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Financial Performance Evaluation of Islamic Banking System: A Comparative Study among Malaysia's Banks

(Penilaian Prestasi Kewangan Sistem Perbankan Islam: Suatu Kajian Perbandingan di antara bank-bank di Malaysia)

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ABSTRACT

The promotion of Islamic banking is parallel with the aim of Malaysia to be the pioneer of Islamic financial hub in the region. With the recent commitment, it is timely to further examine the performance of the industry constituents. Therefore, this study aims to investigate the performance of Islamic banking system in comparison to its conventional counterpart in Malaysia using CAMEL model. For that purpose, annual financial data collected from ten conventional and Islamic banks in Malaysia since 2004 until 2016 is used in the analysis. Both Dynamic Ordinary Least Square (DOLS) and Fully Modified Ordinary Least Square (FMOLS) estimations technique as suggested by Pedroni (2001) are employed. We find that conventional banking system performed better than its counterpart. The maturity of conventional banks which has treads Malaysia's financial market earlier could plausibly dominate the results. Our evidence suggests that the regulators should strengthen Islamic banking system through more reforms and mergers to improve its capital, assets, management, earnings and liquidity.

Keywords: Islamic banking; banking performance; CAMEL; Dynamic Ordinary Least Square (DOLS); Fully Modified Ordinary Least Square (FMOLS)

ABSTRAK

Pembangunan perbankan islam adalah selari dengan matlamat Malaysia untuk menjadi peneraju hub kewangan Islam serantau. Dengan usaha terbaru ini, adalah agak bertepatan agar prestasi anggota industri tersebut dinilai. Oleh itu, kajian ini bertujuan untuk mengkaji prestasi sistem kewangan perbankan Islam dengan membandingkan dengan perbankan konvensional di Malaysia melalui pendekatan model CAMEL. Bagi tujuan tersebut, data laporan kewangan tahunan dari sepuluh buah bank konvensional dan Islam sejak tahun 2004 sehingga 2016 telah dikumpul dan digunakan didalam kajian ini. Kedua-dua teknik pengukuran Dynamic Ordinary Least Square (DOLS) and Fully Modified Ordinary Least Square (FMOLS) seperti yang dicadangkan oleh Pedroni (2001) telah digunakan didalam kajian ini. Kajian mendapati bahawa sistem perbankan konvensional beroperasi dengan lebih baik berbanding sistem kewangan Islam. Tahap kematangan perbankan konvensional yang lebih awal mencorak pasaran kewangan Malaysia telah dikenalpasti sebagai punca kepada dominasi dapatan kajian ini. Bukti kajian menunjukkan bahawa penggubal dasar perlu menguatkan lagi sistem perbankan Islam melalui lebih banyak reformasi dan penggabungan institusi kewangan bagi memperbaiki prestasi modal, aset, pengurusan, pulangan dan kecairan.

Kata kunci: Perbankan Islam; Prestasi perbankan; CAMEL; Dynamic Ordinary Least Square (DOLS); Fully Modified Ordinary Least Square (FMOLS)

INTRODUCTION

The aim of this paper is to evaluate the financial performance between Islamic banks and the conventional banks in Malaysia. It is very important to examine how financial system have fair in the economy thus far especially for the newly established financial system; the Islamic banks. It is well understood that the incapability of financial system to mitigate risk may trigger economic crises. Therefore, understanding the

financial performance is very important and it is the aim of this study. In recent decades, the world has witnessed more prominent economic crisis while the cause is still debatable among researchers and practitioners. At the same time economic volatility has become more vicious than usual. Ironically, the event of crises often takes place after several financial and banking system reforms. Reforms are usually followed with a change in financial sector system and thus raised the question of financial system reform adequacy. Financial sector development through several reforms may usually come out with the creation of new financial instruments or systems which are usually risk indivisible (Hazman 2016). This situation may in turn trigger the chances of financial crises occurrence. On the other hand, financial reform is essential to cope with the development of current needs especially in the new era of economy. As for Malaysia, one of the outcome of financial reform is the establishment of Malaysia Islamic banking system in 1969, thus the Islamic banking system started to gain attention in recent decades in Malaysia. Nevertheless, the literature pertaining to the effect of the reform (the introduction of Islamic banking system) compared to the existing conventional banking system is still relatively thin especially in term of financial system performance comparison between Islamic and conventional. Hence, this outlined the motives of the paper which is to conduct the evaluation of Islamic banking system performance with conventional banking system among Malaysia's banks.

The initiatives to develop the Islamic banking system in Malaysia started since 1969 with the establishment of Pilgrims Fund Board which aimed to manage pilgrimage expenses through pools of Muslim savings. The establishment of the board is more onto financial institutions with non-bank function. Since the establishment, it has further sparked the tone to establish Islamic financial institutions with bank role. The first attempt of Islamic banking system establishment in Malaysia taken place in 1983 which saw the Islamic Banking Act 1983 and Government Investment Act 1983 was enacted. Bank Islam Malaysia Berhad (BIMB) was the first Islamic banking institution established in the same year. Nevertheless, the establishment of Islamic banking system had only been given serious attention after the Ministry of Finance (MoF) initiated the Interest-Free Banking Scheme (IFBS) legislation in 1993. In that similar year, an Islamic interbank system was promoted by the central bank of Malaysia (BNM), boosting its development.

The establishment of the system is crucial in ensuring that both conventional and Islamic banking system co-exist and operate side by side. As a matter of fact, Malaysia has become the pioneer for this system and adds to the credential for Malaysia as a leading hub for Islamic banking. Moreover, Malaysia is also at an advanced stage in Islamic banking research and development (R&D) compared to other Muslim countries that offer Islamic banking and financial services. For instance, in 1993 the BNM has approved 21 Islamic financial instruments for domestic banks resulted from active R&D. This was further supported by the introduction of the GP8 in the year of 1996, a new model of financial disclosure aiming at promoting transparency and improved Islamic financial disclosure.

