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The lead-lag relationship and the determinants of Islamic banks' profit rates: Malaysian evidence

Abdullah, Iskandar and Masih, Mansur

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

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Abstract

The purpose of the study was to investigate the causal relationship(s) and ascertain their degree and directional influence on each other amongst the variables that affect Islamic Profit Rates of the Islamic banks in Malaysia. These intuitive variables are constructed based on a literature review to establish the theoretical relationship(s) of the various Islamic Finance hypotheses to construct the plausible co-integrated vector(s) to test their causal relationships, if any, and/or the level of influences exerted by the variables amongst and on each other; may also provide insight to further research.

Standard time series techniques were applied to test the empirical data for i) cointegration to establish if there is any long term theoretical relationship between the variables and if they exist; was not just a spurious coincidence; ii) Long Run Structural Modeling (LRSM) to test any significance of their theoretical cointegrating relationship(s); iii) Vector Error Correction Model (VECM) to identify any directional causality and which of those variables are leaders (exogenous) and/or followers (endogenous); iv) Variance Decomposition (VDC) to estimate their relative degree of exogeneity and endogeneity and through Impulse Response Function to graphically map out the dynamic response of each variable when another variable is shocked and finally using a Persistence Profile to affect a system wide shock to these variables to estimate the speed with which the variables get back to equilibrium.

This assignment was motivated by the statement "*The issue is not a choice between rigor and intuition, but rather how well-founded on rigor is your intuition*" Jacob Frenkel (Harvard University). How may this be of relevance to Islamic Finance? Much of the intuitions of the latter subject hitherto are anecdotally postulated on qualitative and descriptive theories and this study attempts to scientifically test some of these intuitions through the application of these techniques to validate or negate; if not to gain more insight to the degree of influences or explanatory latitude of those intuitions induced from the various Islamic Finance theories.

Keywords: Islamic banks, profit rates, VECM, VDC, Malaysia

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

The Islamic Banks in Malaysia operate in a unique platform of co-existing with conventional banks and in an environment that puts them in direct competition with each other for the deposits from the surplus units and to the extent of the former being in danger of being conventionalized in order to compete effectively in the market place.

Conventional banking has always operated on the basis of deposits taking (borrowing) and lending out at a higher interest as the price of opportunity cost based on the time value of money; interest being the price of money.

Islamic Banks operate on the deposit taking front utilizing the Mudarabah (where the depositors are investors – Rabul Mal and entrusting the bank as Mudarib (entrepreneur) to invest with no guarantee of profits and/or return of the capital concept and/or Al Wadiah (deposit safe keeping with no obligation of any profit return or Hibah gift at the end of the tenure) in the form of current (cheque) or savings accounts.

It perhaps has been a misdemeanor of nomenclature to have called Islamic Banking “Interest Free Banking” or even “Banking” for that matter and this inherent structural mis-match of the Islamic Finance precepts (al-bay- trading; Murabahah – marked up profit sale for cash or deferred payment; Mudarabah – profit sharing; Musharakah – partnership, Salam – Istisna to the underlying (conventional economic and financial) concepts of banking that in Malaysia the creation of variant, albeit Syariah compliant (in form, arguably not in substance; form over substance precedent) of “credit financing” or “loan” type of Islamic Banking products like Al-bai Bithaman Ajil (BBA) and Al-Ijarah Thumma Al-Bai (AITAP) came into their existence; some may argue under “darurah” (necessity) or pure “hijah” (convenience).

These have also led the Islamic Banks to a quagmire of the deposit taking having to compete with an interest rate driven or interest sensitive or influenced market space whilst its assets (financing products BBA & AITAP) being fixed profit rate for fixed maturity duration and since Islamic Banking is also operating on a credit (deposits) leveraged financing basis; this also leads to another risk of assets liabilities mismatch or negative income gap (especially when the interest rate goes up) of its portfolio of credit financing business.

Unique to Islamic Banks; interest rate also causes the rate of returns risks through the portfolio of mixed marked-up and equity based investments subject to higher uncertainty of returns; Iqbal and Greuning (2008) and consequent to this results in displaced commercial risk to be absorbed by the shareholders of the Islamic Banks. Displaced commercial risk is when the Islamic Bank’s profit rate having to be increased to match up to the conventional interest rate in order to remain competitive and/or to maintain that equilibrium of deposit/financing ratio $\Rightarrow 1$ to avoid a negative income gap (that would lead to reduced earnings of the Islamic Bank in the long run).

