Discerning the relationship between bitcoin and islamic index

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Abstract

With recent alarm and focus on Bitcoin , many researchers tried to come up with studies that are related to Bitcoin. This paper tries to do the same but with a focus on the area of Islamic finance. We try to relate Bitcoin and Islamic index to find if there is any relation between these two assets and to find which will stand out if they are put in one portfolio. Since both assets are deemed to be of high risk in nature, it is an interesting topic to be investigated especially if they are put together. This analysis was carried out using the standard time-series approach of cointegration, VECM and VDC. The empirical results evidenced that Bitcoin and Islamic index are theoretically related as they are cointegrated. Another interesting finding in this study unveiled that Islamic index will be more influential than Bitcoin if they are put in one portfolio.

Keywords: Islamic stock Index, Bitcoin, VECM, VDC

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1. INTRODUCTION

We are now in 4th Industrial Revolution which saw many new drastic changes happening in current time that involves with big data, huge networks, and cyber physical things. While in 3rd Industrial Revolution the development was more on developing things using computers, automation and electronics whereas in present time, we are moving on towards making it all digital. Blockchain, one of the recent trend that sets in the global picture scene have been so called will be the backbone of 4th Industrial Revolution that driven the whole world in terms of finance and its system. In recent article, Klaus Schwab, founder and chairman of World Economic Forum stated that Bitcoin and its underlying blockchain technology are another key technological innovation and indeed, blockchains are the heart of the Fourth Industrial Revolution (Julio,2016). This mark another change in the industry that will saw few changes in current time. While the most famous product of blockchain, the bitcoin, sets people and economist on frenzy on their status as a new type of "currency" named as cryptocurrency. Although it still a long way to go to held bitcoin as true currency like fiat money, currently cryptocurrency is an asset, if not a viable currency as what Kevin O'Leary, a shark investor claims (Buck, 2017). What we can't argue is that bitcoin is a valuable substance that can be used by investors to gain profits, hedge, store of value and many other possibilities. It could be a substitute like any other assets with value which already have been done a lot in today's investment scene. With current value that already reach approximately $17000 per bitcoin, there is still a lot of questions on what can be bitcoin's next direction. Bitcoin is a volatile asset with many up and down within 5 years up pass up until today. A recent research to test bitcoin volatility with currencies of least developed countries found that Bitcoin volatility is still considerably higher than volatilities of currencies of least developed countries (Kasper, 2017). So, in comparison with gold, bitcoin is more volatile. But still a blockchain won't be having a connection with global financial services due to its nature. Hence, financial crisis is not the one that could affect bitcoin sudden changes in price.

The like of 2008 crisis have been a major setback on major economies and brought upon a realization on how debt can affect the economic system if not properly managed. But one light seems to shine then the other during crisis. The evidence of one paper provides substance to the argument that Islamic indices may be a safer haven during crisis. Pointing to a hugely untapped investment avenue for exploration (Rizvi & Masih M., 2013). Islamic finance gained global attention post crisis due to their apparent stability during crisis period. Islamic index as a focus, proven to outperform their conventional index counterparts during tougher time. Although they are high risk and hold a high volatility profile due to their nature which is closely related with real assets, it is proven to be a good asset to hold during crisis because it is quite

sheltered from finance and banking related mishaps. In another note, Islamic indices in the Asia Pacific and Emerging Market region are partially immune to speculative shocks to global financial services making them a good alternative. Similarly, Islamic indices testified more stable due to their rigid screening criteria. (Arshad & Rizvi, 2013). Therefore, Islamic index are also quite stable during crisis period.

Hence, we can already connect Islamic index and bitcoin on their high risk and no quite relations with global financial services which can be deduce somehow to have the same profile. There have been many researches that test various assets in one portfolio for investment purposes to maximize returns, minimize risk and for hedging purposes. Due to the similarities, testing it using cointegration would find the relations between Islamic index and bitcoin. Therefore, the motivation of this paper is to test on the relations of Islamic index with bitcoin if it is put in one portfolio for investment and hedging purposes. A new study on bitcoin would be a new discovery especially when it is going to be related to Islamic indices. Which one would be most influential and stand out if it is combined. Hence this paper would like to find the following research question:

I. Assuming that both asset is high risk in nature, will there be any relationship between Islamic Index and Bitcoin?

II. Assuming that Islamic index and bitcoin are both high risk in nature, Which assets will be most influential if it is put in one portfolio?