The setting up of full-fledged Islamic banking rather than the Islamic banking "window" as proposed by the conventional banks further boost the sector development. The initiative to promote full-fledged Islamic banking has seen the establishment of the second Islamic bank; Bank Muamalat Malaysia Berhad in 1999. Later on, the establishment of Islamic banking system was further supported by BNM with the launched Financial Sector Master Plan (FSMP). The FSMP was design to promote Malaysia as the regional hub of Islamic banking and the plan cover from 2001 until 2010. In order to support the master plan, Malaysia International Islamic Financial Centre (MIFC) was established to facilitate the liberalization of domestic Islamic financial sector and integrate with international Islamic financial sector. With the effort, Islamic banking system in Malaysia has grown rapidly and was able to attract a greater number of participants. As of 2010, 17 Islamic banks, 16 Islamic windows and three international Islamic banks have been established. Figure 1 shows the action of Islamic financial system liberalization steps and reform.

However, the question on how far the liberalization and banking reforms have benefited Islamic banking in term of their performance remains opened. Their performance compared to the other banking system (conventional) is in need of further investigation. The comparison is possible due to the introduction of Islamic interbank system by BNM in 1993 which allows both conventional and Islamic banking exists under the same financial system. Since both financial concepts exist in a parallel system, the comparison is essential and vital in assessing the performance of Malaysian financial system especially the performance of newly established Islamic financial system. As mentioned previously, the failure of financial system reform may trigger financial crisis and hence justified the need for the study. Therefore, this study aims to evaluate the performance of Islamic banking system in Malaysia by comparing it with the conventional banks through the analysis of CAMEL on banks returns in the long run. The assessment is timely and important in addressing the question as to whether Islamic banking in Malaysia is in need of further reform to the extent that it can effectively deal with future crises and rebound quickly thereafter. In other words, the study aims at investigate the long run relationship between banks performance with the CAMEL indicator which have not been investigated thoroughly in the literature especially in focusing on Malaysian financial system. Therefore, the study contribute to the literature by providing the

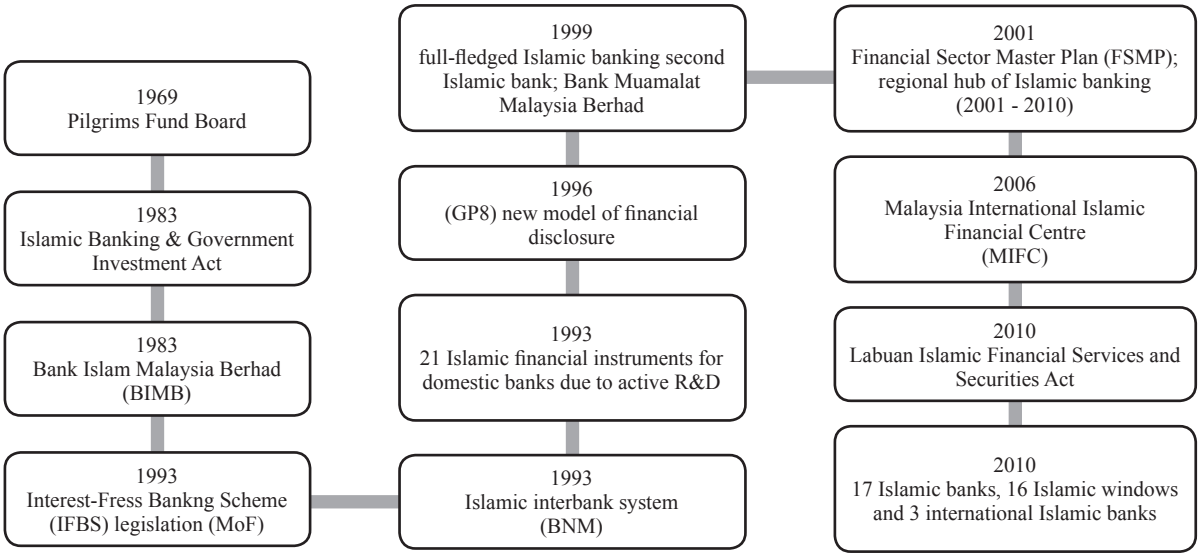

FIGURE 1. Islamic financial system reform and liberalization timeline

information on the long run relationship and extending the method of analysis with the latest econometrics tests.

Even though considerable number of studies have examined the performance of banks, there is thin literature that investigate this issue in the context of Islamic banks. This study attempts to offer robust empirical evidence using estimation methods that are superior to the Pooled Ordinary Least Square (POLS) which was prevalently used in previous studies. Specifically, we employ Fully Modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) in our empirical analyses. In addition, we use a larger panel dataset comprising 10 banks. Hence, filling the gap in the literature.

The rest of this paper is organized as follows. Section 2 presents a survey of related literature. Section 3 discusses the data and methodology employed in this study. Section 4 presents and discussed the empirical results and Section 5 summarizes and concludes this paper.

LITERATURE SURVEY

Evaluation the performance of Islamic banking in Malaysia have just received large attention in the current literature since year 2000 onwards. This is particularly due to its massive introduction in the midst 90's and the overwhelming acceptance in market which promised a large potential in the economy. The overwhelming acceptance in the market has attracted many economists to further investigate its impact on the banking industry and the economy as a whole. Nevertheless, the pertaining literature is still thin and in need of more attention. Especially, a large body of literature is restricted to small sample size in both time and number of banks dimension included in the study. Also, most studies are conducted on multiple country analysis rather than a single country analysis; where a study on Malaysia Islamic banking system deserves special attention given the increasing importance of this sector.

For instance, Ariss (2010) examines the performance of Islamic and conventional banks in term of bank assets and capital for 13 countries from year 2000 to 2006. By utilising the *P-R H*-statistic (Panzar & Rosse 1982; 1987) and Lerner index for a sample of 58 Islamic and 192 conventional banks, the findings suggest that the Islamic banks perform better than the conventional banks. Particularly, the author found that Islamic banks tend to accumulate more assets resulted from its financial activity and more competent in their equity management. They suggests that the results were driven by the fewer competition in Islamic banking system compared to the conventional ones.