Objective

To analyze the causal relationship(s), if any, their degree and direction of influence on each other; amongst the intuitive factors or variables that affect Islamic Profit Rates of the Islamic banks in Malaysia . Answering the following 2 questions:

- i) Is profit rate affected by the interest rate? If yes, to what degree? This study extends further to identify
- ii) What other factors listed here in this study; how are they affecting the Profit Rate and to what degree of significance?

What conclusion(s) can we draw from here?

These variables or intuitions extracted from the various Islamic Finance theories being the interest rate, profit rate, Consumer Price Index (proxy for true inflation), Malaysian Government Security (proxy for risk free rate), total Islamic individual savings and total conventional individual savings (proxy for dis-intermediation from Islamic deposits caused by raise in interest rate).

By doing this it attempts to further test empirically the inter-play of these variables in explaining how displaced commercial risk originates rather than hitherto; all reported studies conducted in the context of risk management only with the resultant being displaced commercial risk which explained as a consequential event but not as to or in the context of how or what other factors may have caused the lead to it (displaced commercial risk).

Literature Review

Zairy and Salina (2010) had conducted a study to analyze the effect of interest rate changes on the rate of return on Islamic Banks, their total deposits and that of the conventional banks using the time series techniques based on Vector Auto Regression (VAR) and applied cointegration, Granger causality, Variance Decomposition and Impulse Response Function. Their study focused more on the aspects of risk management of the rate of return risk and the displaced commercial risk. This study found that Islamic Banks rate of return and the conventional banks' interest rates were cointegrated and had a long run equilibrium. Kasri and Kassim (2009) based on VAR methodology also found that the conventional interest rate was one of the major determinants of the savings in Islamic Banks in Indonesia. Nor and Shahrul (2009) explained the credit risk context of interest effect on the Islamic Banks operating within a conventional banking industry regime.

Bacha (2004) had stated that a constant rise in interest rate may lead to the bank's increased cost of fund to remain attractive to depositors. For Islamic Banks; Khan and Ahmed (2001) found that the rate of return risk being the most critical risk faced. There is a misconception that Islamic Banks since they are not dealing with interest rates are not exposed to interest rate risk. How et.al (2005) found that banks that offer Islamic financing are exposed to higher rate of return risk and Bacha (2004) documented that when interest rates rise, Islamic Banks raise their deposit rate and failure to do so would expose them to liquidity problem. Kaleem and Md Isa (2003) found that Islamic Banks in Malaysia took into account the conventional interest rate before adjusting their deposit returns.

From these theories and researches done to date we can intuitively deduce or generalize that Profit Rate is influenced by conventional interest rate. Is this influence bi-directional or multi-directional? Kader and Leong (2009) suggest that it works both ways that an increase/decrease may lead to disintermediation both ways; that is from Islamic to conventional and vice versa. In this study the standard techniques of time series cointegration, vector autoregressive, Granger causality and impulse response function were used.

The effect of inflation and deflation in the context of Islamic home financing was looked into by Amin and Chong (2007) and in this study proposes to proxy the inflation by adding the variable Consumer Price Index to test its effect if any on the Profit Rate in Islamic Banks Individual savings.

Methodology

The objective of this study is to analyze the causal relationship(s), if any, their degree and direction of influence on each other; amongst the intuitive factors or variables that affect Islamic Profit Rates of the Islamic banks in Malaysia. The data for this study is taken from the Monthly Statistical Bulletins published by Bank Negara Malaysia – monthly data covering the period starting from January 1998 (120 monthly observations of 6 variables giving a total of 720 observations).

The main monthly variables for the study are Islamic Profit Rate (IPS), Islamic Individual Deposits (IID) – the Islamic individual deposits accounts, Conventional Individual Deposits (CID) – the conventional banking individual deposits accounts, Conventional Interest Rates (CIR), Consumer Price Index (CPI) being proxy for true inflation rate and Malaysian Government Certificates (MGC) rates being proxy for the risk free rate.

The method of analysis employs the standard time series econometric techniques of

1. Unit Root Test of all the variables by using the Augmented Dickey-Fuller (ADF) as it is now standard applied procedure aided by software like Microfit or Eviews that any regression analysis would commence not mechanically but by testing the stationarity and cointegration of the variables. It is also established that most economic or social science time series is non-stationary in its level form.