The variable that is used to represent bitcoin is the price of bitcoin whereas Islamic index is cited by financial reporting indices, namely MSCI World Islamic Index (MIWO) and Dow Jones Islamic Market Index (DJIM) with both represent Islamic index in the portfolio. One control variable is set in the study to see the effect of oil as common commodity that is related with Islamic index underlying stocks.

The findings of this research would be of particular interest to any investor that would like to diversify their investment portfolio for future return and hedging. Plus, the findings will also be useful to regulators to come up with regulation or standards for bitcoin which in current time still lack in standard procedures in every country globally. With an adequate research on bitcoin, it can help regulators to analyse the results and came up with standards that suits every country.

The following parts of this paper are structured in a way that it starts with a brief discussion on various literatures relating bitcoin, Islamic index and our control variable which is. This is then followed by a description of the methodology employed in this study as well as a discussion on the empirical findings. Lastly, this paper will end with some concluding remarks and policy implications of the issue at hand.

2. LITERATURE REVIEW

The study on relationship of index in one portfolio have been done to identify the exact connections of index if it is put in one for diversification. Previous study done by Balarezo (2010) using cointegration technique with Modern Portfolio Technique (MPT) to form an investment portfolio better than only using MPT technique. By adding cointegration in the picture, the paper state that they are able to allocate index that are more stand out than the other indices. While this paper also wants to find out the link between Islamic index and bitcoin using integration, we will simplify the paper into just identifying the link of both variable without benchmark it with method of analysing it using MPT only. With the simplified form, this will give us the idea on which variable leads and lags and observe which will affect each other more.

While Bitcoin is just an asset and not an index, we assume that the data use in this paper are similar to recently developed Bitcoin index named as Bitcoin Real Time Index (BRTI) to make Bitcoin parallel in this model to replicate the study above by Balarezo. The CME CF Bitcoin Real Time Index ("BRTI") is a real-time index of the U.S. Dollar price of one bitcoin. It is representative of current bids and offers of market participants to buy or sell bitcoin on Constituent Exchanges (CME,2017). We can expect the exact price of bitcoin will affect the price of Bitcoin index directly hence we can run the data by assuming that both variables are an index.

Both Islamic index and Bitcoin are a high-risk asset in nature based on previous studies. A study state that Islamic index did not exhibit lower volatility than its conventional counterparts (Miniaoui et. al, 2015). An index usually considered as low-risk because they are an asset with a compilation of stocks. But it is found that usually Islamic index are higher in term of risk than any other conventional index available. As for Bitcoin, one recent study shows that Bitcoin is more volatile than the least developed countries which usually are high (Kasper, 2017). And another study on Bitcoin price crash in 2013 stated that. This finding shows that, prior to the price crash of December 2013, positive shocks increased the conditional volatility more than negative shocks. This inverted asymmetric reaction of Bitcoin to positive and negative shocks is contrary to what one observes in equities (Bouri Et. al, 2017). This shows that Bitcoin is more volatile than any other common equities. Hence with both are volatile, a study to find the relationship between both asset will be interesting which will be tested in this paper.

While there is limited study on bitcoin connection with other assets, the most relative study that we could compare to is a study that relates bitcoin with gold and dollar. The study use GARCH model to find relations between bitcoin, gold and dollar. The results stated that bitcoin has a place on the financial

markets and in portfolio management as it can be classified as something in between gold and the American dollar on a scale from pure medium of exchange advantages to pure store of value advantages (Dyhrberg, 2015). What we can say is bitcoin is similar to gold and dollar hence it can be use as hedging instrument as it is comparable to gold and real currency. Another interesting recent finding is how bitcoin are positively related with index. A study results show that the Bitcoin price is negatively associated with a neutral investor's sentiment, gold's price and Yuan to USD exchange rate, while positively related to stock market index, USD to Euro exchange rate and variated signs among the different countries' search trend (Poyser, 2017). So, this paper will then test on how bitcoin are related with Islamic index as a comparison.

