



Relationship between Macroeconomic Variables and Net Asset Value (NAV) of Islamic Equity Unit Trust Funds: Cointegration Evidence from Malaysian Unit Trust Industry

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ABSTRACT

Objective – Even though the unit trust industry witnessed high growth in portfolios size, performances and regulations, however, there is still insufficient understanding of various aspects of the industry such as the lack of information on the funds' unit price behavior and their trend in the long-term investment. This study, therefore, aims to investigate the long-run relationship between the chosen macroeconomic factors and the NAV of the Islamic equity unit trust funds as well as the effect of the (2007-2008) global financial crisis on the performance of Islamic equity unit trust funds and their unit prices.

Methodology/Technique – The study utilized Vector Autoregression (VAR) framework in order to analyze this relationship over the period January 2006 to December 2012 using monthly data.

Findings – The findings of the investigations confirmed that the selected macro-economic variables do share long-run relationship with the NAV of the Islamic equity unit trust funds in the Malaysian capital market.

Novelty – A successful innovation of the relationship between the funds NAV and the selected macroeconomic variables will assist the entire interested group, such as, investors, management of the funds, government agencies, industry players and policy makers to estimate the future trend direction of the NAV and accordingly decide on the operational, managerial, and sustainable growth decisions.

Type of Paper: Empirical

Keywords: Islamic Equity Unit Trust Funds; Macroeconomic Variables; Malaysia.

JEL Classification: E10, E59, G20, G29.

1. Introduction

The Islamic principles of finance emphasize more on equity and it is acknowledged that lack of adequate equity investment is one of the main causes of the current global financial crisis (Chapra's, 2008). The availability of the equity investment platforms will serve ample opportunities for investors to invest their

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excess funds and solve the problem of fund under-utilization (Othman, 2011). Furthermore, the increasing demand for the Sharī`ah compliant alternative investment vehicles has prompted the banking sectors and financial industry as a whole to offer new Islamic financial products this includes unit trust funds which have become a successful investment instrument as reflected in the huge amount of NAV in circulation (Hassan et al., 2010).

The idea of a unit trust fund is to pool the capital of numerous investors, who share similar financial objectives, investment scheme and risk tolerance, and subsequently to employ the experiences of the fund managers to trade the securities (Choong, 2001). As such, the pooled money is then invested by the fund manager in various investment instruments, such as, stocks, bonds, money market investments and other securities, and a diversified portfolio of authorized investments which must be approved by the Malaysian Securities Commission (Keng, 2000 and Choong, 2001). This type of investment known as unit trust fund investment instead of mutual fund investment due to the ownership of the fund is separated into units of entitlement (Taib and Isa, 2007).

There are five categories of unit trust fund investments in Malaysia, namely: i) equity funds, ii) bond funds, iii) balanced funds, iv) money market fund, and v) capital guaranteed fund (Hoong, 1997). However, investors specifically “risk-taker” prefer to invest mainly in the equity unit trust fund with the objective of long-term investment through the capital appreciation. Estimating the price movements in the equity unit trust industry has been a major challenge for various investors, management companies, and brokers. Thus, it is imperative for researchers, academics, and investors to have a detailed and in-depth understanding on the trend in the Islamic unit trust investment. This study therefore attempts to address the problems of the funds units prices movement through analyzing the long-run relationships between the NAV of the Islamic equity unit trust funds and the macroeconomic factors, namely Consumer Price Index(CPI), Industrial Production Index(IPI), Three-Month Treasury bill Rate(TBR), Money Supply (M3), Crude Oil Price(OP), Foreign Exchange Rate(FER), National Political Elections(NPE), and Corruption Index (CI) as well as the current global financial crisis (FC) in the Malaysian capital market. In an effort to achieve the stated objectives, the study aims to answer the following research questions:

- i. Do the chosen macroeconomic variables share long-run relationship with the NAV of the Islamic equity unit trust funds in Malaysia?
- ii. Does the global financial crisis give significant impact in the long-run on the NAV of the Islamic equity unit trust funds in Malaysia?

The rest of this paper is organized as follows: Section 2 reviews previous literature in equity market, Section 3 describes the data & methodology applied in the research analysis. Section 4 discussed the empirical results and finally section 5 draw the conclusion.