That being the case the conventional regression statistical tests are not valid. If by differencing the variables to turn them stationary; the test would only be testing the short term information as by differencing the variables would effectively have removed the trend time element of the theory.

To overcome this limitation; the cointegration technique since the seminal Nobel Prize paper of R. Engle and C. Granger are used applying the Johansen (1990) cointegration test.

2. Vector Autoregressive (VAR) selecting the ideal order of the variables choosing between the values of SBC and AIC;

3. Cointegration is to establish that the variables have a cointegrating equation that in the long run is in equilibrium or in another words that the linear combination of the equation will tend towards stationarity or zero in the long run and to rule out spurious relationships among the variables.

4. Having established that there is a cointegration; Long Run Structural Modeling (LRSM) is applied by applying on those long run relations (and then testing) by both identifying and over identifying restrictions based on theories and a priori information generally testing the coefficient of the cointegrating equations. Given that this study is based on theoretical models and assumptions that to date have not established any model equations or coefficients; the LRSM procedure is equally important to establish which variable is significant or insignificant.

5. This leads to identifying which of the variables are exogenous (leading / influencing) and endogenous (following) through the Vector Error Correction Model (VECM) test to establish this Granger causality of both in the short and long run.

6. Nevertheless, VECM still cannot tell us satisfactorily to what degree or relatively the endogeneity or exogeneity of the variables and especially when there are a few who may be exogenous; would lead to policy makers wanting to critically identify which is most exogenous being that which in its own history of dynamic response when shocked (innovation or change to that variable) explains itself most in the Variance Decomposition (VDC) techniques applied here. The Variance Decomposition techniques applied will be that of the Orthogonalized and Generalized Decomposition.

7. To graphically map out the variance decomposition; Impulse Response (IR) is applied to map out the dynamic response path of a variable owing to one period standard deviation shock (change / innovation) to another variable; and finally

8. Persistence Profiles applied to estimate the speed with which the variables get back to equilibrium when there is a system wide shock to the long-run equilibrium (unlike the IR which traces out the effect of a variable specific shock).

Contents

1. Testing Stationarity of Variables

As eluded earlier; most economics time series data are non-stationary as this would reflect its deterministic and stochastic trend (or process). The original or level form data should be ideally non-stationary and stationary in its differenced form $i(1)$ for each variable by taking the difference of the log forms before proceeding to test for cointegration.

Example – $DIPS = IPS - IPS_{t-1}$. ADF is conducted at both its level and differenced form. The Null Hypotheses of the ADF being that the variables are non-stationary.

Variables in Level Form

Variables	Test Statistics	Critical Value	Finding
IPS	- 3.4494	- 2.8456	Non Stationary
IID	- 3.4494	- 3.3593	Non Stationary
CID	- 3.4494	-1.6348	Non Stationary
CIR	- 3.4494	-1.2918	Non Stationary
CPI	- 3.4494	-2.8090	Non Stationary
MGC	- 3.4494	-2.7256	Non Stationary

When a variable is stationary that variable has a constant mean, variance and covariance.

Variables In Differenced Form			
Variables	Test Statistics	Critical Value	Finding
DIPS	-2.8870	- 7.5590	Stationary
DIID	-2.8870	- 12.5008	Stationary
DCID	-2.8870	-7.9420	Stationary
DCIR	-2.8870	-6.8747	Stationary
DCPI	-2.8870	-8.7568	Stationary
DMGC	-2.8870	-3.0846	Stationary

The null hypotheses for the ADF is that the variables is non-stationary and all the critical values of the variables are higher than the test statistics; we may reject the null and conclude that all the variables are stationary in its differenced form.

This stage of the testing is required because if the variables taken are non-stationary in the level form and applied the usual statistical tests; as once mistakenly done in the traditional regression method; such tests are invalid because the variance of the variables kept changing and the relationship estimated at best would be spurious. On the other hand, if the variables are turned stationary by differencing this would effectually remove the trend element and the relationship estimated would only give the short-run relationship and the regression would not be testing any theory.

To overcome this limitation; the cointegration technique since the seminal Nobel Prize paper of R. Engle and C. Granger are used applying the Johansen (1990) cointegration test below.

2. Determining the Order of the VAR

In determining the order of the vector auto regression (VAR); the number of lags to use both the AIC and SBC recommend order 1.

Further check on each variable for serial correlation been performed with the following results.

