Muda, Ruhaini; Aziz, Raihanah Abdul; Hassan, Salwana & Bakar, Nordin Abu. "Financial distress and economic cycle in a dual banking system: Evidence from Malaysia " *ACRN Oxford Journal of Finance and Risk Perspectives 6.3 – Special Issue FRAP/SSFII Conference (2017): 135-15.*

FINANCIAL DISTRESS AND ECONOMIC CYCLE IN A DUAL BANKING SYSTEM: EVIDENCE FROM MALAYSIA

RUHAINI MUDA[1], RAIHANAH ABDUL AZIZ[2],SALWANA HASSAN[3],NORDIN ABU BAKAR[4]
[1,3] Accounting Research Institute/Faculty of Business and Management,
[2] Arshad Ayub Graduate Business School,
[4] Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA,Shah Alam, Selangor, Malaysia

Received: 28 February 2017
Revised 1: 17 October 2017
Revised 2: 10 December 2017
Accepted: 30 December 2017

Abstract*: The study assesses financial distress over the economic cycle in Malaysia, a dual banking system, with the objective of ascertaining whether Islamic banks have a role in mitigating financial distress. The study makes use of unbalanced panel data of 27 conventional banks and 16 Islamic banks from 2005 until 2014. The study segregates the analysis for conventional and Islamic banks, as well as the banking system as a whole. The results indicate that first, the pro-cyclical of financial distress on economic conditions for Islamic and conventional banks. However, the impact of economic cycle on financial distress for both banks are different. Conventional banks exposed to higher insolvency risk during the downturn of economic cycle relative to Islamic banks. The z-score and non-performing loan shows similar results, the conventional banks are more distressed relative to the Islamic banks. Second, collectively, the result indicates that the pro-cyclicality of financial distress and economic conditions. However, the coefficients values of collective analysis are approaching the values of Islamic banking. The results imply that the operation of Islamic banking in dual banking system in Malaysia, provide positive contributions to the banking system as a whole.*

Keywords: financial distress; economic cycle; dual banking system.

Introduction

Banking crises has had a significant impact on the health of financial system. The real cost of a banking crisis is the deadweight loss to the economy. Subsequently, the crisis forces the macroeconomic policy to adjust unfavorably. The eruption of the global financial crisis and its real consequences have caused financial market become highly volatile and lose its value which causes financial distress among the financial institutions, especially in the banking sector (Ayman, Faizul & Mahmoud, 2013 and Ali, 2007).The disruptions in the banking system have substantial economic costs and banks are affected differently by the crisis (Ibrahim, 2016; al naseer and mohamad, 2017). Theory of financial intermediation discusses the main role of banks to transform the financial assets from short term liabilities into long term assets. Therefore, banks hold a mix of illiquid assets and liquid liabilities which exposes them to liquidity mismatch risk (Farooq and Zaheer, 2015), especially during the crisis. In

addition, the nature of banks' business exposes them to bank runs and financial distress (Diamond and Dybvig, 1983).

Literature on Islamic banking and finance present the evidence that Islamic banking system is stable and resilient to economic cycle on the basis that it is different from their counterpart (such as Cihak and Hesse, 2010; Belanes et al., 2015; Farooq and Zaheer, 2015; Ibrahim, 2016). However, Islamic banks have also experienced financial distress as conventional banks. For example, during the year 2008, severe crisis upon diminishing stocks of the bankers affected some banks including, Dubai Islamic Bank, Kuwait Finance House and al-Rajhi Bank in Saudi Arabia. In addition, Islamic al-Hilal Bank in Abu Dhabi and Noor Islamic Bank of Dubai that had good liquidity were affected as the Dubai government had faced a crisis and was bailed out by the Emirate of Abu Dhabi (Nurul, 2012). The distress might lead them to arrange the accounts in accordance to their strategies or to cease their operations. Those Islamic banks with good liquidity were also affected by the crisis for example, the Islamic al-Hilal Bank in Abu Dhabi and Noor Islamic Bank of Dubai. In Malaysia, Bank Islam Malaysia Berhad (BIMB) had incurred losses of RM457 million in the year ending June 30, 2005, which involved RM774 million provisions against bad loans and investment. Meanwhile, Ihlas Finance House, an Islamic financial institution in Turkey was closed in 2001 due to liquidity problems and financial distress; Faisal Islamic Bank ceased its operations in the United Kingdom for regulatory reasons; Bank Taqwa in Bahamas which was closed in 2001 and Dubai markets written off Dubai's collapse in which the real estate prices have dropped by 50 percent, which then affect them to stop the projects and thousands of workers were laid off. Dubai has accumulated US$80 billion of debts by expanding in banking, real estate and transportation before credit markets seized up in 2008. These are evidences that show Islamic financial institutions are also widely exposed to financial distress.

In the aftermath of the global financial crisis in 2007, it is believed that the fallacy of financial stability relates with the financial volatility situation or financial crisis (Hussein, 2010). It has been witnessed during the liquidity crisis and sub-prime mortgage crisis in United States. In the year 2008, most of financial institutions, including banks in the United States and Europe, were equally affected due to the fallacy of US bank Lehman Brothers. With the pre-bankruptcy assets value of $639 billion, Lehman Brothers' bankruptcy is the largest corporate bankruptcy in the US history (Senbet and Wang, 2012). The collapse of this institution resulted in rapid drop in housing prices and sending the continuous effect across the world especially those firms who had backed huge amount of credit default trades by Lehman Brothers. However, the emergence of new financial instruments and development of information technologies lead to the changing roles of banks. Technology advancement has substantially reduced the cost of information and minimized informational asymmetry. Several empirical studies have been done to show that the demand for banking is increasing (Allen & Santomero 1997, 2001; Scholtens & Wensveen 2000, 2003; Genberg 2007). According to Allen and Santomero (1997) and Holmstrom and Tirole (2000) suggest that due to a rapid change in the development of financial markets, traditional focus of intermediation theory, such as transaction costs and asymmetric information, are less relevant in explaining the development of the intermediaries. They suggested that the theories of intermediation should focus on the issues of risk trading, risk management and participation costs as the significant factors for the existence of modern intermediaries. In a later study, Allen and Santomero (2001) have found that the traditional banking business of accepting deposits and making loans has declined significantly in the United States. The trend shows that there is a switch to pension funds and mutual funds from directly held assets. However, banks have maintained their positions by innovating and switching from their traditional business to fee-producing activities such as trusts, annuities, mutual funds, mortgage banking, insurance brokerage and transaction services.

