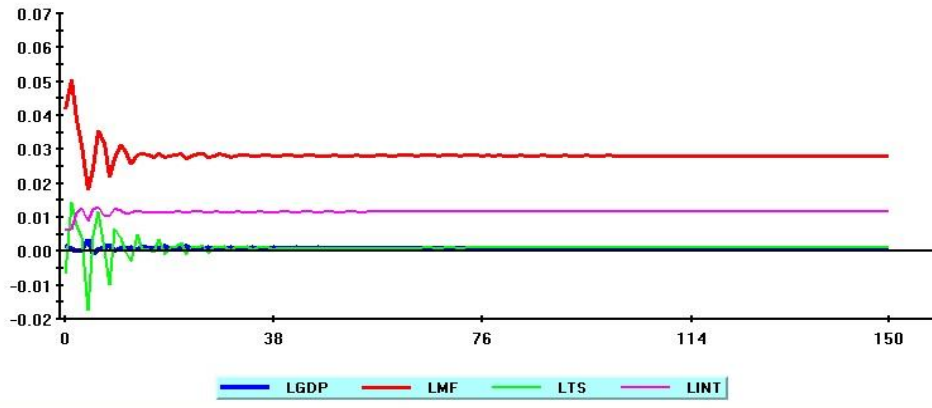
Generalized Impulse Response(s) to one S.E. shock in the equation for LINT
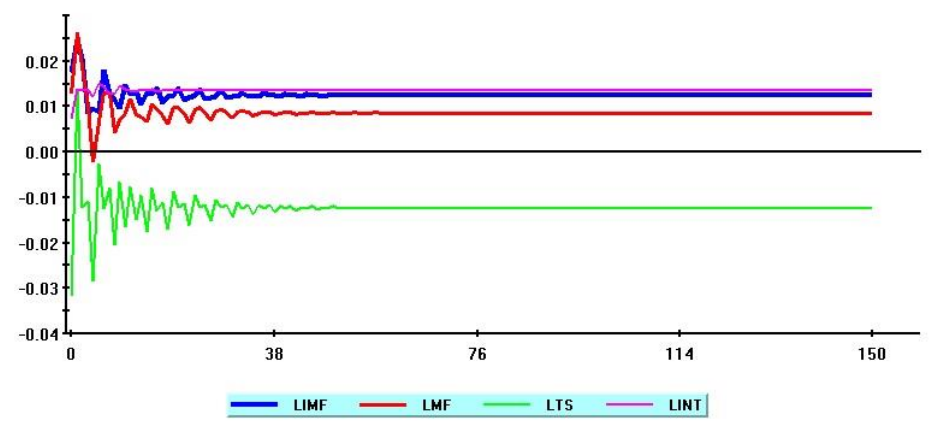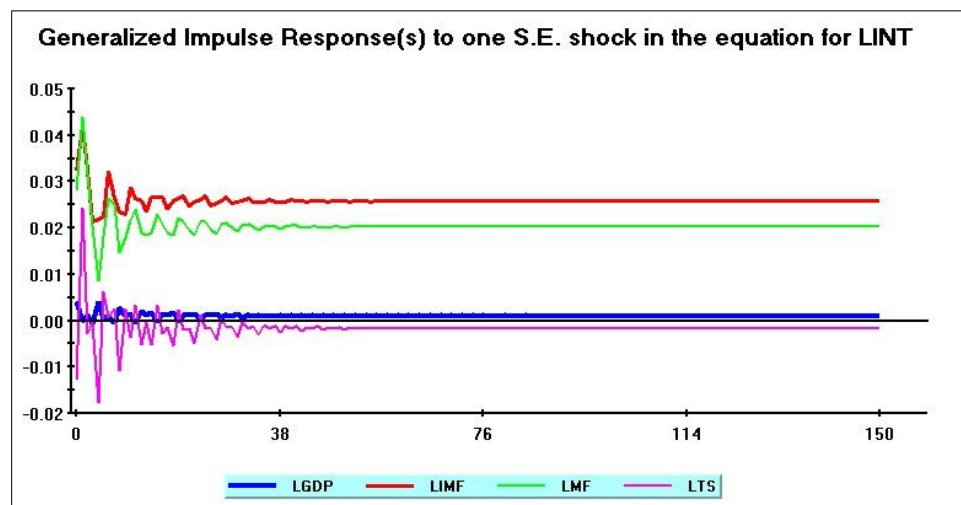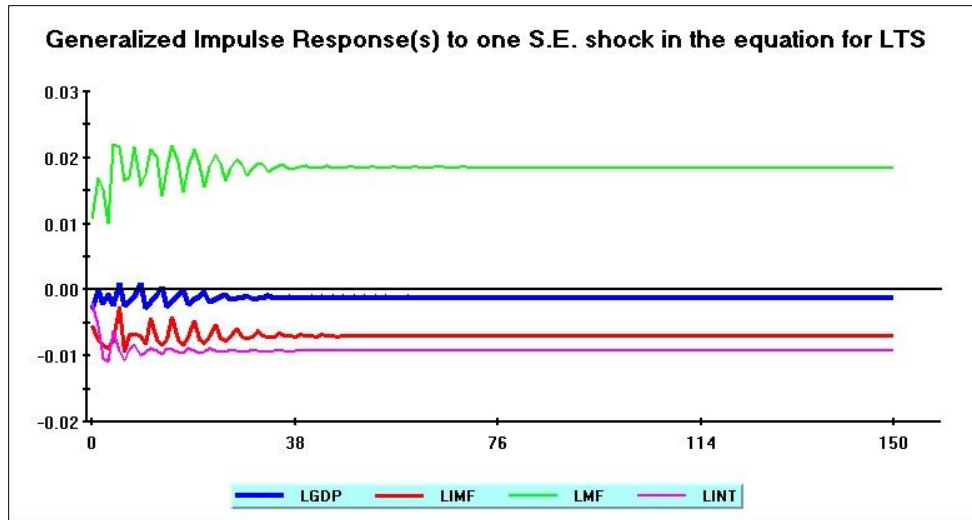
All IR graphs show that when any variable of our model is shocked, other variables need at least 38 quarters (9.5 years) to go back to equilibrium.