Variables	P-Ratio	Findings
DIPS	35%	No Serial Correlation
DIIDS	85%	No Serial Correlation
DCID	97%	No Serial Correlation
DCIR	0.1%	Reject Null – <i>There is Serial Correlation</i>

DCPI	92%	No Serial Correlation
DMGC	85%	No Serial Correlation

Null hypotheses is no Serial Correlation (>10% significant) Accept Null

In determining the order it is guided that lower order to avoid over-parameterization, when there is short time series and no serial correlation. Higher order to address serial correlation and when there is longer time series. Given that there is only one variable with serial correlation and that the time series data of this study is not that long; it is decided to use choose a **higher VAR order of 2**.

3. Establishing Cointegration

Now that it has been established the variables are stationary $i(1)$ and determined the optimal VAR order as 2; cointegration is sought to be established. Cointegration suggests that the variables are interdependent and integrated to each other. No cointegration on the other hand implies that the variables will not come together in the long run. Cointegration then implies that each variable contains information for the prediction of the other variables. The Johansen method is used as it allows more than one cointegrating vector and measured using the eigen value and trace value instead of the Granger residual based that only allows one cointegrating vector. The result are as follows:

Criteria	Number of cointegrating vectors
Maximal Eigenvalue	4
Trace	4
AIC	1
SBC	1
HQC	1

Intuitively and based on the theories expounded to date suggests that it is more plausible than not that one most influential cointegrating vector be “connected” or “integrated” via the Conventional Interest rate since the pricing or fixing of Islamic Profit rate benchmark invariably use the Base Lending Rate as the proxy and most of the Islamic financing loan in the form of BBA and AITAP are “credit financing” that by default uses the BLR as a cost of funding factor. This may be further tested via the LRSM exact identifying and over identifying restrictions to establish which of the variables are most exogenous and significant.

Suffice it at this juncture that it may be stated confidently that the variables chosen, in some combination, result in a stationary error term. The economic interpretation implies that the 6 variables are theoretically related, in that they tend to move together in the long run in equilibrium. That their relations to each other is not spurious or by coincidence.

4. Long Run Structural Modeling (LRSM)

At this stage is sought to attempt to quantify the theoretical relations of the variables. Aided by LRSM and normalizing DIPS (Islamic Profit Rate) as this is thought to be intuitively dependent by reference to the theories expounded by writers evident in the Literature Review. The calculated values of the t-ratios manually establishes 1 variables to be significant – DIID (Islamic Individual Deposits). Intuitively and

statistically close in the t-ratio to significance is the DCIR (Conventional Interest Rates). Intuitively and theoretically was expected that the DIID would be a function of the DIPS as in the Profit Rate of the Islamic Banks is a determinant of the level of deposits that an Islamic Bank would secure. The results here also suggest though not statistically significant in itself (1.7) but close is that of DCIR.

Variable	Coefficient	SD	t-ratio	Interpretation
DIID	.23700	.076348	3.1	Significant
DCID	-.12365	.50904	0.2	Insignificant
DCIR	-.33473	.20227	1.7	Insignificant
DCPI	-.16516	1.6785	0.1	Insignificant
DMGC	-.23143	.21688	1.1	Insignificant

Hence it is proposed to test further by imposing the over identifying restrictions on DIID, DCIR and DMGC to seek further insight by testing the null hypotheses that DIID, DCIR and DMGC were insignificant. The results are consistent with DIID, DCIR and DGGC being Significant tends to be more intuitively in line with the theoretical expectations.

Variable	Chi-Sq p-value
DIID	0.000 - Significant
DCIR	0.000 - Significant
DMGC	0.000 - Significant

From the analysis here the cointegrating equation could be written as follows:

$$DIPS + 0.23 DIID - 0.33 DCIR - 0.23 DMGC \text{ ---- } i(0)$$

5. Vector Error Correction Model (VECM)

Having established the cointegrating equation and testing their significance of cointegration in various degrees amongst DIPS, DIID, DCIR and DMGC; nevertheless, remains unanswered from the cointegrating equation on the issue of temporal Granger causality; that is which variable is leading and which is lagging or which is exogenous and which is endogenous.

This is particularly important in Islamic Finance and the theories under scrutiny as there is not any established mathematical or econometrics equations governing those theories to benchmark a rigorous test of the coefficient of the cointegration equation against the theoretical expectations at the stage of the LRSM exact identifying and over identifying stage earlier.