In Malaysia, banking system is currently represented by 16 Islamic and 27 conventional commercial banking institutions. Malaysia has a dual banking system, where conventional and

Islamic banks co-exist. These banking institutions offer a comprehensive and broad range of financial products and services, among others are financing and investment in Securities. Islamic banking started developing in the 1980s and its growth was spurred by favorable regulation in the late 1990s. The financial industry was permitted to set up regular conventional banks (CBs), full-fledged Islamic banks (IBs), and Islamic banking subsidiaries or standalone Islamic banking branches of existing conventional banks. Currently, there are 16 Islamic commercial banks in Malaysia representing 46% of total banking sector assets (BNM, 2017). Islamic banking institutions have been able to arrange and offer products with attractive and innovative features at competitive prices. These products received wide acceptance by both Muslim and non-Muslim customers (Iqbal and Molyneux 2005), reflecting the capacity of the Islamic banking system as an effective means of financial intermediation. Malaysia, as one of the emerging countries also suffered from a banking crisis episode during the mid-1980s which driven by a number of weak commercial banks into insolvency and financial distress. Malaysian banks also were affected significantly and they have been tremendously distressed when facing with a recession (Abdelaziz and Latif, 2010). It also been affected by the financial crisis that happened during the late 1990s and early 2000. This scenario makes many banks to require more capital and financial aids to help funding their operations. As a result, banking industry in Malaysia was forced to restructure by Bank Negara Malaysia in 1999. Thus, Bank Negara Malaysia had to implement a rescue scheme in order to maintain the integrity of public savings and the stability of the financial system (Nurul and Abdul, 2012).

From this context, a question arise; Does financial distress pro cyclical to economic cycle? Given the above setting and operation of Islamic banks in a dual banking system, the study intends to analyze what are the explanations of economic cycle on financial distress of Islamic banks. The discussion on the ability of Islamic banks in contributing stability into the financial system, only recently that it has been subject to scholarly inquiry. The paper contributes further to this line of inquiry by investigating the impact of economic cycle on financial distress of Islamic financing in a dual banking system. The remaining of this paper is organized as follows: the next section provides brief background on the operation of Islamic banks in a dual banking system in Malaysia, Section 2 presents the literature review, Section 3 describes the data and methodology, section 4 discusses the results, and section 5 draws the conclusions.

Literature Review

Previous studies have defined financial distress as the inability of a company to meet up with its financial obligations which could then lead to bankruptcy. Ross et al. (2012) decided that the financial distress is a situation where an operating cash flows for the firm are not sufficient to fulfill the current obligations for example a trade credits or interest expenses. However, the definition of financial distress can broadly classify into other terms. It can be expanded to insolvency as inability to pay one's debts as the debtor has lack of means to pay for the debts. Similar to Senbet and Wang (2012), the financial distress means that there is a difficulty for the firm which already promises to creditors to perform the payment. It is directly related to the firm's leverage decision. In the other hand, economic distress means difficulties that arise from the firm's operational inefficiencies which has no direct linkage to the firm's leverage. In order to reduce the leverage issue, one should reduce or limit the leverage as a response to the financial distress and one of the underlying theories for this particular event is the theory of leverage cycle.

The leverage here could also be referred as the financial leverage. It indicates the use of debt in acquiring the asset. One could possibly buy the asset using his or her total cash that they have but in other hand, one also could acquire the asset by using the cash and debt to acquire more assets. As asset increase in value, the leverage will work well and vice versa. This is what

it called as leverage. In standard economic theory, the equilibrium of supply and demand determines the interest rate on loans. But in real life, when somebody takes out a loan, he must negotiate two things: the interest rate, and the collateral rate. A proper theory of economic equilibrium must explain both. Geanakoplos (2010) argued that the standard economic theory has not really come to grasps with this problem for the simple reason that it seems that they are not intractable, but in fact they are. Moreover, the two variables are influenced in the equilibration of supply and demand mainly by two different factors: the interest rate reflects the underlying impatience of borrowers, and the collateral rate reflects the perceived volatility of asset prices and the subsequent uncertainty of lenders.

Basically, when the leverage is being too high it could give a huge benefit for the stakeholders as their return are doubled but it also can become so badly when there is a time of too low leverage. As a result, the crises will start to happen and worst thing, it could lead to the financial distress. The government should actually intervene to this particular issue in which, they should not only focusing on reducing the interest rate to stabilize the crises rather they should be able to observe the collateral rate (referring to leverage). Geanakoplos (2010) stated that the policy implication of the leverage cycle is that the Federal should manage system wide leverage, seeking to maintain it within reasonable limits in normal times, stepping in to restrain it in times of ebullience, and sustaining it up as market players become worried, especially in a crisis period. Thus, the leverage cycle is seems to be a recurring phenomenon. Ceteris paribus, leverage becomes too high in boom times, and too low in bad times. As a result, in boom times asset prices are too high, and in crisis times they are too low (Geanakoplos, 2009).