Similarly, Rosman et al. (2014) also examine the efficiency of 79 Islamic banks in Middle Eastern and Asian countries during the event of economic crisis and found that the banks are able to sustain their operation. The findings were based on the Data Envelopment Analysis (DEA). However, they also convey a concern on Islamic banks scale inefficiency where most of these banks operate at a decreasing return to scale. Their study also stresses that Islamic banks efficiency depends on profitability and capitalisation. This finding is consistent with Karim et al. (2014) who analyse the performance of both Islamic and conventional banks for 14 OIC countries with a sample of 52 Islamic banks and 186 conventional banks from 1999 to 2009. Employing the panel Estimated Generalised Least Square (EGLS), their results show that Islamic banks are more likely to be constrained by capital requirement compared to the conventional banks. In other words, conventional banks are more likely to survive and perform better from this dimension.

Due to this puzzling issue, Louati et al. (2015) further investigate the behaviour of 47 Islamic and 70 conventional banks from 12 MENA and South East Asian countries using Lerner index as proposed by Ariss (2010). The finding shows that Islamic banks depend on assets accumulation and not bank deposits to fulfil regulatory requirements. Therefore, Islamic banks have fewer effects from market competitiveness unlike conventional banks. They further explained that the behaviour of Islamic banks is unlikely to be affected by capitalisation level and hence independent from interest rate to comply with the sharia. This indirectly explains the findings by Karim et al. (2013) on why Islamic banking is affected by the regulation on capital requirement. Therefore, the differences in banks behaviour might explain the level of performance of both banking system.

Clearly, the findings on the subject matter are still debatable and far from settle down hence signalling for more research and importantly different approach. Therefore, it is a call for researchers to investigate the matter at country level analysis rather than multiple country analysis. Particularly, among the drawback of multiple countries analysis is it tends to over-or-underestimate the performance of the banks if specific country effect is the main interest. Hence, some studies have been conducted which focus solely on Malaysia to further investigate on the subject matter. Among these include Mohamad et al (2010) who examine the risk management system efficiency among 17 Islamic banks in Malaysia during 1994 until 2008. By analysing the ROA, the finding suggests that Islamic banks tend to operate out of economics of scale in term of bank assets and their performance is highly sensitive towards economic environment.

However, it is argued that the study only concentrated on Islamic banks and no comparison was made to understand its performance relative to conventional banks. Due to the problem, Hassan and Rahim (2012) incorporate three banks (two Islamic banks and one conventional bank) in their study to investigate the stability of the banks in the aftermath of economic crisis. Using data from year 2000 to 2011, the *z-score* shows that the banks are financially stable where assets ratio is higher than the credit ratio. Nevertheless, conventional banks tend to outperform both Islamic banks. In more recent development, a study by Wahid and Dar (2016) employing the *z-score* akin to Hassan and Rahim (2012) also conclude similar finding where conventional banks tend to be more stable than the Islamic banks overall. They also extend the literature by providing that banks size does matter. Particularly, they found that for smaller Islamic banks tend to be more stable compared to the same size conventional banks and the reverse is found on bigger banks. Nevertheless, this contradicts with Chen et al., (2018) where they argued that profitability due to greater diversification for larger Islamic banks is more pronounced than the conventional banks.

Due to unsettled arguments, Beck et al. (2013) shows that in a market with higher Islamic banks share, conventional banks seems to be more cost-effective but they are less stable. In simple words, Islamic banks is likely to survive in the event of economic crisis compared to the conventional banks. This findings, is in lined with Rosman (2014). On the other hand, Samsudin et al. (2012) investigate the performance of Islamic and conventional banks by focusing on liquidity ratio using 17 banks. With data ranging from 1997 to 2010, they document that Islamic banks are not sensitive towards assets and liquidity ratio. They further explain that the situation is due to the fact that Islamic banks are independent from interest rate and operate under the sharia law.

Further, Daud (2013) also investigates the performance between international banks and domestic banks as well as the conventional and Islamic banks in Malaysia. They find that domestic banks tend to be more profitable than the international banks despite its large capital. More importantly, among the domestic banks, the conventional banks are more profitable compared to the Islamic banks. The author argues that the finding is due to high risk tolerance by the conventional banks. Nevertheless, Islamic banks are able to demonstrate a sound performance still and are able to compete in the market while the competition by the existence of international banks may further increase domestic banks efficiencies. The findings were derived from CAMEL model analysis based on four international and four domestic banks with data ranging from 2005 to 2009. We note that the number of banks used in the study is quite small especially when comparing the conventional and Islamic banks.

Rozzani and Abdul Rahman (2014) extend the above study by employing 19 conventional and 16 Islamic banks from 2008 to 2011. By using Panel Ordinary Least Square (POLS) with random effect, they provide evidence contradicting with Daud (2013). Their findings suggest that the performance of Islamic banking and conventional banking are very similar. However, the findings are subjected to different variables used in the study where CAMEL is used as endogenous to bank size, operational cost, credit risk and bank ownership rather than as exogenous to bank returns.

Based on the preceding, existing literature that compares the performance between conventional banks and Islamic banks in case of Malaysia is limited and the results offered are still inconclusive to allow for robust inferences. Therefore, this study steps up the pursuit in further analysing the implication of CAMEL model on equity returns between conventional and Islamic banks in the long run. Even though there are few studies with regards to Malaysia's financial system in the literature utilising the CAMEL model, some of them are subjected to small banks sample and only restricted to the POLS with random effects. It is argued that the DOLS and FMOLS may perform better than POLS. With that in mind,

this study employs both DOLS and FMOLS and extend previous studies by analysing the CAMEL model for five conventional and five Islamic banks in Malaysia to fill the gap in the literature[1].

METHODOLOGY AND DATA

As mentioned, this study aims to evaluate the performance of Islamic banking by comparing it with the conventional banks. By doing so, the current stand of Islamic banking in the financial system can be further depicted. Essentially, there are several ways to measure the performance of financial system. In this study, the CAMEL model was adopted to explain the performance of banking system in term of its Return on Equity (ROE) in the long run[2]. The advantages of adopting the method is mainly due to its substantial improvement in term of frequency, check, spread over and concentration compared to the earlier measurements (Misra & Aspal 2013). The used of ROE instead of other performance measurement is particularly due to different perspective that the study aim to analyse[3]. This model is employed particularly because of its wide application among bank evaluators. Hence, the used of the model is seen more practical and parallel with current practices. However, banks evaluators concern solely on the performance of CAMEL[4] rather than to put an attempt to link up the model with its implication on bank returns in the long run. Therefore, this study is conducted to further investigate the issue based on the CAMEL theoretical framework.