Further by knowing which variable is exogenous and endogenous; especially in financial engineering new products and financial risks management of Islamic Banking products, investments and financing and

ultimately how to move away from the conventional interest rate regime of the BLR as benchmark remains vitally important a consideration and path finding research undertaking.

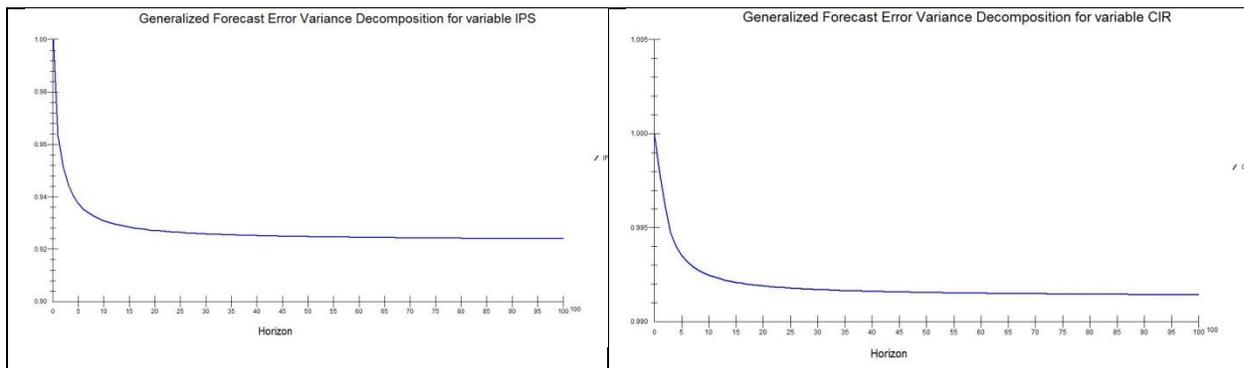
VECM besides partitioning the change in each variable to its short and long term components or response paths; is also able to state which variable is exogenous and endogenous and the Granger causality, a form of temporal causality determining the extent to which the change in the variable is caused by another variable in a previous period.

Examining the error correction term, $et-1$, for each variable and against its significance; the following results were recorded:

Variable	ECM(-1) t-ratio p value	Finding – Variable Is
IPS	0.134	Exogenous
IID	0.000	Endogenous
CID	0.428	Exogenous
CIR	0.723	Exogenous
CPI	0.696	Exogenous
MGC	0.531	Exogenous

Intuitively was suspected that the various variables may be exogenous on their own right and the IID being the deposit receiving end being the endogenous given all these other factors have been theoretically commented to influence the amount that would be deposited in the Islamic Banks. Intuitively consistent that IPS would also be exogenous and now remains to be further inquired the degree or relatively which of the exogenous variables are most exogenous by decomposing them next in the Variance Decomposition next.

VECM is also of interest and predictive information as the coefficient of $et-1$ tells how long it will take to return to long term equilibrium if the variable is shocked. The coefficient represents proportion of imbalance corrected each period and graphically is depicted as follows:



The inference drawn here is that when the IPS is shocked it takes on average, 10 weeks whereas CIR takes longer at about 20 weeks.

6. Variance Decompositions (VDC)

As evident from the previous section that there are a number of exogenous variables and the IPS (Islamic Profit Rate) is one of them. It is still unclear and will be of interest if the IPS is influenced by other variables such as IID (Islamic Individual Deposits accounts total), CIR (Conventional Interest Rate – BLR that IPS invariably benchmark against especially in Malaysia’s credit financing type of BBA and AITAP), CID (Conventional Individual Deposits accounts to trace the disintermediation effect when IPS goes down due to CIR increase – if there is disintermediation of IID to CID?) and other influencing variables like CPI (proxy for inflation) and MGC (risk free deposit – would that have any bearing on supposedly interest free IPS or IID). In answering or shading intuitively guided intelligence into these questions; policy makers at Islamic Banks in their Board, Management, products financial engineering and financial risks management need to be guided by the deeper information that VDC offers.

VDC decomposes the variance of the forecast error of each variable into proportions attributable to shocks from each variable in the system, including its own. The most exogenous variable is thus the variable whose variation is explained mostly by its own variation.