A number of variables have been used to associate with financial distress. The earlier works on predicting financial distress used firm-specific characteristics and financial structures originally attributed by Altman (1968) and Altman et.al (1977) which employed discriminant analysis of financial ratios to derive the z-score approach. The z-score approach is widely used in the banking literature such as Boyd and Graham (1986), Hannan and Hanweck (1988) and Boyd, Graham and Hewitt (1993); and Lepetit and Strobel (2014). The studies defined the z-score index as a risk measure to represent the bank's probability of insolvency. It plays an important role in the assessment of both individual bank risk as well as overall financial stability. The z-score index takes on banks' return on assets (ROA), volatility of return from the standard deviation of ROA and the capital base (CAP) that is total equity to total asset. The calculation of z-score index is easier to use since the data required can be obtained from both listed and unlisted financial institutions (Strobel, 2011). The variability of ROA can capture the overall risk of a bank included the credit risk, interest rate risk, liquidity risk, operating risk, and any other risk that is realized in bank earning. It is expressed in units of standard deviations of ROA and measure how much a bank's accounting earnings can decline until it has a negative book value. The z-score index equation is a good risk measure as it includes ROA, which is one of the most widely accepted measurement of the overall bank performance; the variability of ROA which is a standard measure of risk in financial economics, and book capital adequacy which represents an industry standard for bank protection and soundness.

In addition, previous studies also applied the non-performing loan (NPL) to measure the financial distress for banks. Higher levels of NPLs can lead into the financial distress. It is because the global financial and credit crisis which affected the large financial institutions, put pressure on banks to focus on core lending activities and non-performing businesses. NPLs have a dual effect on financial institutions, as there are no returns from unrecovered loans and reduce the ability to offer future lending. Siti and Roza (2012) claimed that NPL is the default risk that causes reluctance for bank to provide credit and as a result, the risk could lead to insolvency or illiquidity.

Even though, no universal set of indicators had been used across past studies, the CAMELS method appears to have a significant capacity to detect distress (Wanke et al.,2016). CAMEL is the Uniform Financial Rating System which was introduced by the United States regulators

in 1979. The acronym of CAMEL stands for Capital adequacy, Asset quality, Management quality, Earnings, and Liquidity. Bets et. al. (2013) state that the literatures on individual bank failures are heavily relied on this ratings system. Since 1996, the sensitivity also had been included in the rating system. The CAMELS rating system is an internal supervisory tool for evaluating the reliability of financial institutions on a uniform basis and use to identify those institutions requiring special supervisory. It also measures the performance of banks such as; Suria and Roza (2013) used the CAMEL variables to measure the performance of the Islamic banks. Nevertheless, the original criteria used to determine the CAMELS ratings are not disclosed to the general public (Jin et al, most of the studies use proxies to represent the indicators for CAMELS method.

Among these three kinds of measurement, the z-score index had been used in order to measure the distress that could exist in the Malaysian banks. It is due to its simplicity in which the data can be constructed using only accounting information and the z-score index itself could resemble the bank's probability of insolvency. For robustness purposes, the NPL is also been measured as a proxy for financial distress. z-score and NPL can directly measure the distress as a dependent variable. Besides, the bank specification and macroeconomic factors also been considered in this study to better reflect the banking situation.

Data and Methodology

The data for bank specific factors and macroeconomics indicators were collected from the annual reports of the banks, Bankscope and the World Bank database, respectively. This study utilizes data from 2005 to 2014 for 16 Islamic and 27 conventional commercial banks in Malaysia (BNM, 2015). Throughout the early period of this study, few mergers and acquisitions of conventional banks had taken place, indirectly affecting those banks which operate on Islamic window basis. In 2008, there were some structural change existed since those banks that operated under Islamic banking windows, had been transformed to full-fledge banks. In the meantime, the new upgraded Islamic banks are treated as a continuation from Islamic banking operations or windows. Thus, this study proceeded by using the data of anchor bank prior to merger and acquisition and also includes both full fledge and Islamic banking operations.

This study considers two proxies of financial distress, namely; z-score and NPL, following these studies on financial distress for bank; Hannan and Hanweck (1988); Liang and Savage (1990); Eisenbeis and Kwast (1991); Sinkey N. (1993); and Siti and Roza (2012). NPL represents the default risk that causes reluctance for bank to provide credit (Siti and Roza, 2012). Based on the literatures, this study considers few bank specific factors such as loan asset ratio (LAR), cost income ratio (CIR), log total assets (LTA), loan loss reserve to total loans (LLRL) and Herfindahl Index (HI). Bank liquidity is measured as loan assets ratio, (LAR). Higher value of this ratio indicate the high risk that a bank should bear since it shows a bank is loaned up to much and its liquidity is quite low (Siti and Roza, 2012). The study also included the efficiency element which measured by cost income ratio (CIR). The ratio gives investors a clear view of how efficiently the bank is being run; the lower it is, the more profitable the bank will be. Bank size (LTA) measured log of total assets. As the bank size becomes larger, bank would be more stable. Herfindahl Index (HI) measure of concentration index. The higher the concentration, the lower possibility for the bank to involve in distress. Asset quality is measured by the loan loss reserves to total loans ratio (LLRL). The relationship between the asset quality and the bank performance is commonly positive in nature. The better the performance will lead to lower probability of bankruptcy (Suria and Roza, 2013). While, the market share is measured by the share of the bank's asset to total asset in the national market (Mirzaei, 2011).