Based on the discussed CAMEL theory, the economics function of banks returns can be written as (1).

$$ROE = f(c, a, m, e, l) \quad (1)$$

Where, *ROE* is the return on equity, *c* is capital, *a* refers to asset, *m* represent management, *e* is equal to earning and *l* stand for liquidity. All of these variables are transformed into logarithm form for unit standardisation and reducing the chances of precision error measurement. Furthermore, one of the biggest advantages of turning the data into logarithm, it allows the interpretation of the findings to be presented in the form of elasticity aside of reducing the standard error measurement. The variables are defined as follow.

Capital

According to Sahajwala and van der Bergh (2002), the capital serves as an indicator of capital adequacy to meet additional requirement of funds when needed. Strong capital adequacy should lead to better returns on banks investment as it may lessen the burden of banks in term of interest spend due to borrowings. However, if strong capital leads to lower banks return, then it is said that the banks fail to capitalise the advantage, hence indicating weak performance of the banks managements. We capture this by using the ratio of debt to equity.

Asset

Similarly, banks' asset refers to the quality of an asset acquired through lending (Barr et al. 2002). It is merely a measure of credit risk associated with lending and bank ability in detecting and controlling for risk. Greater ability in detecting risk on an asset should reflect a positive relationship with return. If the reverse is established, then it indicates that the banks capability of detecting risk is insufficient to improve returns. The asset quality is proxied by the ratio of non-performing loans to the total loans.

Management

Next, management refers to the quality level of management efficiency for a bank (Njoku & Inanga 2012). It is measured by the ratio of operational cost to income. The indicator is quite straight forward where higher management efficiency should lead to greater returns. However, if negative relationship is documented, then it can be concluded that an increase in operational cost has failed to increase bank returns and become a sunk cost thus indicate weak bank management.

Earning

On the other hand, earning refers to the ratio of net profit after tax to average assets (Klomp & De Haan 2011). Earnings indicate the level of banks financial stature and its growth capacity. Therefore, higher earnings should lead to greater ROE as it depicted the efficiency of allocation of income. If negative relationship persists, it shows that the banks may suffer from weak allocation of income efficiency.

Liquidity

Lastly, the liquidity is merely the banks position to meets its daily cash obligation (Dash & Das 2013). It is measured by the ratio of net loans to total bank deposit. For a sound banking system, greater liquidity ability should lead to greater returns in the long run. Particularly, it installs the confidence of depositors and making sure the daily operation run smooth hence positively influence returns in the long run. However, if greater liquidity is unable to increase banks returns, then it is said that the bank is weak in channelling the cash into more profitable activities.

With the formulation of the above function, the econometrics equation (2)[5] can be further developed as below.

$$ROE_{it} = \alpha_{it} + \beta_i \ln c_{it} + \beta_i a_{it} + \beta_i \ln m_{it} + \beta_i \ln e_{it} + \beta_i \ln l_{it} + \mu_{it} \quad (2)$$

Where, α is the intercept, β is the estimated parameter and μ is the residual of the model. On the other hand, *i* refer to the i^{th} banks and *t* is the time horizon for each observation[6]. According to Pedroni (2001), the endogenous and the set of exogenous variables in equation (2) are cointegrated with the estimated parameter, and may or may not be

homogenous across i. For the purpose of this study, equation (2) is tested twice; one for Islamic banks and the other test is conducted to the conventional banks which then allowing for comparison study between those two banking systems. The econometric function (2) is then transform into equation (3) which fits the econometrics tests of FMOLS and DOLS as mentioned earlier. For simplicity, the set of exogenous variables in (2) is specified as X in equation (3).

$$ROE_{it} = \alpha_i + \beta_i X_{it} + \sum_{k=-Ki}^{Ki} \gamma_{ik} \Delta X_{it-k} + \mu_{it} \qquad (3)$$

In equation (3), $\xi_{it} = (\hat{\mu}_{it}, \Delta X_{it})$ is set as a stationary vector which is inclusive of the measured residuals and the variation in ρ[7]. The Ω_{it} is also set to equal to the $\lim_{T\to\infty} E[T^{-1}(\sum_{t=1}^{T}\xi_{iT})(\sum_{t=1}^{T}\xi_{iT})]$ and represents the process of the long run covariance vector. The vector is then decomposed into $\Omega_i = \Omega_i^0 + \Gamma_i + \Gamma_i'$ where both Ω_i^0 and Γ_i is the contemporaneous covariance and autocovariance weighted sum respectively. Therefore, the FMOLS group mean estimators based on Pedroni (2001) can be specified as equation (4).

$$\hat{\beta}^*_{GMF} = N^{-1}\sum_1^N[\sum_{t=1}^{T}(X_{it} - X_i)^2]^{-1}[\sum_{t=1}^{T}(X_{it} - \bar{X}_i)\, y^*_{it} - T_{\hat{\gamma}_i}] \qquad (4)$$

Based on equation (4), $y_{it*} = (y_{it} - \bar{y}_i) - \frac{\widehat{\Omega_{21t}}}{\widehat{\Omega_{22t}}}\Delta X_{it}$ while $\hat{y}_i = \hat{\Gamma}_{21i} + \widehat{\Omega^0_{21i}} - \frac{\widehat{\Omega_{21t}}}{\widehat{\Omega_{22t}}}(\hat{\Gamma}_{22i} + \widehat{\Omega^0_{22i}})$. The estimator between dimension is $\widehat{\beta^*}_{GMF} = N^{-1}\sum_{i=1}^{N}\beta^*_{CFM,i}$ where $\beta^*_{CFM,i}$ refers to the conventional FMOLS on the ith bank in the panel estimation. In the estimated panel, the t-statistic is calculated based on $t_{\hat{\beta}^*_{GMF}} = N^{-0.5}\sum_{i=1}^{N} t_{\hat{\beta}^*_{CFM,i}}$ while $t_{\hat{\beta}^*_{CFM,i}} = (t_{\hat{\beta}^*_{CFM,i}} - \beta_0)[\Omega^{-1}_{11i}\sum_{t=1}^{T}(X_{it} - \bar{X}_{it})^2]^{0.5}$.