According to the results, the ranking of the variables by degree of exogeneity (extent to which variation is explained by its own past variation) is as follows:

1. CID – Conventional Individual Deposit	2. IPS – Islamic Profit Rate
3. MGC – Malaysian Government Certificates	4. CIR – Conventional Interest Rate
5. IID – Islamic Individual Deposit	5. CPI – Consumer Price Index

The results are quite consistent with the earlier VECM results where IID was endogenous but in VDC the CPI that was exogenous is now found to be the least exogeneous. The results throw some questions of doubt as to whether there are any other possible or stronger cointegrating vector that may be possible during the stage of LRSM where it was put to normalize the IPS (Islamic Profit Rate). CID intuitively being the most substantial of all the deposits amounts in Malaysia did not come as a surprise to be most exogenous and assuring to see that IPS came second given the increasing influence of Islamic Banking in Malaysia. It is also interesting to see that in the CIR the IPS exerts a degree of influence on it as highlighted in the table below.

The Orthogonalized method was also used and tested and the results are in the Appendix for sufficiency of this assignment’s purpose. It is generally commented that the Orthogonalized VDC does not produce a unique solution and that the generated numbers are dependent upon the ordering of the variables in the VAR. Where the first variable would be reported as most exogenous variable. Another assumption is that when a particular variable is shocked, all other variables are “switched off” which is not a realistic assumption.

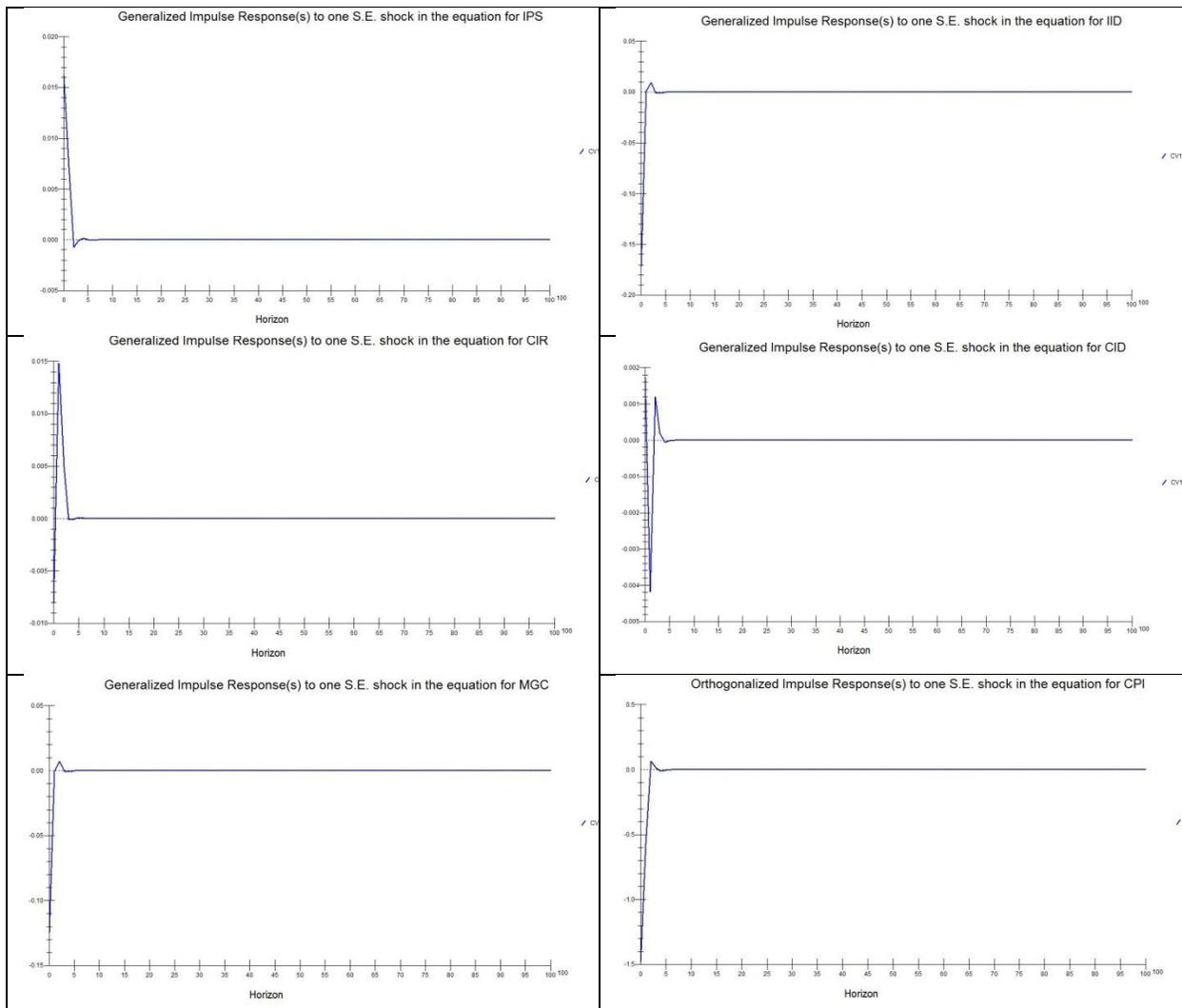
Generalized Variance Decomposition Analysis