This study also considers some external factors such as market share (SHARE), inflation (INF), GDP. The external indicators that have been considered are GDP, inflation and real interest rate. GDP measure the growth rate of gross domestic product and it reflects the economic cycle. Next, the interest rate is considered as the main price of funds and the changes of interest will give impact on banking system. While Wadhwani (1986) stated that the inflation which refers to the increase in the price level can actually influence the emergence of bankruptcies.The empirical specification is designed to assess financial distress and procyclicality and verify whether Islamic banks are less or more procyclical. The paper structures the model as follows:

$$D_{it} = \beta Y_{it} + \lambda X_{it} + \varphi inf_t + \alpha_{it} + \varepsilon_{it} \quad (1)$$

where D_{it} are financial distress for banks, Y_{it} is the growth rate of real gross domestic products, X_{it} is a vector of bank-specific variables, inf_t is the inflation rate, is α_{it} bank-specific effect, and is ε_{it} the common error term. The procyclicality is represented by the growth rate of real gross domestic products Y_{it}. The study also considers a set of bank-specific variables as follows: the natural logarithm of Total Asset (Bank size), Loan Asset Ratio (Liquidity), Cost Income Ratio (Efficiency), Herfindahl Index (Concentration index), Loan Loss Reserve to Total Loans (Asset quality), Market Share and macroeconomic variables; inflation rate.

This study employs panel data estimation technique. Panel data models are able to handle data limitation and control for heterogeneity among variables. In addition, the method enables the construction and testing of more complex behavioral models; the effects that are not identifiable in pure cross-section or pure time series data (Baltagi, 2001).

Results and Discussion

Figure 1 shows the trend for average z-score of the Islamic and conventional banks for ten years period. During the year 2006-2008, the trend shows that Islamic banks obtain higher z-score as compared to the conventional banks. In 2008, the gap between these two trends was not wide enough because the Islamic banks in Malaysia were still in the emerging phase. BNM (2009) claimed that the Asian economies would also be affected by the spillover effects of the crisis. It is proven that the strong trade relations with the developed economies do exist especially in food and energy consumption. Bank Negara Malaysia had to reduce its Overnight Policy Rate (OPR) by a total of 150 basis points between November 2008 and February 2009 to 2 percent. As a result, the borrower benefited from the reduced amount of monthly instalment and high default rate can be controlled. From the trend of 2009 onwards it depicts that the higher z-score is obtained by conventional banks. It shows that the policy taken by the bank gives a positive outcome to both banks and gives higher impact to the conventional banks.

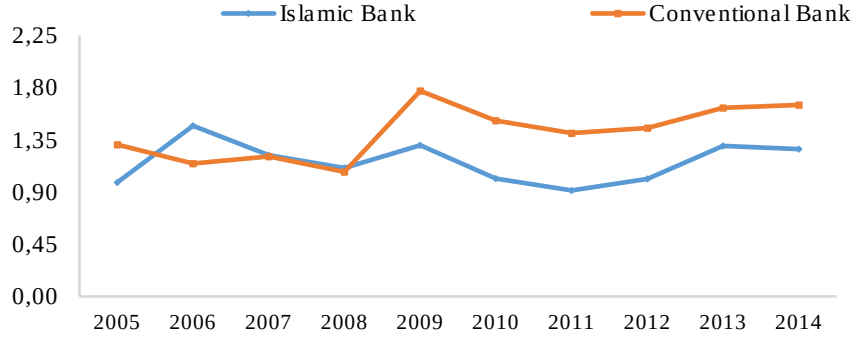

Figure 1: Trend for average z-score for Islamic and conventional banks.

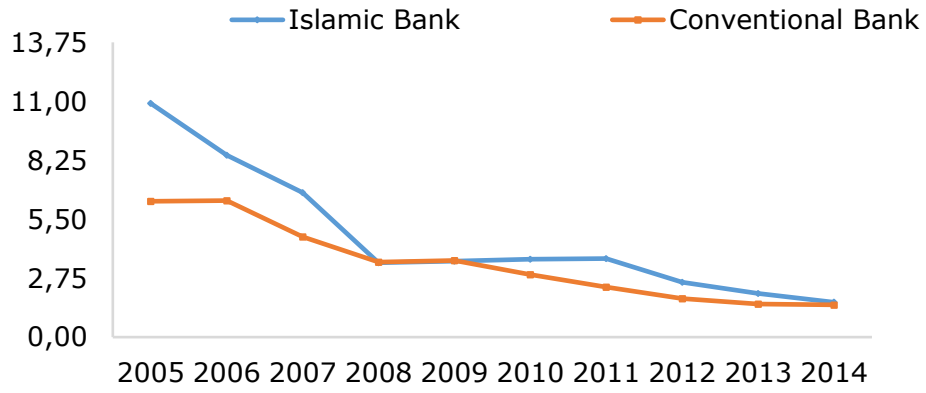

Figure 2: Trend for average NPL for Islamic and conventional banks.

The figure 2 shows the trend for average NPL of the Islamic and conventional banks from 2005 to 2014. The non-performing loan (NPL) trend resembles the rate of impaired loans happened in both Islamic and conventional banks. Islamic banks have a higher average on NPL during 2005-2008. The trend depicts that the Islamic banks have higher default rate as compared to conventional banks. NPL here is derived from the non-performing loan over total loans. The borrower of Islamic banks is tending to default due to the leniency of borrowing in Islamic banks. Islamic banks cannot charge anything on their borrowers if the late payment happen because it will be considered as taking the interest upon the borrowing (riba'). Therefore, the borrowers easily can default. The default rate is reduced due to the new implementation of charges make upon the late payment (ta'widh) to discipline the borrower and avoid the large number of default rate.