2. Literature Review

The most significant body of research in the financial economics is concerned with the factors that determine the prices of risky securities in which there are a number of competing theories of asset pricing. These theories comprise the modern portfolio theory, the original capital asset pricing models (Sharpe (1964), and the arbitrage pricing theory of Ross (1976). The finance literature also contains a large number of studies that examine the equity price behaviour with some emphasis on the determinants of the relationship between the equity prices and the economic activities. For example, Goswami and Jung (1997), Dadgostar and Moazzami (2002), Chaudhuri and Smiles (2004), Günsel and Çukur (2007), Fadhil and Azizan (2007), Mahmood and Dinniah (2009), Rahman et al. (2009), Rasool et al. (2012), Hussin et al. (2012), and Sirucek (2012). The macroeconomic variables applied for these studies can be categorized into four groups. The first group refers to the overall economic conditions (i.e. employment level, GDP, and the industrial production index). The second group contains variables concerning with monetary policy (i.e. money supply, Treasury bill rate, interest rate). The third group of variables focuses on price level (i.e. consumer price index, inflation).

The fourth group concerns international activities (i.e. foreign exchange rate, oil price and global stability). The overall result revealed that there are significant short and long-run relationships among the equity prices or returns and the macroeconomic factors in the both developed and developing stock market.

3. Model Specification

Based on the review of the literature and the theories of asset pricing (Section 2), the proposed models established to explain the estimated behaviors of NAV of Islamic equity unit trust funds as illustrated below:

$$\hat{Y} = \alpha + \beta_1 (\text{CPI}) + \beta_2 (\text{IPI}) + \beta_3 (\text{TB}) + \beta_4 (\text{M3}) + \beta_5 (\text{FER}) + \beta_6 (\text{OP}) + \beta_7 (\text{CI}) + \beta_8 (\text{NPE}) + \beta_9 (\text{FC}) + \epsilon \tag{3.1}$$

Whereby: \hat{Y} donate for estimated NAV of Islamic equity unit trust funds, and α , β_i and ϵ are the intercepts (slope of the dependent variable), coefficients of the independent variables and the error term, respectively.

4. Data and Methodology

The data for this study are characterized as a monthly frequency running over the period January 2006 to December 2012 which collected from the secondary sources. The selected macro-economic variables are transformed into the natural logarithm except the variables that contain zero and negative values, such as the NAV, and the dummy variables; namely, NPE and FC. This transform was made to make these variables behave symmetrically. The data includes two forms of variable – endogenous and exogenous. The endogenous variables comprise variables that are commonly and regularly perceived in the Malaysian economic system, such as LIPI, LTBR, LM3, LFER, and LOP. While the exogenous variables represent the variables that are out of the Malaysian economic system, such as LCI, NPE and FC.

The study employs the Vector Auto-Regression (VAR) framework introduced by Sims in 1980 to analysis this relationships. This method is more applicable in the case where the chosen variables are non-stationary, however it is cointegrated in order I(1). There are several steps that must be performed in order to examine the existence of cointegration among the variables. I) first, test the order of the integration of each variable in the model. In this study therefore, the stationarity of each series was tested using the Augmented Dickey Fuller (1979) (ADF) and the Phillips-Perron (1988) (PP) unit root test. The ADF and PP unit root test that includes both a drift and linear time trend are mathematically presented in the following:

$$\Delta Y_t = \alpha_0 + \alpha_{1t} + \gamma Y_{t-1} + \sum_{i=1}^p \beta_i \Delta Y_{t-i} + \epsilon_t \tag{4.1}$$

$$\Delta Y_t = \alpha_0 + \alpha_{1t} + \gamma Y_{t-1} + \epsilon_t \tag{4.2}$$

Where, the Y represents the variables, α_i and γ are constant terms, t is the time period, α_{1t} the intercept and time trend that may be added, Δ represents the first difference operator, ϵ_t is the white noise residual, and p is the number lagged values. II) Second, the study identified the appropriate (optimal) lag length for the specified model based on a sequential log likelihood ratio (LR) test as in Lütkepohl (2005). In addition, in the existent literature there are many selection criteria commonly used to complement LR test such as the Akaike Information Criterion (AIC), the Schwarz Information Criterion (SIC), the Final Prediction Error (FPE), and the Hannan-Quinn Information Criterion (HQC). III) Third, choosing the appropriate model regarding the deterministic components in the multivariate system based on the the information criteria. Then a decision whether to include a linear time trend or not has to be made. Following the practice in standard econometric literature, a typical VAR (k) model can be formulated as:

$$\Delta X_t = \Pi X_{t-1} + \sum_{i=1}^k \Gamma_i \Delta X_{t-i} + \epsilon_{kt} \tag{4.3}$$