Percentage of Forecast Variance Explained By Innovation (Change)						
IPS	IPS	IID	CID	CIR	CPI	MGS

1 Year	88.7%	8.3%	0.4%	0.1%	1.6%	0.8%
2	87.3%	8.3%	0.4%	1.4%	1.6%	0.8%
3	87.2%	8.3%	0.4%	1.4%	1.6%	0.8%
4	87.2%	8.4%	0.4%	1.4%	1.7%	0.8%
5	80.9%	8.3%	0.4%	1.4%	1.6%	0.8%
IID						
1 Year	5.3%	58%	1%	1.7%	3.5%	30%
2	8%	55%	1.7%	2.4%	5.5%	27%
3	10.4%	51.3%	2.4%	2.9%	7.2%	25.6%
4	12.4%	51.2%	2.9%	3.4%	8.8%	23.9%
5	14.2%	47.1%	3.5%	3.8%	10.1%	22.4%
CID						
1 Year	0.2%	1.1%	97.5%	0.1%	0.8%	0.1%
2	0.3%	1.2%	97.4%	0.1%	0.8%	0.1%
3	0.3%	1.2%	97.4%	0.1%	0.8%	0.1%
4	0.26%	1.2%	97.4%	0.1%	0.8%	0.1%
5	0.26%	1.2%	96.4%	0.1%	0.8%	0.1%
CIR						
1 Year	24.7%	0.08%	18.6%	56.42%	0.06%	0.09%
2	15.7%	0.09%	21.3%	62.6%	0.07%	0.08%
3	12.1%	0.09%	22.4%	65.1%	0.07%	0.08%
4	10.2%	0.09%	23%	66.4%	0.06%	0.08%
5	9%	0.09%	23%	67%	0.07%	0.08%
CPI						
1 Year	8.67%	56.65%	3.18%	3.16%	11.99%	16.31%
2	8.67%	56.62%	3.18%	3.22%	11.98%	16.30%
3	Ditto					
4	Ditto					
5	Ditto					
MGS						
1 Year	0.24%	<u>31.20%</u>	0.07%	0.99%	2.02%	65%
2	0.24%	<u>30.46%</u>	0.07%	1.03%	1.98%	65.53%
3	0.24%	<u>30.63%</u>	0.07%	1.05%	1.99%	65.99%
4	0.24%	<u>30.61%</u>	0.07%	1.06%	1.99%	65.99%
5	0.24%	<u>30.60%</u>	0.07%	1.07%	1.99%	66%

7. Impulse Response Functions (IRF)

IRF produces the same information as VDC except in a graphical format as follows.