The above equation is set up to estimate the parameter based on FMOLS regression technique. From equation (3) also, the DOLS estimator can be further developed as specified in equation (5).

$$\widehat{\beta^*}_{GMD} = N^{-1}\sum_1^N[\sum_{t=1}^{T}Z_{it}Z'_{it}]^{-1}[\sum_{t=1}^{T}Z_{it}Z'_{it}] \qquad (5)$$

In equation (5), Z_{it} is equivalent to $2(K+1)1$ vector regressors for $Z_{it} = X_{it} - \bar{X}_{it}$, ΔX_{it-K}, ..., ΔX_{it+K}, and $\tilde{y}_{it} = y_{it} - \bar{y}_{it}$. From there, the between dimension model specifications for DOLS estimator is further developed as $\widehat{\beta^*}_{GMD} = N^{-1}\sum_{i=1}^{N}\beta^*_{CD,i}$. The $\beta^*_{CD,i}$ denotes the estimator for conventional DOLS for the ith bank based on the estimated panel. The t-statistics based on DOLS specification is calculated as $t_{\hat{\beta}^*_{GMD}} = N^{-0.5}\sum_{i=1}^{N} t_{\hat{\beta}^*_{CD,i}}$ where $t_{\hat{\beta}^*_{CD,i}} = (\beta^*_{CD,i} - \beta_0)[\hat{\sigma}_i^{-2}\sum_{t=1}^{T}(X_{it} - \bar{X}_{it})^2]^{0.5}$, while the residuals based on DOLS long run variance estimation is $\sigma_i^2 = \lim_{T\to\infty} E[T^{-1}(\sum_{t=1}^{T}\mu_{it})^2]$.

For the purpose of this study, the dataset is collected from the annual financial statement based on five Islamic banks[8] and five conventional banks[9]. The data spanning from 2004 until 2016 due to data availability[10]. Both FMOLS and DOLS are utilised in deriving the results and is discussed in next section.

RESULTS AND DISCUSSION

According to Kao (1999), in the case of panel data approximations of structural parameter tend to converge to zero for two independent non-stationary variables. Different form time series, it is a random variables hence time series regression based on non-stationary analysis tend to be spurious. In other words, although non-stationary panel data may lead to biased standard errors, the point estimations of the value of parameters are consistent unlike in time series estimations. Therefore, the study skips the stationary test to keep the analysis simple[11]. Nevertheless, prior to the regression analysis, it is beneficial to analyse the underlying properties of the data by providing some additional information based on the descriptive and the correlation analysis. This is important especially in reducing the probability of scaling problem which usually arises with short time series observation data set (Neyapti 2001). The result of the test statistic is as presented in Table 1.

As presented in Table 1, the descriptive statistics for both financial systems shows that the spread of the data is very small which may lead to consistent estimation and small standard error in the model. The number of observation for both financial systems is also quite fairly big to allow for greater degree of freedom[12]. The correlation analysis also shows that the data did not show any tendency for the existence of multicollinearity in the model. In short, both descriptive and correlation test statistic shows that the regression analysis may not suffer from scalling problem and tend to deviate from multicollinearity problem[13].

After the preliminary test, Pedroni (1999) cointegration test is further conducted in order to confirm for the existence of long run relationship. It is useful to conduct this test as a robustness check for DOLS and FMOLS regression test. Particularly, the test may address the most anticipated questions of spurious correlation in the pooled estimations model. The results are presented in Table 2.

As confirmed by the Pedroni (1999) cointegration test, the existence of a stable long run relationship cannot be rejected at least in four regression tests which confirmed the existence of a stable long run relationship between CAMEL and bank performance. With the results in hand, the regression analysis as specified in *(4)* and *(5)* is further conducted. The regression line is established based on the FMOLS and DOLS estimation as suggested by Pedroni (2001). As mentioned, the FMOLS and DOLS may performed much more superior than the POLS especially under the short-run dynamic designs and eliminating finite sample bias. Moreover, the methods may generate a more consistent result for small sample size analysis and is at best for controlling the possibility of endogeneity and serial correlation in the model. The results of both FMOLS and DOLS are presented in Table 3.

TABLE 1. Descriptive statistics and rank correlation matrix

I – Summary Statistics Islamic Banks						
	ROE	Capital	Asset	Management	Earnings	Liquidity
Mean	2.8516	8.5969	–3.7016	4.2519	5.3083	–0.4382
Median	2.8531	8.5966	–3.7901	4.2521	5.2933	–0.4855
Maximum	2.8640	8.5998	–2.2972	4.2579	5.4321	2.0525
Minimum	2.8364	8.5961	–7.0503	4.2392	5.2391	–0.9390
Std. Dev.	0.0072	0.0009	0.8769	0.0030	0.0497	0.5128
Skewness	–0.6222	1.8561	–1.5588	–2.3859	0.8147	3.9135
Observations	65	65	65	65	65	65
II – Rank Correlation Matrix Islamic Banks						
	ROE	Capital	Asset	Management	Earnings	Liquidity
ROE	1	0.3081	–0.31731	0.1417	0.3280	0.0104
Capital		1	–0.4571	–0.4112	0.5674	0.2164
Asset			1	0.1420	–0.5668	–0.7030
Management				1	–0.4531	–0.13461
Earning					1	0.4431
Liquidity						1
I – Summary Statistics Conventional Banks						
Mean	–0.9069	1.7933	–3.3000	5.6372	4.2574	–0.8919
Median	–0.8918	2.3034	–3.2919	5.6362	4.3327	–0.2909
Maximum	–0.4141	2.6191	–1.9396	5.6702	5.4272	–0.0636
Minimum	–1.5451	–0.6163	–4.6503	5.6251	–0.1508	–3.5161
Std. Dev.	0.2390	1.1314	0.7014	0.0070	0.8420	1.2013
Skewness	–0.1030	–1.4586	–0.0113	2.6789	–2.7955	–1.4491
Observations	65	65	65	65	65	65
II – Rank Correlation Matrix Conventional Banks						
ROE	1	–0.1959	0.5760	0.0846	–0.0082	–0.1747
Capital		1	–0.1695	–0.1343	0.2815	0.6751
Asset			1	0.0322	–0.0067	–0.2571
Management				1	–0.0838	–0.1251
Earning					1	0.2506
Liquidity						1