The model specified in Eq. (1) serves to test the impact of economic cycle on financial distress for Islamic and conventional banks which co-exist in a banking system. This study runs three separate analysis, for each analysis on Islamic and conventional banks, individually, later for Islamic and conventional banks as one set of banks to observe the behavior in a dual banking system. The present study uses the z-score and NPL as proxies of financial distress. First, the models are estimated using panel least square method and test the pooled least square regression model. The models are assumed not to explicitly contain an unobserved effect which means it assumes a constant intercept and slope of cross section or time. The result indicates that the null hypothesis H_0: $\beta_{ik} = \beta_k$ is rejected, the panel data is not poolable. Next, the models have been estimated using fixed effects model to allow for different intercepts representing each bank. Based on the pool OLS estimation, the results show that the null hypothesis is rejected that is the individual effect associated with the independent variables. The results of Hausman tests statistics for each models suggest different preferences of estimators for the models. Table 2 (Panel A, B and C) present selection of the models. For Islamic banks in Panel A, the Hausman test statistics showed that the insignificant p-value for both models of the Z-score and NPL. Thus, it suggests that random effect model (REM) is the preferred model. However, for Conventional banks and; Islamic and conventional banks as shown in Panel B and C respectively, the Hausman test statistics appeared to be significant at 5 percent level of significant. The results indicate that fixed effect model is the preferred models for both cases.

Table 1 shows the descriptive statistics of variables for 16 Islamic banks, 27 Conventional banks and 43 of total banks in dual banking system in Malaysia over the period of 2005-2014. The Jarque-Bera test indicates that at 5 percent level of significant, the null hypothesis of normality is rejected, all variables are not normally distributed, except for Size of banks for Islamic banks.

Table 1: Summary statistics of variables for Islamic and conventional banks over the period 2005-2014.

	Z-score	NPL	EC	CIR	LAR	HI	SHARE	SIZE	LLRL
Islamic Banks									
Mean	1.1355	3.1105	0.0484	48.931	60.503	83.099	6.3674	9.5089	2.8635
Maximum	4.7628	22.250	0.0740	92.160	139.22	2457.7	49.575	11.8941	14.020
Minimum	0.4791	0.0700	-0.0150	21.200	22.530	0.49194	0.7014	7.6378	0.4000
Standard Deviation	0.7273	3.7231	0.0242	14.192	17.513	257.07	6.5512	0.8393	2.8923
Jarque-Bera	579.01	485.03	123.84	17.046	155.66	20387	1650.61	2.6567	601.59
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2647	0.0000
Conventional Banks									
Mean	1.2568	3.2133	0.0484	43.429	45.622	0.0960	0.1233	9.4874	3.0332
Maximum	4.5596	0.0740	0.0740	92.87	82.170	1.7014	1.0583	13.022	21.520
Minimum	0.4234	-0.0150	-0.0150	18.54	0.4300	7.35E-06	4.70E-05	3.1008	0.0500
Standard Deviation	0.7299	4.3469	0.0242	13.215	23.112	0.2210	0.1822	1.8847	2.7072
Jarque-Bera	170.61	8662.11	123.84	57.251	25.234	2873.0	396.65	6.1484	2198.7
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0462	0.0000
Islamic Banks and Conventional Banks									
Mean	1.2117	3.1751	0.0484	45.533	51.090	31.450	2.5126	9.7631	2.9978
Maximum	4.7628	35.420	0.0740	92.870	139.22	2457.7	49.575	13.022	15.160
Minimum	0.4234	0.0100	-0.0150	18.540	0.4300	7.35E-06	0.0027	6.7783	0.2600

Standard Deviation	0.7301	4.1219	0.0242	13.864	22.3673	162.76	5.0217	1.3990	2.3386
Jarque-Bera	569.99	9983.40	123.84	62.956	25.115	359207	12636.0	9.6684	1509.3
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0079	0.0000

Table 3 summarizes the regression results. Panel A and B present the regression results for Islamic banks and Conventional banks, respectively. Panel C shows the regression results for both Islamic and conventional banks. It comprises of the z-score and NPL as measuring financial distress. The adjusted models for the z-score and NPL show that; first, the pro-cyclical of financial distress on economic conditions for Islamic and conventional banks. Second, the impact of economic cycle on financial distress for both banks are different. Conventional banks exposed to higher insolvency risk during the downturn of economic cycle relative to Islamic banks. The z-score indicates the conventional banks are more distressed relative to the Islamic banks. The impact on NPL for conventional banks also show similar results relative to Islamic banks. Collectively, it showed the pro-cyclicality of financial distress and economic conditions. However, the coefficients values are approaching the values of Islamic banking. The results imply that the operation of Islamic banking in dual banking system, such as Malaysia, provide positive contributions to the banking system as a whole.

In addition, the bank size is positively related to the z-score. This opposite result may be due to other reasons which include the customer's preference or choice of depositing excess funds and taking loans and informational asymmetry of customer; lack of information regarding economic changes in the country (Kanwal and Nadeem, 2013). The result of inflation shows that it positively related to the z-score under Islamic banks. It depicts that as the inflation rate goes higher, the bank performance (z-score) will get better and thus, will demotivate the financial distress. Suria and Roza (2013) in their studies argued that the Islamic banks are expected to have different result as compared to the conventional counterparts. It is due to the nature of Islamic finance principles in terms of the financing and investment that they have to follow regardless of economic environment. In contrast, the inflation affects the NPL negatively in which it is consistent to the previous study that stated in the early study, any changes in inflation can actually influence the emergence of distress (Wadhwani, 1986). It is in line with the literature review where Haron (2004) report that the economies of scale is applicable in Islamic banking sector. Akhavein et al. (1997), Demirguc-Kunt and Maksimovic (1998) also believes in the positive relationship between bank size and banking performance, lower the financial distress. It is because, the bank size is related to the capital adequacy and usually has less expensive capital (Short, 1979). On the other hand, the bank's size is negatively related to the NPL which indicates that there is a negative relationship between bank size and the non-performing loan. The larger the bank size, the lower the possibility for the bank to have default risk. The regression give a different result on the asset quality variable. The higher the ratio of asset quality resulting of less possibility of financial distressed. It is in line with the study of Suria and Roza (2013) which explained that the relationship between the asset quality and the banking performance is commonly positive in nature. On the other hand, the NPL result show that it is positively related in a way that the higher the asset quality, the higher the probability for the bank to default. The different views on asset quality relationship is accordance to the study of Heffernan and Fu (2008) argued that the expected relationship of the asset quality ratio with probability that it can be either positive or negative. It is due to higher provision signals which estimate a possible loan loss in the future or it could also indicate a timely recognition