Where, X_t (X_{1t}, X_{2t}, \dots) denotes an $n \times 1$ vector of I(1) NAV of Islamic equity unit trust funds and the selected macroeconomic variables. ΔX_t are first difference of all variables I(0), Γ_i represents $n \times n$ coefficient matrices, Π is a long-run coefficient matrix, k is the number of lagged values and ϵ_{kt} is the error terms. IV) Fourth, determine the rank of Π or the number of cointegrating vectors. Johansen (1988) proposed two likelihood ratio

(LR) statistics, namely, trace statistic (λ_{trace}) and the maximum eigenvalue (λ_{max}) test for examining the rank of matrix Π_i or the number of cointegration(s) using the following equations:

$$\lambda_{\text{trace}} = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_{r+1}) \tag{4.4}$$

$$\lambda_{\text{max}} = -T \ln(1 - \hat{\lambda}_{r+1}) \tag{4.5}$$

Where, T is the sample size and $\hat{\lambda}_r$ is the largest eigenvalue of the Π_i matrix obtained from the equation (4.3). The null hypothesis of trace test is that the number of cointegrating vectors is less than or equal to r, and the alternative hypothesis is that r matrix is of the full rank ($r = n$) cointegrating vectors. However, the null hypothesis in the max-eigenvalue test is, $r = 1$, and the alternative hypothesis is that the rank is more than one ($r > 1$) (Brooks, 2003). V) Fifth, once the long-run (cointegrating vectors) are established, it is conceivable to estimate the VECM model in order to estimate the coefficients of long and short run relationship. However, VECM model requires to identify and explore the variables that are truly endogenous and exogenous in the model. Therefore, to achieve this task this study employed the weak-exogeneity test.

5. Empirical Analysis and Results

This part deals with the discussion of the empirical results, including the correlation matrix, the unit root test, the Vector Autoregressive Analysis, and the Vectors Error Correction Model analysis.

5.1 Correlations Matrix

The estimated correlation matrixes of the selected macro-economic variables, which are LCPI, LIPI, LTBR, LM3, LFER, LOP, LCI, NPE, and FC, are presented in Table 5.1.

Table 5.1: Pairwise Correlation of the Macro-Economic Variables under Study.

	LCPI	LIPI	LTBR	LM3	LFER	LOP	LCI	NPE	FC
LCPI	1								
LIPI	0.34**	1							
LTBR	-0.24**	0.47**	1						
LM3	.97***	0.37**	-0.25**	1					
LFER	-0.78**	-0.58**	-0.09	-0.82***	1				
LOP	0.47**	0.69**	0.33**	0.44**	-0.70	1			
LCI	-0.54**	0.16*	0.66**	-0.52**	0.39**	-0.02	1		
NPE	-0.01	0.42**	0.43**	0.14*	-0.25**	0.19*	0.57**	1	
FC	-0.11*	-0.27**	-0.22*	-0.19*	0.30**	-0.06	0.19*	-0.07	1

Notes: ‘***’, ‘**’, and ‘*’ are significant at the 1%, 5%, and 10% levels, respectively. LCPI = natural Logarithm of Consumer Price Index, LIPI = natural Logarithm of Industrial Production Index, LTBR = natural Logarithm of 3-month Treasury Bill Rate, LM3 = natural Logarithm of Money Supply, LFER = natural Logarithm of Foreign Exchange Rate, LOP = Oil Price, LCI = natural Logarithm of Corruption Index, NPE = National Political Election, FC = the global Financial Crisis.

The findings showed that, there was a satisfactory degree of relationship among the macroeconomic variables. Furthermore, Table 5.1 suggests possible multicollinearity between consumer price index and money supply as they have a high correlation of 0.97 per cent, for which the rule of thumb for collinearity is

that sample correlation of more 0.90 per cent is evidence of a collinearity problem (Asteriou and Hall, 2007). In understanding that multicollinearity negatively impacts the efficiency of the coefficient estimates, the LCPI index was dropped from the empirical analysis to maintain efficiency in further analysis. The higher correlation between the LCPI and the LM3 at 0.97 per cent is due to the existence of the relationship between the inflation rate (as measured by the rate of change in the consumer price index) and the growth rate of the money supply (M3). If the money supply grows more than the real economy, then accelerated inflation can occur due to more money chasing a given quantity of goods and services.