Looking at Islamic index, there are two views on relationship of Islamic index with other assets with one study shows that gold and Islamic index continue to be one of the assets that can be use as safe haven during crisis using wavelet technique. The result shows that gold leads in world Islamic emerging markets and displayed negative relationship across a range of frequencies and indicates safe haven effects for the returns of Islamic stock markets (Raza Et. Al., 2015). But this is a proof that there is relation of index with gold. Another study shows otherwise which state that Islamic stock returns were not co-integrated with strategic commodities in the long run (Hussin et. Al, 2013). The strategic commodities referred in this paper is gold which they found out to be no relation. But this is based on the case of Malaysia market only, not Islamic index as a whole. Hence with both assets, Islamic index and bitcoin is somehow related to be as a safe haven asset. We hence want to identify the relation between them both in this paper.

Oil is used in this paper as control variable. This is because oil is a commodity that is commonly related with constituents in shariah compliant index. This is due to screening of shariah compliance for Islamic index mostly filtered from debt and focused more on commodity and asset based related stocks. Many studies in relation of crude oil with Islamic index have shown that there are positive or bilateral relation of oil and Islamic index. The findings showed that Islamic stock prices are co-integrated with oil price and selected macroeconomic variables (Hussin Et. al, 2012). While other commodities might also be related, we will focus on oil to see the changes that it could make in the model.

Therefore, the previous studies done on the area of bitcoin and Islamic index are quite varies and related. But what we can observe is that there is no study done by previous researchers to find the relation of Islamic index and bitcoin. We can see that there is recent study on bitcoin relation with market index which react positively. Therefore, the need to relate it with Islamic index as comparison is there.

3. METHODOLOGY

To test the relations of variables, usually traditional regression method is used to find the connections between it. But due to limitations faced by traditional regression, time series technique is more relevant to find the connections using time series approach. This is proven by previous literature on the relevancy of using time series approach. It has been known that most economic and financial variables are non-stationary in the level form. Thus, if traditional regression to be carried out on these variables, conventional statistical tests such as t-ratio, R2 and F-statistics are rendered invalid and any results or conclusion obtained are inaccurate or misleading. Traditional regression however, can be applied to these variables once they are made stationary. Stationarity can be achieved by differencing these variables but at the expense of removing their long-run theoretical information. Thus, the conclusions obtained are only valid for short-run but not the long-run theoretical relationship.

In addition, the traditional regression approach also starts off with a preconceived assumption by the researcher on the exogeneity and endogeneity of the variables through how they indicate which variables are independent and dependent. The cointegration time series technique on the other hand, approaches this by allowing the data to determine the exogeneity and endogeneity of the variables hence making way for a more substantiated analysis on causality.

Nevertheless, the cointegration time series technique also come some limitations. Time series studies usually use Vector Error Correction Model (VECM) and the Variance Decomposition (VDC) model to test long-run relationships. However, these methods are based on the estimates of the cointegrating vectors, which are “atheoretical” in nature (Masih et.al., 2010). Therefore, the Long-Run Structural Modelling (LRSM) method, which quantifies and estimate the theoretical relationship by imposing an identifying as well as an over-identifying restriction based on theory and priori information (Masih et.al., 2010) overcomes this limitation.

Hence, in this analysis, the Granger causal relationship between Bitcoin price, Islamic index and oil will be tested using a time-series approach based on Long-Run Structural Modelling (LRSM), Vector Error Correction Model (VECM) and the Variance Decomposition (VDC) model.

4. DATA, EMPIRICAL RESULTS AND DISCUSSION

UNIT ROOT TEST

To determine the relationship between BTC, MSI, DJI and OIL, it is important to first conduct a unit root test on the variables. The unit root test is carried out because it is an important prerequisite before the cointegration test can be carried out. This is so because, for cointegration test to be carried out, it is important that the variables are non-stationary in their level form but become stationary in their differenced form, i.e. I(1). Thus, the augmented Dickey Fuller (ADF) test is carried out to determine the non-stationarity or stationarity of the variables in both their level and differenced form. Unfortunately, due to the limitation of the software used (Microfit 4.1), the Phillips and Perron (PP) test cannot be conducted. Hence, only the results from the ADF test will be used.