8.Persistence Profile (PP)

Finally, an application of the persistence profile analysis indicates that if the whole cointegrating relationship is shocked, it will take about 37 quarters (about 9 years) for the equilibrium to be restored.

Persistence Profile of the effect of a system-wide shock to CV(s)
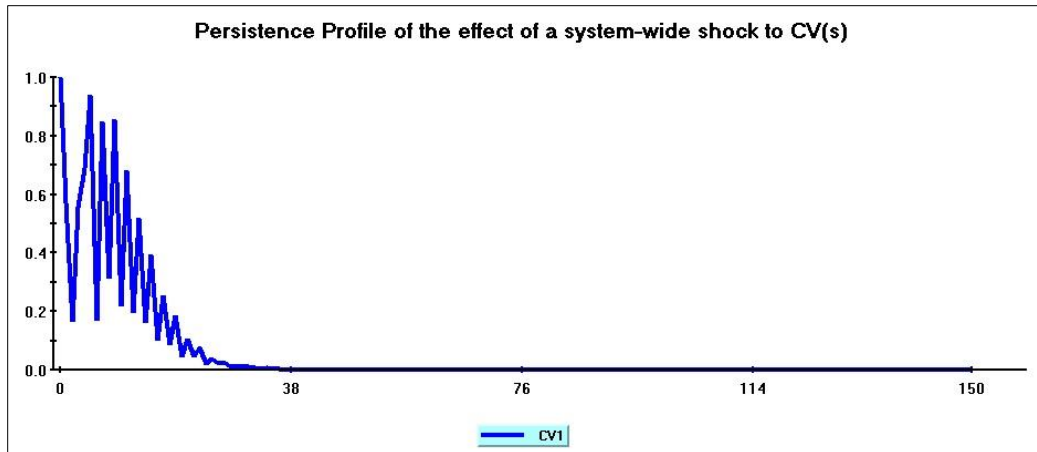
This indicates that it will take approximately 30 quarters (7.5 years) to reach to equilibrium if there is a system-wide shock.

Conclusion and policy recommendations

The aim of this paper is to test the lead-lag relationship between mutual funds (both conventional and Islamic) and economic growth in the Malaysian economy during (2010-2016). Although the NAV of conventional and Islamic mutual funds and GDP were the main variables in our analysis, interest rate and total savings have also been used as control variables to have a better and more realistic analysis as these two variables are related to investment which is a component of GDP and a main driver for economic growth.

Time series analysis has been used as standard regression technique has some significant weakness. Although Cointegration tests showed two different results, we go with the one cointegrating vector which indicates that there is a theoretical relationship among the variables and they are in equilibrium in the long run, and we believe that these variables are connected and interactive with each other so they'll move in one group not two (i.e. one cointegration).

LRSM test has been applied to make the coefficients of the cointegrating vector consistent with the theoretical and a priori information of the economy. VECM demonstrated the direction of Granger causality in short and long run by showing the two types of mutual funds (conventional and Islamic) as exogenous while total savings, interest rates, GDP as indigenous variables. It determined that the two types of mutual funds are the leaders in this model while others are acting as a follower. However, conventional funds have more influence and that might be because of their

larger number, larger amounts of assets under management and much longer existence in the financial markets.