of weak loan of banks. Next, the cost efficiency shows a negative significant result for z-score but not for NPL under Islamic banks. It is in line with the previous study which stated that the negative relationship is considered as unfavourable to the banks since it denotes that the bank should bear the bigger cost in generating the revenue or income (Hefferman and Fu, 2008 and Siti and Roza, 2013). The concentration index (DHI) only influence the NPL positively. It means that the more concentrated the market of Islamic banks, the higher the rate of non-performing loan in Islamic banks. Berger and Mester (1997) in their study proved that increase in industry concentration is related to lower technical efficiency due to low competition. Furthermore, the market share also influence the z-score for both Islamic and conventional banks. In Islamic banks, the market share is inversely related to the z-score in a way that the higher the market share the higher the possibility of a financial distress. It is consistent with the study by Haron (2004) whereby the contradicting finding is due to the limited opportunity in investment are available in Islamic banks. This is because, Islamic banks focus more on the short-term financing and the demand deposit in Islamic banks not significantly give a high return to the banks since they cannot be invested. Even though Islamic banks able to expand their market share by attracting more deposit funds, they are not actually can be changeable into earning assets (Suria and Roza, 2013). However, the market share is negatively influence the NPL in a way that the higher the market share, the lower the NPL rate. It is because the Islamic banks with a high market share tend to have a big size of asset thus can provide more reserve to cater the issue of insolvency among the customers.

Table 3: POLS, FE and REM models

	Z-SCORE				**NPL**			
Panel A: Islamic Banks								
	POLS	FEM	REM	**REM***	POLS	FEM	REM	**REM***
C	5.4945 (1.2752)	5.0178 (1.1244)	4.7328 (1.2051)	**4.7328** **(1.9201)**	-2.5740 (3.3387)	-0.0477 (3.7212)	-1.8017 (3.3738)	**-1.8017** **(3.3738)**
EC	-0.9832** (0.3856)	-2.8327** (1.1967)	-0.4722** (1.2028)	**-0.472**** **(1.0214)**	3.7826** (1.6421)	13.0227** (6.0226)	12.3828 (7.9245)	**12.3828** **(7.9245)**
SHARE	0.06920* (0.0366)	-0.0764* (0.0391)	-0.1035** (0.0400)	**-0.103**** **(0.0421)**	-0.6882** (0.2857)	-0.4948* (0.2681)	-0.0601** (0.2545)	**-0.0601**** **(0.2545)**
SIZE	0.1009** (0.0439)	0.0735*** (0.0201)	0.0813*** (0.0209)	**0.081***** **(0.0182)**	-0.2304* (0.1357)	-0.3658** (0.1410)	-0.2873** (0.1285)	**-0.2873**** **(0.1285)**
LIQ	0.0184 (0.3005)	0.0598 (0.1366)	0.1646 (0.1413)	**0.1646** **(0.1521)**	-1.1129 (0.9265)	-0.5042 (0.9459)	-0.6806 (0.8770)	**-0.6806** **(0.8770)**
AQ (asset quality)	0.0392* (0.0201)	0.0249*** (0.0095)	0.0615* (0.0098)	**0.0615*** **(0.0064)**	1.4629*** (0.0518)	1.4311*** (0.0563)	1.4441*** (0.0515)	**1.4441***** **(0.0515)**
HI	-2243.90 (1680.01)	-1069.54 (787.57)	-478.96 (827.87)	**-478.96** **(832.14)**	5993.91 (5197.65)	5146.56 (5535.42)	5925.88** (4969.37)	**5925.88**** **(4969.37)**
Cost Efficiency	1.1484*** (0.2616)	0.0038 (0.1446)	-0.4502*** (0.1589)	**-0.4502***** **(0.1421)**	-1.0097 (0.8113)	0.1444 (1.0578)	-0.3919 (0.8687)	**-0.3919** **(0.8687)**
R-squared	0.5091	0.3353	0.7647	**0.7647**	0.9106	0.9402	0.9034	**0.9034**
Adj. R^2	0.4779	0.2930	0.7103	**0.7103**	0.9053	0.9273	0.9034	**0.9034**

F-statistic	16.3017 [0.0000]	7.9283 [0.0000]	14.0377 [0.0000]	**16.3017 (0.0000)**	171.76 [0.0000]	73.5529 [0.0000]	108.73 [0.0000]	**108.73 [0.0000]**