From table 1, the ADF test indicates that all the variables are non-stationary in their level form. Table 2 however represents the results of the ADF test for the differenced form of the variables, the results indicate the variables are stationary in their differenced form. Hence, from both tables we can conclude that indeed all variables are I(1) and this would allow us to proceed with the cointegration test.

	VARIABLE	ADF	VALUE	T-STAT.	C.V.	RESULT
LOG FORM	LBTC	ADF(1)=SBC	16.1847	- 2.181	- 3.472	Non-Stationary
		ADF(1)=AIC	11.6314	- 2.181	- 3.472	Non-Stationary
	LMSI	ADF(1)=SBC	132.9463	- 2.266	- 3.472	Non-Stationary
		ADF(1)=AIC	137.4996	- 2.266	- 3.472	Non-Stationary
	LDJI	ADF(1)=SBC	133.8149	- 2.767	- 3.472	Non-Stationary
		ADF(1)=AIC	138.3682	- 2.767	- 3.472	Non-Stationary
	LOIL	ADF(1)=SBC	65.5333	- 2.334	- 3.472	Non-Stationary
		ADF(1)=AIC	70.0867	- 2.334	- 3.472	Non-Stationary

Table 1: Result of ADF test in Level Form

	VARIABLE	ADF	VALUE	T-STAT.	C.V.	RESULT
1ST DIFF. FORM	DBTC	ADF(1)=SBC	268.6943	- 5.638	- 2.902	Stationary
		ADF(2)=AIC	273.0167	- 7.231	- 2.902	Stationary
	DMSI	ADF(1)=SBC	130.5648	- 6.797	- 2.902	Stationary
		ADF(1)=AIC	133.9588	- 6.797	- 2.902	Stationary
	DJI	ADF(1)=SBC	133.6344	- 6.993	- 2.902	Stationary
		ADF(1)=AIC	130.2403	- 6.993	- 2.902	Stationary
	DOIL	ADF(1)=SBC	63.5510	- 5.587	- 2.902	Stationary
		ADF(2)=AIC	67.8772	- 5.805	- 2.902	Stationary

Table 2: Result of ADF test in Differenced form

LAG ORDER OF VAR

Following the unit root test, we then proceeded to determine the most optimal order of the vector auto regression (VAR) or in simpler terms, the optimal number of lags to be used. The number of lags to be used is determined based on the order given by the highest value of Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC) as well as the order where adjusted Likelihood Ratio (LR) becomes insignificant. The results obtained, as shown in Table 3, indicates a VAR order of 1.

Order	AIC	SBC	p-Value	C.V.
1	450.84	428.213	[.693]	5%
0	442.41	437.885	[.253]	5%

Table 3: Result of VAR lag order

COINTEGRATION TEST

Since we have determined that our variables are I(1) and the order of VAR is 1, we can now proceed with the cointegration test. In this study, the Johansen test was conducted to test for cointegration. The

Johansen test approaches cointegration based on the maximum likelihood of the Eigenvalues and Trace statistics.

From our results, (Table 4), based on the maximal eigenvalue, the results indicate that there are 2 cointegrations at 90% confidence level. However, in Table 5, results based on trace statistics, it is found that there is only 1 cointegrating vector and it is significant at 95% confidence level. Since the result of both tests are conflicting, we believe based on our intuition that BTC, MSI, DJI and OIL are well integrated with each other, where a change in one variable would lead to changes in the other variables. Therefore, having that assumption in mind, the results obtained from trace statistics (Table 5) is selected for the remainder of this assignment, i.e. the presence of 1 cointegrating vector at 95% confidence level.

Hence, the presence of cointegration here implies that the relationship between these variables are not spurious, meaning to say that they are in fact theoretically related and are in equilibrium in the long-run. This has serious policy implications because, being cointegrated also implies that these variables are interdependent, and each variable contains information that can predict the other variables.