5.2 Unit Root Test Results

The results of the unit root test are presented in Table 5.2 below. The results show that the null hypothesis of unit root cannot be rejected at level because the variables are not statistically significant at the 1 and 5 per cent levels of significance, as their values are more than the critical values. Overall, the results indicate that the variables are not stationary at level $I(0)$, but that the series becomes stationary at the first difference $I(1)$. However, as there was a contradictory result from both tests for the LIPI and LOP variable, in which the ADF test shows that the LIPI variable is non-stationary at level while the PP test result displays a stationary result. Conversely, in the case of the LOP variable, the ADF test indicates it is stationary at level, while the PP test shows it is non-stationary. To this end, the study applied the KPSS test to confirm the result that we have to follow for further analysis. The KPSS test contrasts with the ADF and PP tests, in that it examines the null hypothesis of the series being stationary, against the alternative hypothesis of the series being non-stationary (Kwiatkowski et al., 1992). The KPSS findings show that both variables LIPI and LOP are non-stationary at level, $I(0)$ at the 1 and 5 per cent levels of significance. Hence, the evidence across the tests shows that the given macro-economic variables are stationary in the first difference, namely $I(1)$. This suggests that the unit trust industry in Malaysia is not weak form efficient. It recommends that the series of all variables does not follow the random walk model and the NAV of the Islamic equity unit trust fund displays predictable behaviour.

Table 5. 2: Unit Root test for the NAV and Macro-economic Variables.

Variables	On Levels			On First Differences	
	Intercept and Trend			Intercept & No Trend	
	ADF	PP	KPSS	ADF	PP
NAV	-1.480158	-1.480158	-----	-9.44707***	-9.447070***
LIPI	-2.750377	-5.065686***	0.145254	-17.24583***	-18.00045***
LTBR	-2.395920	-1.367352	-----	-4.522738***	-8.742479***
LM3	-2.239421	-2.508239	-----	-8.001418***	-8.001418***
LFER	-2.384834	-2.384834	-----	-9.835818***	-9.835818***
LOP	-3.885165**	-2.750221	0.120141	-6.017594***	-5.923456***

Note: 1)- the critical values for unit root tests at 1%, and 5% levels of significance are -4.07, and -3.46 (with trend) and 3.51, -2.89 (without trend), respectively, for both the Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests. 2) - ***, and ** indicate statistical significance at 1%, and 5%, respectively. The critical values of Phillips, Schmidt and Shin (KPSS) test at 1% and 5% levels of significance are 0.216 and 0.146 (with trend), respectively. 3) -Lag-length are selected automatic - based on SIC, maxlag = (11)

for Augmented Dickey Fuller (ADF) and Bandwidth: 0.889 (Andrews automatic) using Bartlett kernel for Phillips Perron (PP) tests.

5.3 Selecting the Optimal Lag-Lengths

Five different criteria are applied to obtain the optimal lag lengths for the VAR system before proceeding with the Johansen-Juselius (JJ) (1990) test. The determinants of the optimal lag results are presented in Table 5.3, however, it shows conflicting results, in which the recommended lag-length based on Likelihood Ratio (LR) is (4), and (FPE), (HQ) and (SC) are (2). In addition, the (AIC) is (8). To overcome this issue, the study elected for another method based on the residual of the VAR model. Various lag-lengths were imposed on the VAR specification until all the residuals of the correlograms were uncorrelated. Based on this technique, the optimal lag-length is found to be ($p = 8$).

Table 5. 3: Optimal Lag-Lengths of the VAR.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	605.7437	n.a	9.05e-15	-15.30905	-14.57302	-15.01490
1	1015.814	712.2274	4.85e-19*	-25.15300	-23.31295*	-24.41763*
2	1041.421	40.43235	6.56e-19	-24.87951	-21.93542	-23.70291
3	1077.126	50.73780	7.05e-19	-24.87173	-20.82361	-23.25390
4	1120.714	55.05855*	6.48e-19	-25.07141	-19.91926	-23.01236
5	1155.963	38.95953	7.99e-19	-25.05165	-18.79547	-22.55138
6	1204.505	45.98723	7.73e-19	-25.38170	-18.02149	-22.44021
7	1257.950	42.19342	7.65e-19	-25.84078	-17.37654	-22.45806
8	1322.015	40.46224	7.21e-19	-26.57934*	-17.01107	-22.75540

* indicates lag order selected by the criterion

Specifically, the p-values associated with the Lagrange Multiplier (LM) tests in table 5.4 strongly indicate the absence of serial correlation in the estimated residuals generated from the VAR (8) models up to $p=12$.