TABLE 2. Pedroni (1999) long run cointegration test

Islamic Banks		
Test	Within-Dimension	Between-Dimension
v-Statistic	–0.363174	–
σ-Statistic	1.329473	2.328164
PP-Statistic	–3.025436***	–2.785827***
ADF-Statistic	–2.800879***	–3.135142***
Conventional Banks		
Test	Within–Dimension	Between–Dimension
v-Statistic	–1.571479	–
σ-Statistic	2.240964	3.106868
PP-Statistic	–2.985624***	–6.629405***
ADF-Statistic	–3.238984***	–3.667572***

Note: *** indicate 1% significant level. The tests are conducted under deterministic trend and intercept trend assumption with AIC lag length selection criteria

TABLE 3. FMOLS and DOLS regression analysis

Variables	Conventional Banks		Islamic Banks		LSDV
	FMOLS	DOLS	FMOLS	DOLS	
Capital	0.8155***	0.7075**	–2.8015**	0.8856***	–0.2837***
	(3.4067)	(2.107)	(–2.4933)	(6.084362)	(–4.415)
Asset	0.1773***	0.1660***	0.0019**	–0.0036*	0.1761***
	(3.8231)	(2.8876)	(2.1086)	(–2.0984)	(5.9631)
Management	–7.8326*	–0.2788	–0.1182	–1.0630***	1.3994***
	(–1.7703)	(–1.4686)	(–0.5265)	(–3.6264)	(9.2355)
Earnings	–0.0139	–0.0459	–0.0313***	–0.0456***	0.0191
	(–0.3685)	(–0.5649)	(–8.2275)	(–18.511)	(0.7074)
Liquidity	1.053752***	0.9072***	0.00009	0.0064	0.2492***
	(3.3819)	(3.5775)	(0.0421)	(1.5902)	(4.1115)
R^2	0.6240	0.6707	0.9024	0.9962	0.9927
Adj R^2	0.5549	0.3414	0.8805	0.9920	0.9922
S.E. Regression	0.1555	0.1952	0.0081	0.0027	0.1604
AR (1)	0.0012	0.5139	0.2408	–0.2839	
AR (3)	2.1105	0.2888	–0.1133	–0.0877	
AR (5)	0.0087	–0.0690	–0.0534	0.3729	
Bank Dummy					–7.5647***
					(–12.148)

Notes: *, ** and *** denotes significant level at 10%, 5% and 1%. Number in () denotes the *t*-stat value.

Based on Table 3, the finding shows that the models are stable with no detection of serial correlation at lag 1, 3 and 5 for both models. In other words, the regression models are stable and performed well. The model goodness of fit is also exceptionally well especially for Islamic banks regression model with high R^2 value and very small spread of standard error. Therefore, the estimated CAMEL models are able to explain banks returns in term of ROE very well.

As the results suggests, it seems that the conventional banks tend to outperform Islamic banking especially in term of the effects of capitals and assets on bank performance in the long run[14]. Compared to the conventional banks, both FMOLS and DOLS confirm that there is a positive implication flowing from capitals and assets towards banks returns in the long run. In contrary, for Islamic banks, at least one of the variables is negatively related to banks performance in either regression test. The test indicate that the effect of capital is negative in case of FMOLS while positive in DOLS. The same is also observed for assets. This is partly due to variations effects in panel dimensions as the panel data consists of wide variety of cross and time dimensions[15]. Nevertheless, regardless of the inconsistency, the finding still indicate that either capital or assets may negatively influence Islamic bank performance. Therefore, the finding may still lead to a conclusion that indicate the conventional banks outperformed Islamic banks in this dimensions. The finding is consistent with Beck et al. (2013) where they argued that countries in which the Islamic banks and conventional banks operate together, Islamic banks seems to be less cost-effective.

Furthermore, the effect of liquidity on Islamic banks performance is also insignificant despite its positive relationship. This is parallel with Samsudin et al (2012) and Louati et al. (2015) who explain that the insignificant is due to Sharia compliance towards interest rate intolerant and the dependent on assets accumulation to fulfil regulatory requirements. This shows that, Islamic banks struggle to live up with the current banking standard and practice due to standardisation of Islamic interbank system which allow Islamic banking system to exist in the same based with the conventional banks in 1993. In other words, the main ground for Islamic banking system is interest-free, however, the interbank system set the operational standard to be equally grounded with the conventional banking system and hence setting up the insignificant results flowing from earnings to bank performance. Despite the argument, based on the CAMEL measurement of banks performance, the finding still provide another prove that conventional banks tend to outperformed Islamic banks in this dimension.

The negative effect of earning on Islamic banks performance is also too obvious compared to the conventional banks. Both tests postulate a significant negative relationship. This indicate weak income allocation management by the Islamic banks. In other words, Islamic banks are unable to generate higher return with provided greater investment on assets. This indirectly raise another issue on weak bank governance in term of bank capability in detecting profitable investments. Failure in carrying out the main role of banks in detecting profitable or riskier investment may results in financial catastrophe and trigger economic

crises in the long run. According to Grira et al. (2018), they stress that Islamic banks tend to demonstrates higher equity financing costs compared to the conventional banks on average. This further strengthens the finding where Islamic banks tend to have weak bank governance in term of income allocation on assets. Therefore, the finding suggest for Islamic banks reform with greater concentration on income allocation management.

In short, based on the CAMEL model, the FMOLS and DOLS provide sufficient evidence to conclude that conventional banks tend to outperform Islamic banks in the case of Malaysia. To further strengthen the finding, the Least Square Dummy Variable (LSDV) test is further conducted. In the test, Islamic bank is assign with the value of one and the conventional bank takes the zero value. As expected, the significant negative dummy term further confirm that the conventional bank outperform Islamic banks. Therefore, this study provides additional evidence to support Mohamad et al (2010), Hassan and Rahim (2012), Daud (2013), Karim et al (2013), Rosman et al (2014) and Wahid and Dar (2016).