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix					
Null	**Alternative**	**Statistic**	**95% Critical Value**	**90% Critical Value**	**Result**
r = 0	r = 1	27.882	31.790	29.130	2 cointegration @ 90%
r<= 1	r = 2	23.531	25.420	23.100	

Table 4: Results of Cointegration in Maximal Eigenvalue

Cointegration LR Test Based on Trace of the Stochastic Matrix					
Null	**Alternative**	**Statistic**	**95% Critical Value**	**90% Critical Value**	**Result**
r = 0	r>= 1	70.351	63.000	59.160	1 cointegration @ 95%
r<= 1	r>= 2	39.717	42.340	39.340	

Table 5: Result of Cointegration in Trace

LONG RUN STRUCTURAL MODELLING (LRSM)

At this stage, we attempt to quantify the theoretical relationship found earlier to make the coefficient of the cointegrating vector consistent with theoretical information. This is done through the LRSM process, where estimated cointegrating vectors are subjected to exact- and over-identifying restrictions based on theoretical and priori information.

Since BTC is our variable of interest, its coefficient is normalized and an exact-identifying restriction is imposed. As illustrated in the table below (Table 6, Panel A), the variables MSI and DJI were found to be significant at 95% confidence level but OIL was not. Hence, in order to test the significance of the OIL variable, we imposed an over-identifying restriction of 0 (zero) on its coefficient. The null hypothesis here indicates that the restriction is correct. From the results, (Table 6, Panel B), the restriction is found to be correct at 95% confidence level.However, on the basis that there is statistical evidence of a significant cointegrating relationship between the variables as well as our judgement on the theoretical implications of OIL, especially towards its relationship with the Islamic indices, we will proceed with our findings from the exact-identification step (Panel A) for the remainder of this study

VRBL	**PANEL A**	**PANEL B**
LBTC	1.0000	1.0000
	(*NONE*)	(*NONE*)
LMSI	-58.0533	-47.6795
	(19.5447)	(12.0714)
LDJI	54.7675	43.8466
	(22.2345)	(15.2322)
LOIL	0.78473	0.00
	(1.1513)	(*NONE*)
Trend	-0.13906	-.13164
	(.038415)	(0.036348)
CHSQ(1)	NONE	.51028[.475]

Table 6: Output of exact-identification and over-identification LRSM. Standard errors are in parenthesis and p-values are in brackets.

VECTOR ERROR CORRECTION MODEL (VECM)

Following LRSM, we know there is theoretical relationship between the variables but, cointegration in itself, does not indicate the direction of Granger causality between the variables, i.e. which variable is exogenous (leading) and which variable is endogenous (lagging). This is important for policy makers because by knowing which variable is exogenous and endogenous, policies can be made revolving around the exogenous variable since shocking the exogenous variable will also cause a response towards the endogenous variables.

Therefore, in order to determine the absolute exogeneity and endogeneity of the variables, we carried out the VECM process. VECM decomposes the change in each variable into short-run and long-run components. VECM also allows us to determine exogeneity and endogeneity by determining the extent of change in a particular variable that is caused by another variable in a previous period through the error correction term (ecm(-1)). The formula for VECM for this model is as follow:

$$\Delta BTC_t = \alpha + \Delta BTC_{1t-1} + \Delta MSI_{1t-1} + \Delta DJI_{1t-1} + \Delta OIL_{1t-1} + \varepsilon_{t-1}$$

Hence, by looking at the significance of the coefficient of the error correction term, we find that both MSI and DJI are exogenous while BTC and OIL is endogenous. This is in fact an interesting find because we would expect the Islamic indices to be endogenous and driven by OIL. Nevertheless, our results essentially indicate that MSI and DJI are the drivers of BTC and OIL. The implication of this find is that, as Investors, this provide insights into how Islamic indices or BitCoin can be used as a hedging instrument.

ecm1(-1)	Coefficient	Standard Error	T-Ratio [Prob.]	C.V.	Result
dLBTC	-0.27608	.066794	-4.1333[.000]	5%	Endogenous
dLMSI	-.0099157	.0057978	-1.7103[.091]	5%	Exogenous
dLDJI	-.011121	.0057895	-1.9209[.059]	5%	Exogenous
dLOIL	-.047003	.014452	-3.2523[.002]	5%	Endogenous