Table 5. 4: Residual Serial Correlation LM Tests Rustles.

Lags	LM-Stat	Prob
1	36.61378	0.4402
2	36.23275	0.4578
3	38.72067	0.3479
4	33.33764	0.5959
5	21.22279	0.9761
6	46.89846	0.1055
7	38.30986	0.3651
8	33.83060	0.5722
9	34.60519	0.5349
10	38.77167	0.3458
11	27.87283	0.8317

 Probs from chi-square with 36

5.4 Johansen Cointegration Tests Results

In this step, the Johansen-Juselius cointegration test is used to determine the number of cointegration vectors. Johansen (1995) found that the cointegration test is very sensitive to the existence of deterministic trends. Following the recommendation of Seiler (2004), the analysis examined the long-run relationships between the NAV of the Islamic equity unit trust fund and the selected macro-economic variables in the system assuming no deterministic trends in the VAR and the cointegrating relationship has no intercept and no trend. This since the index values were specified as natural logs, when the first difference in the index is taken, the result will only represent the return series, hence no trend can be expected. Furthermore, it is also assumed that there is no constant in either the cointegrating relationship or VAR because the study included two dummy variables in the model, which are NPE and FC. Therefore, either of these dummy variables can play the role of the constant in the equation. Table 5.5 below displays the results of the cointegration tests for model (8) including both the trace test and the max-eigenvalue test at the 5 per cent level of significance.

Table 5. 5: Johansen-Juselius Cointegration.

Hypothesized No. of CE(s)	Trace			Max-Eigen		
	Statistic	Critical-V at 5%	P-Value**	Statistic	Critical-V at 5%	P-Value**
$r = 0$	300.0297	83.93712*	0.00000	115.4133	36.63019*	0.00000
$r \leq 1$	184.6164	60.06141*	0.00000	87.6624	30.43961*	0.00000
$r \leq 2$	96.95399	40.17493*	0.00000	54.07738	24.15921*	0.00000
$r \leq 3$	42.87662	24.27596*	0.00010	30.25352	17.7973*	0.00040
$r \leq 4$	12.6231	12.3209*	0.04450	10.29939	11.2248	0.07240
$r \leq 5$	2.323707	4.129906	0.15040	2.323707	4.129906	0.15040

Note: **denotes rejection of the hypothesis at the 5% significance levels. r indicates the number of cointegration(s) relationship. **MacKinnon-Haug-Michelis (1999) p-values.

Table 5.5, shows that the trace tests support five cointegrating vectors, while the max-eigenvalue tests suggest four cointegrating vectors at the 5 per cent level of significance. The study analysis allows for four cointegrating vectors at the 5 per cent level of significance based on the results of the maximum eigenvalue statistic test following the reference of both Banerjee et al. (1993), and Enders (2004) who recommend and favour the max-eigenvalue test. The main conclusions can be derived from these two tests is that, the NAV of the Islamic equity funds and chosen macro-economic variables in the system share a long-run relationship. Therefore, each variable in the system has a tendency to adjust regularly to remove short-run deviations from the long-run equilibrium.

5.5 Weak Exogeneity Test Results

Having identified the cointegrating vectors, the Variance Error Correction Model (VECM) must be estimated. However, estimation of the VECMs requires normalizing the truly endogenous variables in the model. To this end, the weak exogeneity tests were performed for the model and the results are as stated in Table 5.6 below. The results indicates that the NAV of the Islamic equity unit trust funds index was found to be truly endogenous at the 1 per cent level of significance. In contrast, all the macro-economic variables were weakly exogenous at the 1 per cent level of significance, except the oil price, which can also play another truly endogenous variable in the model; however, it is not of interest in this study.