Panel B: Conventional Banks

	POLS	FEM	REM	**FEM***	POLS	FEM	REM	**FEM***
C	7.1656 (0.5347)	10.7248 (1.1524)	7.2525 (1.7815)	**10.7248 (1.1524**	-5.5574 (2.3512)	-0.7634 (5.477)	-5.4470 (2.348)	**-0.7634 (5.9161)**
EC	-2.9166 (3.3963)	-2.6431** (0.8928)	-2.5449 (1.7815)	**-2.6431** (0.8928)**	17.5243** (7.7022)	14.8201** (7.1889)	17.4617** (7.1409)	**14.8201** (7.2041)**
SHARE	0.0352 (0.0340)	0.0270* (0.0157)	0.0173 (0.0261)	**0.0270* (0.0157)**	1.6332 (3.7695)	-0.0524*** (0.0188)	-0.0598 (0.0589)	**-0.0524** (0.0198)**
SIZE	-0.4486*** (0.0409)	-1.0477*** (0.3006)	-0.5641*** (0.0505)	**-1.0477*** (0.3006)**	0.3178*** (0.0821)	0.4426** (0.2149)	0.3136*** (0.0970)	**0.4426** (0.2049)**
LIQ	0.0101*** (0.0031)	0.0097 (0.0072)	0.0182*** (0.0037)	**0.0097 (0.0072)**	0.0061 (0.0060)	-0.0069 (0.0080)	0.0053 (0.0070)	**-0.0069 (0.0089)**
LLRL	-0.0324 (0.0268)	0.0434* (0.0246)	-0.0018 (0.0235)	**0.0434* (0.0246)**	1.1415*** (0.0422)	0.8898*** (0.0392)	1.1193*** (0.0423)	**0.8898** (0.0692)**
HI	-1.2970 (0.7492)	0.0097* (0.0072)	2.39E-05 (0.0002)	**0.0097* (0.0072)**	0.0001 (0.0005)	0.0003*** (0.0001)	0.0002 (0.0004)	**0.0003** (0.0021)**
CIR	0.0340*** (0.0042)	0.0298*** (0.0041)	0.0380*** (0.0039)	**0.0298*** (0.0041)**	0.0189** (0.0080)	0.0211*** (0.0062)	0.0213** (0.0083)	**0.0211** (0.0092)**
R-squared	0.7151	0.7818	0.6758	**0.7818**	0.7193	0.7860	0.7018	**0.7860**
Adj. R^2	0.7054	0.7433	0.6648	**0.7433**	0.7092	0.7534	0.6911	**0.7503**
F-stats	73.8634 (0.0000)	20.2739 (0.0000)	61.3536 (0.0000)	**20.2739 (0.0000)**	71.7557 (0.0000)	22.039 (0.0000)	65.9017 (0.0000)	**22.039 (0.0000)**

Panel C: Islamic Banks and Conventional Banks

	POLS	FEM	REM	FEM*	POLS	FEM	REM	FEM*
C	7.1656 (0.5347)	9.0956 (0.8514)	4.9588 (0.4591)	**9.0956 (0.8514)**	-4.9518 (1.0392)	-1.1614 (3.5190)	-4.2473 (1.3458)	**-1.1614 (3.5190)**
EC	-2.6484** (1.2034)	-1.6531** (0.2705)	-2.0290* (1.2617)	**-1.6531** (0.2705)**	11.5555** (5.0368)	11.1135** (4.6618)	11.1334** (4.6336)	**11.1135** (4.6618)**
SHARE	-0.0609*** (0.0145)	0.0893* (0.0348)	-0.0298 (0.0199)	**0.0893* (0.0348)**	0.0508 (0.0456)	-0.2367* (0.1342)	0.0111 (0.0570)	**-0.2367* (0.1342)**
SIZE	-0.3716*** (0.0145)	-0.9715*** (0.0879)	-0.5064*** (0.0449)	**-0.9715*** (0.0879)**	0.2929*** (0.0975)	0.1066 (0.3726)	0.2702** (0.1309)	**0.1066 (0.3726)**
LIQ	0.0018 (0.0021)	0.0028 (0.0035)	0.0035 (0.0026)	**0.0028 (0.0035)**	0.0061 (0.0067)	-0.0110 (0.0133)	0.0015 (0.0082)	**-0.0110 (0.0133)**
LLRL	-0.0407** (0.0166)	-0.0475** (0.0186)	-0.0311* (0.0159)	**-0.0475** (0.0186)**	1.4659*** (0.0439)	1.2994*** (0.0553)	1.4045*** (0.04552)	**1.2994*** (0.0553)**

HI	0.0014***	-0.0010*	0.00038	**-0.0010***	-0.0015	0.0042*	-0.0004	**0.0042***
	(0.0004)	(0.0006)	(0.0005)	**(0.0006)**	(0.0013)	(0.0024)	(0.0015)	**(0.0024)**
CIR	0.0323***	0.0323***	0.0285***	**0.0323*** **	-0.0015	-0.0016	-0.0004	**-0.0016**
	(0.0032)	(0.0035)	(0.0029)	**(0.0035)**	(0.0076)	(3.5191)	(0.0084)	**(3.5191)**
R-squared	0.5578	0.7670	0.4553	**0.7670**	0.7884	0.8427	0.7519	0.8427
Adj. R^2	0.5482	0.7275	0.4435	**0.7275**	0.7838	0.8179	0.7465	0.8179
F-stats	58.3872	19.4138	38.69	**19.4138**	171.43	33.8331	139.44	**33.8331**
	(0.0000)	(0.0000)	(0.0000)	**(0.0000)**	(0.0000)	(0.0000_	(0.0000)	**(0.0000_**

Notes: ***, **, * significant at the 1%, 5% and 10% respectively. Standard errors are given in parentheses.

There are several contradicting relationships as compared to the Islamic banks. The regression results show that there is negative relationship between bank size (LTA) and the z-score at 1% of significance level. On the other hand, there is a positive relationship between the bank size and the NPL. The larger the bank size, the higher the possibility of the bank to default. These results is in line with the study of Demirguc-Kunt and Huizinga (2012) where large banks resulted in the banks are too big to save, offsetting the effect of too-big-to-fail subsidies since the large banks commonly faced higher funding rates systemically and consistent with the lower profitability which then could give higher risk that led to financial distress. The asset quality under conventional banks depict that there is a positive relationship between asset quality with the z-score and NPL. The higher the quality of asset, the higher the z-score which also resembles the better performance of the bank. However, the positive relationship with NPL is contradicted to the previous study. The study finds that the banks that rely heavily on loans have lesser profitability, thus, increase the possibility of the banks to experience the financial distress (Bashir and Hassan, 2003; Staikouras and Wood, 2003).

Next, the regression results show that the concentration index (HI) is significantly influenced the NPL of conventional banks. Similar to Islamic banks, the concentration index positively affects the NPL and it is supported by the results from Berger and Mester (1997) that the increase in industry concentration is related to lower technical efficiency due to low competition. The market share has positively influenced the z-score but negatively affected NPL under the conventional banks. The result indicates that the market share variable can influence the z-score at 10% level of significance and influence the NPL at 1% level of significance. Hence, it shows that the result is consistent with the study by Suria and Roza (2013) whereby the greater the amount of market share, the greater the funds made available to the bank for investment and will increase the performance and lower down the risk of bank from being bankrupt.