Table 7: Results of VECM

VARIANCE DECOMPOSITION (VDC)

At this point of our analysis, we now know that MSI and DJI are the exogenous variables and BTC and OIL are endogenous, we do not however know their relative exogeneity and endogeneity. For this, we carried out VDC. VDC determines relative exogeneity and endogeneity by decomposing the variance of forecast errors of each variable as well as determining the proportion of the variable explained by itself (or its own past) following a shock to itself or other variables. Hence, the variable that is explained mainly by itself is considered the most exogenous and the most endogenous variable is one where its variance is explained mainly by the variance of the other variables. We use generalized VDC instead of orthogonalized VDC because, the orthogonalized VDC has a few major limitations. One of which is the fact that orthogonalized VDC relies heavily on the order or arrangement of the variables. There will be bias towards the first variable in the arrangement which would cause it to obtain a higher percentage. Hence based on generalized VDC, the results are as shown below (Table 8).

Horizon	Var	**LBTC**	**LMSI**	**LDJI**	**LOIL**	Total	Self-Dep	Ranking
12 months	**LBTC**	57%	30%	13%	0%	100%	57%	2
	LMSI	0%	52%	48%	0%	100%	52%	3
	LDJI	0%	50%	49%	0%	100%	49%	4
	LOIL	12%	1%	0%	87%	100%	87%	1
Horizon	Var	**LBTC**	**LMSI**	**LDJI**	**LOIL**	Total	Self-Dep	Ranking
36 months	**LBTC**	39%	43%	18%	0%	100%	39%	4
	LMSI	0%	52%	48%	0%	100%	52%	2
	LDJI	1%	50%	49%	0%	100%	49%	3
	LOIL	15%	1%	0%	84%	100%	84%	1
Horizon	Var	**LBTC**	**LMSI**	**LDJI**	**LOIL**	Total	Self-Dep	Ranking
60 months	**LBTC**	34%	47%	19%	0%	100%	34%	4
	LMSI	0%	52%	48%	0%	100%	52%	2
	LDJI	1%	50%	49%	0%	100%	49%	3
	LOIL	15%	1%	0%	84%	100%	84%	1

Table 8: Results of Generalized VDC

In generalized VDC the percentage had to be normalized so that the total would become 100%. Our results indicate that for all three horizons of 1 year, 3 years and 5 years, the relationship of relative exogeneity does differ in short run and long run. Plus, it also different from VECM results. Because VDC show us the exact ranking of relative exogeneity, hence we look at VDC to determine the lead-lag order instead of VECM. The ranking of the variables from most exogenous to most endogenous according to VDC is as

follow. In first year the ranking is led by OIL, BTC, MSI and lastly DJI. While in the other horizon of third and fifth month, the order is as follow OIL, MSI, DJI and followed lastly by BTC.

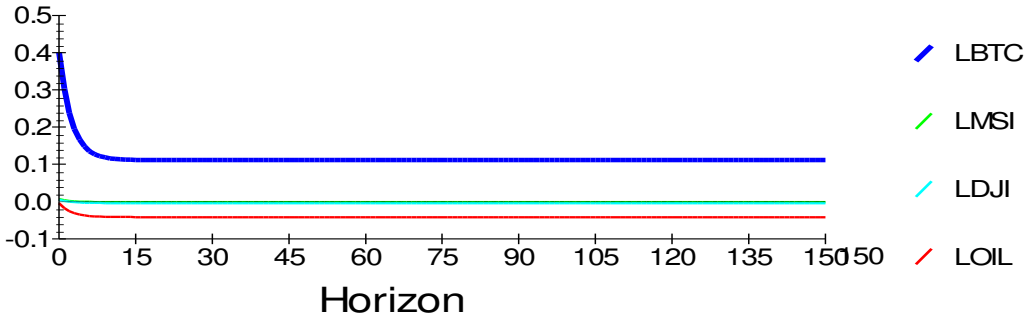
Based on VDC results, now it is logical that oil is the driver of Islamic index as it is ranked as the most exogenous. In the short run, Bitcoin ranked as second after oil followed by the indices while in the long run, the indices outrun Bitcoin and the situation remained through out the horizon. What we can deduce is that in the long run, the indices will adjust themselves and become stable overtime and outrun Bitcoin. Bitcoin will be affected by the indices and oil the most in this model as it is the most endogenous. Any changes in the long run will make Bitcoin affected in this model. This is maybe due to Bitcoin is riskier and more sensitive to slight changes as opposed to Islamic index. Islamic index undergoes a strict screening process to ensure that it is Shariah compliant. Hence it might be more stable than Bitcoin during shocks because of that process.