Table 5. 6: Weak Exogeneity Test Results

Model	NAV	LIPI	LTBR	LM3	LFER	LOP	
	χ^2						
NAV	14.05769	6.449340	6.566189	3.331845	0.142023	12.61250	
	P-Value	[0.000177]	[0.011099]	[0.010393]	[0.067951]	[0.706278]	[0.000383]

5.6 Long-Run Estimation

Having found at least four statistically significant cointegrating vector at the 5 per cent level of significance, the study proceeded to estimate the VECM with eight lags and with only one cointegrating vector that is normalized on the NAV of the Islamic equity fund equation. Table 5.7 below displays the results of the long-run coefficient of β matrices.

Table 5.7 Normalized Cointegrating Coefficients: 1 Cointegrating Equation

Variables	β -Coefficients	Standard-Errors	T-Statistic
LIPI	3.301991	0.60595	[5.44930] ***
LTBR	0.002177	0.08501	[0.02561]
LM3	-0.359396	0.08443	[- 4.25659] ***
LFER	-1.295037	0.31574	[- 4.10154] ***
LOP	-0.45717	0.12215	[- 3.74284] ***
LCI	-0.376117	0.12828	[-2.93210] ***
NPE	0.016757	0.01685	[0.99456]
FC	0.020421	0.01721	[1.18644]
ECT	-0.418885	-0.14389	[-2.29111]***

Note: '***', '**', and '*' are significant at the 1%, 5%, and 10% levels, respectively

The estimated coefficient results generally indicate that all the variables included in the system are statistically significantly contributing to the long-run relationships between the variables in the system with only three exceptions, which are LTBR, NPE and FC. In particular, the LIPI displays a statistically significant positive effect on the NAV of the Islamic equity unit trust funds in Malaysia. In the presence of cointegration in the long run, a 1 per cent increase in industrial production will enhance the NAV of the Islamic funds by

approximately 3.30 per cent. This finding is consistent with a large body of empirical studies concerning the effect of the IPI on the Malaysian equity market. For example, Mohammed et al. (2013), Hussin et al. (2012) and Rahman et al. (2009) found positive relations between the Malaysian stock market and the industrial production index in the long term. These results provide evidence that the Malaysian equity market is very sensitive to changes in the industrial production index. Therefore, both fund managers and investors have to consider the variability of the IPI index when they hold shares or units in their investment portfolios.

Table 5.7 indicates an insignificant statistical positive relationship between the three-month Treasury bill rate and the NAV of the Islamic equity unit trust funds in Malaysia. This finding is not actually surprising, since the Islamic investment is based on the prohibition of interest, for which the existing theoretical and empirical studies display no consensus regarding the relationship between the interest rate and Islamic stock market including the Islamic unit trust industry such as Yusof & Majid, 2006. This means the equity unit trust funds run their investment operations according to the Sharī'ah principles. Thus, the results can guide and encourage Muslim investors, whether local or from overseas, who prefer to invest in Sharī'ah compliant products to have an investment in the Malaysian equity unit trust industry.

Table 5.7 also indicates a statistically significantly negative long-run relationship between the NAV of the Islamic equity funds and the money supply (M3). This result is perhaps because an increase in money supply causes inflation in the long run, resulting in an increase in the nominal interest rates, which represents the discount rate in an equity valuation-model leading to lower equity prices as future cash flows are discounted at a higher cost of capital. This result is in line with Fama, (1981), Ibrahim and Yusoff (2001), and Alatiqi and Fazel (2008), who found a negative association between inflation and equity prices. One possible implication of this finding is that the Malaysian Islamic equity unit trust funds is not an effective hedge instrument against inflation in the long term; hence, investors would probably shift their investment from a risky equity market to real assets once the inflation rate starts to grow. Therefore, this study suggests that in order to enhance the performance of the unit trust industry and make it stable investment instruments for their optional investors, the central bank could avoid the effect of inflation by controlling the money supply.

Table 5.7 presents a statistical significant long-run negative relationship between the NAV of the Islamic equity unit trust funds and the foreign exchange rate in Malaysia. This finding is in line with the studies of Ibrahim and Aziz, (2003), Hussin et al. (2012), Vejzagic and Zarafat (2013). This due to the exchange rate recorded a negative movement during the period of the study, which mean Malaysian Ringgit appreciate against US dollar. An appreciation of the Malaysian ringgit will lead to a decrease in demand for Malaysia's export products as they become costly among the competing exporter countries. Ultimately, this leads to a decline in the cash flows into the country's economy, which causes a decrease in the profit of the companies, and, consequently, a decline in the average level of equity prices, resulting in a reduction of the equity fund's unit price. Since Malaysia is a country that is heavily reliant on international trade, any changes in the exchange rates will certainly affect its exports and imports. The study suggests that exchange rates should be given more attention by the relevant authorities and that it is advisable to depreciate the Malaysian ringgit through an increase in the money supply, and, over time, there will not be any effect on inflation since the exports of the country will increase.