Despite the findings, interestingly both banks still share some common characteristics where both management and earnings negatively influence banks performance in the long run. In other words, regardless of whether it is a conventional or Islamic bank, the domestic banks in Malaysia tend to suffer from operational costs management and earnings allocation performance. This indirectly shows that the level of operational costs management for domestic banks in Malaysia is still low and lack of maturity. The allocation of income is also unable to increase banks performance in the long run as the results suggest. In short, Malaysia domestic banks tend to operate out of economics of scale and possess weak investment portfolios for both types of banks. The finding gives support to earlier study such as Hasnan et al. (2013).

On the other hand, the results also postulate that Malaysia banking system is at risk of external shocks due to its weaknesses. More financial reform with leverage on operational costs management and earnings allocation is needed for Malaysia banking sector development. Promoting a sound financial system development is crucial in maintaining a country economic stability. Therefore, strengthening its management capability and better income dissemination seems crucial in mitigating financial risk or otherwise Malaysia will be at risk of financial crisis.

CONCLUSION

This paper examines the CAMEL model in examining its long run implications towards Islamic banks performance by comparing it with the conventional banks in Malaysia. Sustaining banks performance is very important in preserving economic volatility and failure in mitigating the risk may result in economics crisis (Aghion et al. 2004; Hazman 2016; Kim et al. 2009 ; Kose et al. 2006; Silva 2002). Therefore, it is very important to understand the effect of CAMEL model in explaining banking sector performance especially on the Islamic banks due to rapid financial reform in recent decades. Where it stands in comparison with the conventional banks is important in making it at least at par with its counterparts.

In the current state of literature, the number of study who examines the comparisons of long run relationship between the CAMEL model and Islamic banks performance in case of Malaysia is still relatively thin. Particularly, the proposed method has yet to be tested in the related literature. As the results suggest, the method is able to establish a stable long run relationship between the variables for both banking systems. This shows that the model could best evaluate banking sector performance for both Islamic and conventional systems. Therefore, maintaining and taking good care of this CAMEL indicator is important in determining the banks long run directions. Any financial reform on the Islamic banks in the future is suggested to address and keep along with the CAMEL indicator.

Our findings highlight that greater attention should be paid to both side of management and earnings for the betterment of Malaysia banking system. Hence, any future financial reform should focus more on ensuring and promoting the banks to operate under cost efficient regime. The banks' ability to anticipate future profitable investment is also important in order to enhance banks income allocations.

In term of banking performance, it is highlighted that the conventional banks may perform better than the Islamic banks especially in the term of capital and asset management. The results suggest that the management maturity of conventional system might be main reason for this as conventional banks have been established decades earlier than Islamic banking. Therefore, future amendment on the FSMP and MIFC on Islamic banks reform should also address capitals and asset management in order to boost their performance. Finally, the effect of liquidity on Islamic banks performance should be maintained insignificant as it reflects the sharia compliance within the banking system[16]. In short, Islamic banking should be concentrate more in building its management capacity in order to keep up the pace with the conventional banks.

NOTES

1 It is argued that the inclusion of more banks may benefited the study, however, data gathering is not an easy tasks especially regarding data availability.

2 CAMEL model has been used widely by practitioners and industrial experts in evaluating banks performance. In other words, CAMEL is used as supervisory measurements in banking industry.

[3] As discussed in the literature review, most of past study tend to used ROA as banks performance indicator. Therefore, this study filling the gap by taking other performance measurement indicator (ROE) hence extending the findings.

[4] CAMEL model stands for Capital, Asset, Management, Earning and Liquidity.

[5] In this study, no control variables was introduced due to lack of data observation. Preserving the degree of freedom is more essential in small sample study. Furthermore, in order to make the study more comparable, the exclusion of control variable seems preferable as most of the study using CAMEL model exclude control variable from the model.

[6] The expected sign for each coefficient is as explained in the theoretical framework.

[7] ρ has a non-standard distribution (Brownian or Wiener process).

[8] Bank Muamalat Malaysia Berhad Bank Islam Malaysia Berhad, CIMB Islamic Bank Berhad, Hong Leong Islamic Bank Berhad and RHB Islamic Bank Berhad

[9] AmBank (M) Berhad, CIMB Bank Berhad, Hong Leong Bank Berhad, Malayan Banking Berhad and RHB Bank Berhad

[10] Most of financial data are only available online since 2004. For the other banks, the available data observations are even too short, hence excluded from the study as it may distort the degree of freedom in the analysis.

[11] The stationarity test results may be provided upon request to the authors.

[12] According to the Central Limit Theorem (CLT), for any statistical analysis to follow approximately the normal distribution, it will need at least 30 observation as a rule of thumb.

[13] The Variance Inflation Factors (VIF) test further confirms the inexistence of multicollinearity in the model. However, the results are not presented for simplicity and it is available upon request.

[14] This came quite surprising as presented in table 1, the mean of ROE for Islamic banks is higher than the conventional banks. Nevertheless, the long run results shows that the effect of CAMEL performance indicator on ROE for Islamic banks is low. This prove that analysis based on descriptive analysis is not sufficient and a regression analysis to analyse its long run relationship is essential.

[15] According to Kao and Chiang (2001), between FMOLS and DOLS, it is found that DOLS may outperformed FMOLS in many cases. Therefore, the results of DOLS is preferable compared to FMOLS.

[16] The insignificant result depict the sharia compliance towards interest rate intolerant and the dependent on assets accumulation to fulfil regulatory requirements which obeying the main principal of Islamic financing (Samsudin et al. 2012; Louati et al. 2015). Therefore, it should be maintain insignificant or otherwise it may be a sign of breach of Islamic principle on interest tolerance.

REFERENCE

Aghion, P., Bachetta, P., & Banerjee, A. 2004. Capital markets and the instability of open economies. *Journal of Monetary Economics 51*(6): 1077–1106.