IMPULSE RESPONSE FUNCTION (IRF)

The impulse response function analysis (IRF) was then carried to determine how the variables would respond when another variable is shocked. Essentially, IRF produces the same findings as VDC but in a graphical form. Since, the findings of the generalized VDC was used, we will also analyse the generalized IR of each variables.

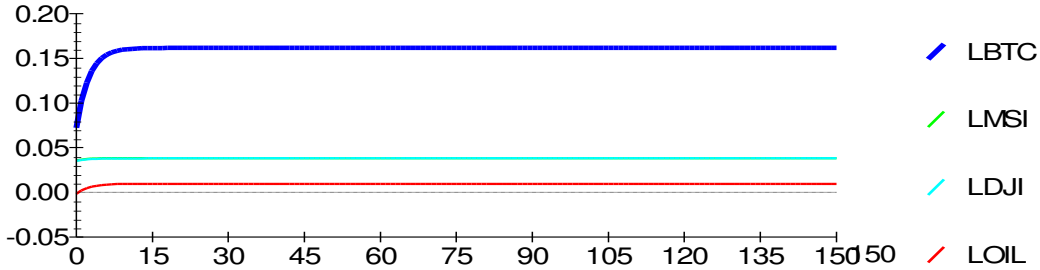
From the figures below, the blue line represents BTC, the green for MSI, light blue is DJI and the red line is OIL. It can be observed in all three figures that when a variable is shocked, BTC is affected the most while MSI and DJI are hardly affected.