Table 5.7 suggests a negative long-run relationship between the NAV of the Islamic equity funds and global crude oil price. The rise in global oil prices may affect the country's economy through different pathways, but mostly through the rise in the inflation rate through an increase in the production cost of goods and services. The global oil prices and inflation are usually seen as being associated in a cause and effect relationship in Malaysia (Shaari et al., 2012). When oil prices move up or down, inflation follows in the same direction; hence, the increase in global oil price negatively impacts on the NAV of the Islamic equity funds in the long-run. In relation to this regard, past empirical literature shows similar findings concerning the impact of crude oil price shocks on equity prices. For example, the earlier studies of Sadorsky (1999), Papapetrou (2001), Nandha and Hammoudeh (2007), O'Neil et al. (2008), Nandha and Faff (2008), Arouri and Julien (2009).

The estimated coefficient of the LCI shows negative significant long-run relationship with NAV of Islamic funds during the study time frame. The negative sign of the coefficient means positive effect since the index

is scaled from 0 to 10 scores where, 0 indicates the most corrupt country and 10 refers to least corrupt country. This may be explained as that corporates may reduce their costs through transfer the costs that imposed on their activities to government's resource activities. For example, paid bribes to reduce their tax liabilities or sometimes to reduce the costumes fees, in which the marginal bribe rate is usually below the official marginal tax rate, customs rate or any another forms of government' resources activities rates. However, in the short-run it showed an absence of relationship between the Islamic equity market and the corruption index, however, its analysis is beyond this paper. This an indication that the Malaysian government is fighting against corruption and the anti-corruption policies contribute well to protect the industry from corrupt people or speculators who make up-normal profit in the short- term.

In addition, the estimated coefficient of NPE shows a positive insignificant effect on the NAV of the Islamic equity funds. This is perhaps due to investors and fund managers feeling satisfied and confident with the performance of the current elected government and their belief that the ruling party provides more incentive for enhancing the economic conditions. For this reason, equity investors respond positively to democratization events in Malaysia and continue to invest in the equity unit trust industry during the uncertainty associated with the run up to elections. Furthermore, Table 5.20 also indicates that the estimated coefficient of the FC shows a positive effect on the Islamic equity funds' unit prices but it is statistically insignificant at the 5 per cent level of significance. This is perhaps because the Islamic equity unit trust funds run their business according to the Sharī'ah rules that have a strong linkage to the real economic activities, which helps Islamic funds avoid or partially eliminate the harmful financial effects of such a crisis through rejecting the causes of the crisis, such as dealing in riba (interest rate), maysir (speculation or gambling) or gharar (uncertainty). Hence, the Islamic funds could be used as a hedging instrument by both Muslim and non-Muslim investors during an economic slowdown or financial crisis. Finally, the existence of a long-run relationship was further validated by a negative and significant coefficient of the error correction term (ECT), which indicated that each variable in the system tended to adjust proportionally to bring the system back to its long-run equilibrium.

6. Conclusion

The purpose of this study was to investigate the long-run relationship between chosen macroeconomic variables and the NAV of the Islamic unit trust funds in the Malaysian capital market. The major findings of the study indicated that NAV of Islamic equity fund cointegrated with chosen macroeconomic variables, which suggested direct long-run equilibrium associations with those variables. In particular, normalizing the cointegrating vector in the system on the NAV of Islamic equity funds index will increase awareness and knowledge of these relationships with Islamic equity market, thus, local and international investors would be able to enhance their long-term investment decisions since the finding provides them the necessary information on the trends and prospects of different economies' indices and their sign effect on the funds' performance. Possible extension of the macro level analysis is to consider the impacts of other information from the public sector, such as, the government's spending and tax policy as well as the Gross Domestic Product (GDP) instead of Industrial Production Index (IPI) which, unfortunately, are not included in the analysis because the data for these variables are not currently available on a monthly basis. In fact, the inclusion of these variables would be a significant addition to account for the impact from the effects of the public sector and the real activity on the unit trust industry.

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