VDC has been used to know the relative endogeneity and erogeneity. It showed that conventional funds can be explained by its past own shock (51-55%) while Islamic funds became second in ranking, and GDP is the last (most endogenous) using Generalised VDC. This result is constant in most different horizon periods. It also demonstrates the significant impact of mutual funds on economic growth especially of conventional funds.

The Impulse Response Function (IRF), then, has been used which indicates the dynamic response path of a variable due to a one-period SD shock to another variable. The IRF demonstrated the findings from VDC graphically. Finally, the Persistence Profile (PP) has been applied to estimate the speed at which the variables reach to an equilibrium when there is a system-wide shock. This indicates that it will take approximately 30 quarters (7.5 years) to reach to an equilibrium if there is a system-wide shock.

Our findings are classified in two causal chains for each type of mutual funds. The two chains argue that both conventional and Islamic mutual funds in Malaysia have influence on total savings by congregating these savings to be invested in such funds instead of being consumed or mere hoarding. However, the conventional funds have bigger influence due to the abovementioned factors. The increase of total savings leads, *citrus paribus*, to lower interest rates because more money is available to be loaned or invested and thus the cost of capital (the interest rate) is supposed to be less. The more investment is a crucial factor for enhancing economic growth.

Majority of results are similar to some findings by other researches which found strong correlation in the long run between collecting savings through mutual funds and economic growth, although these studies didn't specify the lead-lag relationship (i.e who leads whom).

The major policy implication of this study is that increasing the number of mutual funds, both conventional and Islamic and not only conventional, is supposed to enhance GDP growth though better savings, and thus help in lower interest rates.

Therefore, we recommend Malaysian authorities to focus more on activating the role of such funds by giving incentives to increase their number, diversify their investing categories (equities, fixed return, sukuk, real estate ..), invest in real economy sectors rather than financial. Incentives to economic entities (individuals, corporates, businesses) to turn their surpluses into savings at these funds is also highly recommended especially for Shariah-conscious people who are concerned where to put their money and the Islamic mutual funds might be one of the best choices for them

and for the economic growth as well. Providing tax incentives and increasing the awareness of investing in such funds will help policymaker utilizing this causal relationship between these funds and economic growth.

Finally, we acknowledge that our model could be more efficient by including more variables and expanding its time frame and comparing results with other prominent Islamic finance jurisdictions.

<u>References:</u>

Bashir, M. S. and Nawang, W. R. (2011). Islamic and Conventional Unit Trusts in Malaysia: A Performance Comparison. *Journal of Islamic Economics, Banking and Finance, 7*(4), 9-24.

Chu, P. K. (2011). Relationship between macroeconomic variables and net asset values (NAV) of equity funds: Cointegration evidence and vector error correction model of the Hong Kong Mandatory Provident Funds (MPFs). *Journal of International Financial Markets, Institutions and Money, 21*(5), 792-810.

Diaconasu, D. E. (2011). The Role Of Mutual Funds In US Economy. *The Annals of the" Stefan cel Mare" University of Suceava. Fascicle of The Faculty of Economics and Public Administration,* 2(14)), 239- 244.

Elfakhani, S. M., Hassan, M. K. and Sidani, Y. M. (2007). Islamic mutual funds. In M. K. Hassan, & M. K. Lewis (eds), *Handbook of Islamic Banking* , Chapter 16, 256-273, Northampton, Massachusetts, USA: Edward Elgar Publishing, Inc.

Engel, R. F., and Granger, C. W. (1987). Cointegration and error correction representation, estimation, and testing. *Econometrica*, 55(2), 251–276.

Jani, D. and Jain, R. (2013). Role of Mutual Funds in Indian Financial System as A Key Resource Mobilizer. *International Monthly Refereed Journal of Research in Management & Technology, 2*(12), 85-91.

Klapper, L., Sulla, V. and Vittas, D. (2004). The development of mutual funds around the world. *Emerging Markets Review, 5*(1), 1-38.

Mansor, F. (2012). *Investment performance of Islamic versus conventional mutual funds: Evidence from Malaysia.* Melbourne University, Australia: A thesis submitted in total fulfilment of the requirements for the degree of Doctor of Philosophy.

Masih, M., Al-Elg, A. and Madani, H. (2009). Causality Between Financial Development and Economic Growth: An Application of Vector Error-Correction and Variance Decomposition Methods to Saudi Arabia, *Applied Economics,* 41 (13), 1691-1699

Securities Commission Malaysia. (2014). *Capital Markets Malaysia: Financing the future.* Kuala Lumpur: Securities Commission, Malaysia.

Shikhah. Q. (2015). *Islamic mutual funds' role in achieving economic growth*, Masters thesis. University of Damascus, Syria.