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



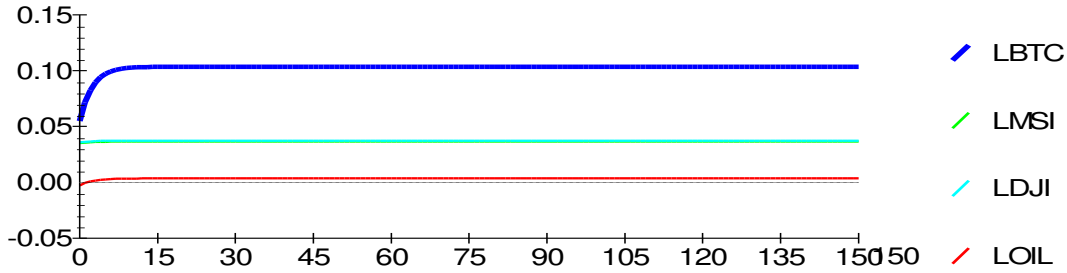
Horizon

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

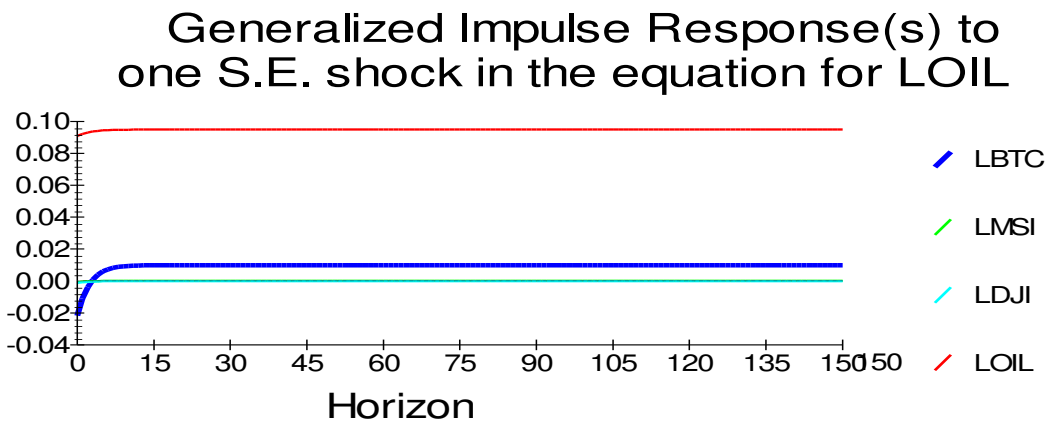


Horizon

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

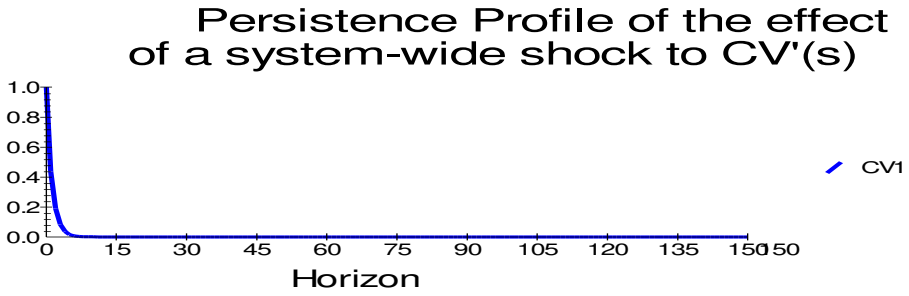


Horizon



PERSISTENCE PROFILE (PP)

Finally, we constructed the persistence profile of the cointegrating vector. Persistence profile illustrates how the whole cointegrating vector would respond in the presence of an external shock to the whole system. It also indicates how long it will take for the whole system to come back to equilibrium. From the figure, it can be seen that it will take approximately 5 – 8moths for the whole system to reach equilibrium should it be exposed to system-wide shock.



5. CONCLUDING REMARKS

Visiting back our main objective for this paper, this study attempts to find the relationship between Bitcoin and Islamic index based on relative value of both asset as well as to know which one would be more influential if it is put in one portfolio. Based on the cointegration result, it can be concluded that Bitcoin and Islamic index is cointegrated hence they are theoretically related. We can say that in some way, Bitcoin and Islamic index are the same especially in their high-risk nature. Hence, we can move to our next objective on which one is more influential if it is put in one portfolio. VDC results show that Bitcoin is the

most endogenous in this model which means it will follow Islamic index if there is shock occurred. This shows that Islamic index will be more influential as oppose to Bitcoin if they are put in one portfolio. This might be due to volatility of Bitcoin is way higher than Islamic Index which affect the results of VDC.

This study is important for both investors and policy maker especially because Bitcoin is a booming asset that caught major attention in recent years. Based on the results, should there is any index available related to bitcoin, we can use Islamic index to compensate the losses gained from index if something happens to the economy if we put them together in one portfolio. During crisis, what could happen is Bitcoin will be high in demand as investors will find any safe place that does not get affected by financial crisis. Due to high in demand, Bitcoin can be vulnerable due to their nature of unregulated asset which is based on Blockchain. The exogenous of Islamic index in this study can be a sign that Islamic index can be use as hedging instrument to mitigate Bitcoin risk. In policy maker or regulator point of view, in some countries Bitcoin standard and view have been issued by their respective central bank. This study can give more insights for policy maker to include the finding in their decision-making process in issuing standards. In Islamic finance point of view, as we are comparing Bitcoin with an Islamic instrument, we need to have a standard and view whether it is permissible to use Bitcoin as an asset to be invested. A unified opinion regarding the legality of Bitcoin in Islamic finance point of view need to be issued fast to allow the people to know the status of Bitcoin. If Bitcoin is allowed, many possibilities and opportunities can be grasp by the people, policy maker, countries and investor to use Bitcoin in the area of Islamic finance.

This study however is restricted to only four variables with one as a control variable. Future research can be done in the by testing Bitcoin with other Islamic index available in the market to test and find more strong results and analysis with added variables. Plus, although Islamic index are similar in term of regulation, their constituents and content might be different hence the result can be different from this study. Last but not least, we hope that this study can contribute to the growing need of related issues in the area of Bitcoin and Islamic finance. Any shortcomings and unintended errors is a reflection of the author alone.

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