Ariss, R.T. 2010. Competitive conditions in Islamic and conventional banking: A global perspective. *Review of Financial Economics 19*(3): 101–108.

Barr, R., Killgo, K.A., Siems, T.F., & Zimmel, S. 2002. Evaluating the productive efficiency and performance of U.S. commercial banks. *Managerial Finance* 28(8): 3–25.

Beck, T., Demirguc-Kunt, A. & Merrouche, O. 2013. Islamic Vs. conventional banking: Business model, efficiency and stability. *Journal of Banking & Finance 37*(2): 433–447

Chen, N., Liang, H-Y. & Yu, M-T. 2018. Asset Diversification and Bank Performance: Evidence from Three Asian Countries With a Dual Banking System. *Pacific-Basin Finance Journal. https://doi.org/10.1016/j.pacfin.2018.02.007*

Dash, M., & Das, A. 2013. Performance Appraisal of Indian Banks Using CAMELS Rating. *IUP Journal of Bank Management 12*(2): 31–42.

Daud, N.A. 2013. *Prestasi Perbankan di Malaysia: Analisis CAMEL.* Paper presented at the Persidangan Kebangsaan Ekonomi Malaysia VIII, Johor Bahru.

Grira, J., Hassan, M.K., Labidi, C. & Soumare, I. 2018. Equity Pricing in Islamic Banks: International Evidence. *Emerging Markets Finance and Trade. https://doi-org.ezproxy.uaeu.ac.ae/10.1080/1540496X.2018.1451323*

Hazman, S. 2016. Can greater openness and deeper financial development drag ASEAN-5 into another series of economic crises? *Asian Social Science* 12(8): 125–140.

Kao, C. 1999. Spurious regression and Residual-Based Tests for cointegration in panel data. *Journal of Econometrics 90* (1999): 1–40

Kao, C. & Chiang, M-H. 2001. On the estimation and inference of a cointegrated regression in panel data. In *Nonstationary Panels, Panel Cointegration, and Dynamic Panels (Advances in Econometrics, Volume 15)*, edited by Badi H. Baltagi, Thomas B. Fomby, R. Carter Hill, 179-222. Emerald Group Publishing Limited.

Kim, D.H., Lin, S.C, & Suen Y.B. 2009. Dynamic effects of trade openness on financial development. *Economic Modelling* 27(1): 254 - 261. doi: 10.1016/j.econmod.2009.09.005

Klomp, J., & de Haan, J. 2011. Banking risk and regulation: Does one size fit all?" DNB Working Paper No.323, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=197723

Kose, M.A., Prasad, E.S., & Terrones, M.E. 2006. How do trade and financial integration affect the relationship between growth and volatility? *Journal of International Economics 69*(1): 176–202.

Louati, S. 2015. Capital adequacy implications on Islamic and non-Islamic bank's behaviour: Does market power matter? *Borsa Istanbul Review* 15(3): 192–204.

Mastura Abdul Karim, M. K. H., Taufiq Hassan & Shamser Mohamad. 2014. Capital adequacy and lending and deposit behaviours of conventional and Islamic banks. *Pacific-Basin Finance Journal* 28*:* 58–75.

Misra, S.K., & Aspal, P.K. 2013. A Camel Model analysis of state bank group Misra & Aspal. *World Journal of Social Sciences* 3(4): 36–55.

Mohammad Taqiuddin Mohamad, A.A.S.M.J.T.B. 2010. *Analisis Pengaruh Risiko terhadap prestasi keuntungan perbankan islam di malaysia.* Paper presented at the Persidangan Kebangsaan Ekonomi Malaysia ke V, Port Dickson, Negeri Sembilan.

Mohd Hassan, N., & Mat Rahim, S.R. 2012. *Islamic Vs Conventional Bank Stability: 'A case Study of Malaysia'*. Paper presented at the Persidangan Kebangsaan Ekonomi Malaysia, Ipoh, Perak.

Muhamad Lukman Samsudin, M.R.A.H., Mohammad Taqiuddin Mohamad & Ahmad Azam Sulaiman. 2012. *Pengurusan Kecairan Berasaskan Aset dan Liabiliti Perbankan Islam di Malaysia.* Paper presented at the Persidangan Kebangsaan Ekonomi Malaysia ke VII, Ipoh, Perak.

Neyapti, B. 2001. Central bank independence and economic performance in Eastern Europe. *Economic Systems* 25(4): 381–399.

Njoku, J., & Inanga, E.L. 2012. Underlying nature of the 2008-2009 banking crises. *African Journal of Accounting, Auditing and Finance* 1(2): 190–208.

Panzar, J. C. J. N. R. 1982. Structure, conduct and comparative statistics: Bell laboratories economic discussion paper.

Panzar, J. C. J. N. R. 1987. Testing for monopoly equilibrium. *Journal of Industrial Economics* 35: 443–456.

Pedroni, P. 1999. Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and Statistics* 61: 653–670.

Pedroni, P. 2001. Purchasing power parity tests in cointegrated panels. *The Review of Economics and Statistics* 83(4): 727–731.

Rahman, N.R.R.A. 2014. Determinants of bank performance: Coventional vs Islamic. *Jurnal Pengurusan* 39(2013): 129 - 139.

Romzie Rosman, N.A.W.Z.Z. 2014. Efficiency of Islamic banks during the financial crisis: An analysis of Middle Eastern and Asian countries. *Pacific-Basin Finance Journal* 28: 76–90.

Sahajwala, R., & van der Bergh, P. 2000. Supervisory Risk Assessment and Early Warning Systems. *Basel Committee on Banking Supervision Working Papers*, No. 4, Bank of International Settlements

Silva, G.F. 2002. The impact of financial system development on business cycles volatility: Cross-country evidence. *Journal of Macroeconomics* 24(2): 233–253.

Suhaily Hasnan, R.A.R.S.M. 2013. Management motive, weak governance, earnings management and fraudulent financial reporting: Malaysian evidence. *Journal of International Accounting Research* 12(1): 1–27.

Wahid, M.A. & Dar, H. 2016. Stability of Islamic versus conventional banks: A Malaysian case. *Jurnal Ekonomi Malaysia* 50(1): 111–132.

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