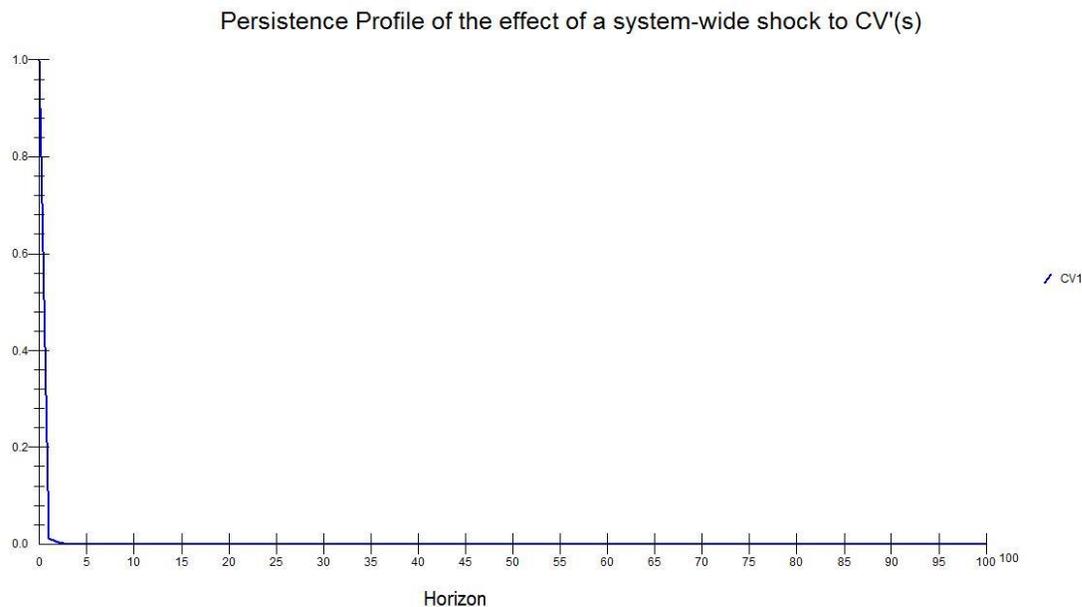


For the completeness of this assignment both the Generalized and Orthogonalized VDC had been executed – attached to the Appendix.

8. Persistence Profiles (PP)

PP illustrates the entire cointegrating equation when shocked and indicates the time it would take the relationship to get back to equilibrium. Here the effect of a system wide shock on the long run relations

is the focus (whereas in IRF the variable specific is shocked). The following illustration depicts the PP for the cointegrating equation of this study.



Concluding remarks and Limitations

Concluding and in answering the questions that have been set in the objective of this study; based on the above analyses the following may be summarized –

The Islamic Profit Rate is the second most exogenous and exerts an influence on the Conventional Interest Rate. Surprisingly, CIR did not come up more exogenous than CID; intuitively was thought that CIR would be most influential given that IPS is benchmarked on BLR. This reverse situation could also be plausibly explained by the actions taken by Conventional Banks in pricing their deposit interest guided closely by the IPS for competitiveness reason (since the IPS does take into account CIR and intuitively known that often Islamic Banks through its Profit Equalization Reserve increases the IPS to avoid Rate of Return risks of not being able to match up to conventional rates to deter its depositor from defecting to conventional banks). The evidence is obvious for shorter term deposit where IPS explains up to 24% of the variation when CIR is shocked and this may be intuitively explained that most Islamic Deposit accounts are shorter term and thus its influence exerted via its Profit Rate.

It is noteworthy to find that MGC besides being 3rd most exogenous also has a influential response to its innovation by IID which may be intuitively explained that a substantial part of investment by Islamic Banks is placed on such Government Certificates.

The cointegrating equation established that the Conventional Interest Rate and Malaysian Government Certificate were having a long run relations with the Islamic Profit Rate. This is later evidenced that these two other variables being very exogenous and in the error correction term the Islamic Individual Deposit

accounts being the endogenous variable that in the long run possibly being the variable that returns the equation toward zero or equilibrium.

The exogeneity of the Islamic Profit Rate may also be intuitively explained by the possibility of the Profit Equalization Reserve being used to smooth out any shortfall of Profit Rate to conventional interest rate to maintain the competitiveness of the Islamic Banks. This may remove the residual traces of the correlation of Islamic Profit Rate to conventional interest rate.

Limitations of this study and suggestions for further studies and research –

The choice of the variables taken is somewhat random and there may very well be a few other plausible cointegrating vectors other than the one established in this study. This study has chosen to normalize the Islamic Profit Rate and choice of other variables to normalize such as the Conventional Interest Rate or Conventional Individual Deposit should also be considered together with other permutation of the variables in this study with increased cointegrating vectors and other combination of over identifying restrictions. The direction of the influence especially when IPS is increased / decreased and influence/effect on IID and CID and of CIR. Testing using SIM causality for the impact of present on future direction would also be of great predictive value especially in assets liability matching of the Islamic Banks deposits accounts, investments and financing accounts on predicting the likely Profit Rates of the deposit/financing to avoid a negative income gap (and erosion of earnings or needing to secure funds from open money markets).

The theoretical foundation of this study is somewhat weak despite being based on much researched and commented Islamic Finance and Banking stipulations but none of them are exactly mathematically or econometrically established formulae or theories that more rigor to expound or expand studies may be founded upon.

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