The models have gone through several diagnostic tests. One important issue in panel data causality analysis is to take into account possible cross-section dependence across banks. The Jarque-Bera shows that the standardized residual is normally distributed. Meanwhile, at 5 percent significant level, the diagnostic tests confirm that there is cross sectional dependency presence in the model in Table 4.Therefore, the study uses the corrected standard errors and produces the results as reported in column (4) for each Panel, Table 3. Table 3 presents the panel data estimation for coefficients corresponding to each variable for POLS, Fixed effect Model, Random effect model and Random effect model with corrected standard errors. Models in column (4) for each Panel present the robust coefficients estimation using adjusted standard errors.

Conclusions

The study examines the impact of economic cycle on financial distress for Islamic and conventional banks which co-exist in a banking system. This study runs three separate analysis, for each analysis on Islamic and conventional banks, individually, later for Islamic and conventional banks as one set of banks to observe the behavior in a dual banking system. The present study uses the z-score and NPL as proxies of financial distress. The study makes use of panel data analysis and utilizes data from 16 Islamic banks and 27 conventional banks that listed under Bank Negara Malaysia from 2005 to 2014.

Firstly, the average z-score shows that the Islamic banks obtain higher z-score as compared to the conventional counterparts during 2005-2008 and the conventional get higher z-score after recovered from the crisis after 2009. The NPL shows that the Islamic banks recorded the higher default rate than the conventional banks throughout the years from 2005 until 2014. Yet, the default rate are reducing from time to time due to the control steps taken by the Islamic banks to reduce the default rate among the borrowers. Secondly, the results revealed that the pro-cyclical of financial distress on economic conditions for Islamic and conventional banks. However, the impact of economic cycle on financial distress for both banks are different. Conventional banks exposed to higher insolvency risk during the downturn of economic cycle relative to Islamic banks. The z-score indicates the conventional banks are more distressed relative to the Islamic banks. The impact on NPL for conventional banks also show similar results relative to Islamic banks. Collectively, the result also found the pro-cyclicality of financial distress and economic conditions. However, the coefficients values are approaching the values of Islamic banking. The results imply that the operation of Islamic banking in dual banking system in Malaysia, provide positive contributions to the banking system as a whole. In addition, the study showed that the variables that have significant factors towards financial distress for both Islamic banks and conventional banks are bank size, asset quality, efficiency, market share, GDP, inflation and concentration index. The similarities in term of significant variables indicates that the conventional and Islamic banks are two institution that have done similar process of operation, even though they are different in terms of contract and their underlying asset used especially in Islamic banks. Despite of similarities in significant variables, there are a bit difference that can be observed from these results in which the relationship (positive and negative relationship) between independent variables and the financial distress are varies. Thirdly, empirical evidence indicates that the market share, concentration index, efficiency and asset quality highly influencing on the financial distress under Islamic bank while under conventional bank, the financial distress is influenced by the bank size, GDP and inflation.

In order to preserve the sustainability and resiliency of the banks, the bank management should instill sound lending procedures by looking at the credit worthiness seriously. Besides, the bank should increase their reserves in term of their asset quality (loan loss reserve to total loan) and capital adequacy ratio to make sure their bank can be safeguarded in a crisis. Next, the bank should tighten up their internal control and the operation itself. The efficiency of the bank can be improved by having the business realignment and gradually move to more cost-effective business. In doing so, the bank should minimize their resource obligation. For instance, the bank should consider shifting to the non-traditional system and enhancing their technological advance by changing to more modernized banking system. It can improve the efficiency of the banks and subsequently could boost up the size of their market share. Apart from that, the policy maker like Bank Negara Malaysia should strengthen the supervision and regulation on the banking industry in order for them to always be on track and be more resistant especially in the time of crises.

Acknowledgement

This paper acknowledges the research funding contributed by the Ministry of Higher Education (MOHE) 600-IRMI/FRGS5/3(132/2014).

References

Al Quran al-kareem

Abdelaziz, C. & Lateef, A.M. (2010). Risk Exposure During the Global Financial Crisis: The Case of Islamic Banks. International Journal of Islamic and Middle Eastern Finance and Management, 3(4), pp. 321–333.

Akhavein, J. D., Berger, A. N. & Humprey, D. B. (1997). The Effects of Megamergers in Efficiency and Prices: Evidence from A Bank Profit Function. Review of Industrial Organization, 12(1), pp. 95-139.

Ali, S. S. (2007). Financial Distress and Bank Failure: Lessons from Closure of Ihlas Finans in Turkey. Islamic Economies Studies, 14(1 & 2).

Al-naseer, SAS, & Muhammad J. (2017). Financial crisis, legal origin, economic status and multi-banks performance indicators: Evidence from Islamic banks in developing countries. Journal of Applied Accounting Research, vol 18 (2), 208-222.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankcruptcy. The Journal of Finance, 23(4), pp. 589-609.

Ayman, A. M., Faizul, H. & Mahmoud, K. A. (2013). Islamic Banking Vs Conventional Banking, During the Global Financial Crisis: Malaysia As a Case. Journal of Islamic and Human Advanced Research, 3(1), pp. 27-40.

Bank Negara Malaysia, The annual reports (various isssues).

Bashir, A. M. & Hassan, M. K. (2003). Determinants of Islamic Banking Profitability, presented on the ERF 10th Annual Conference.

Berger, A. N. & Mester, L. J. (1997). Inside the Black Box: What Explains Differences in the Efficiencies of Financial Institutions. Journal of Banking and Finance, 21(7), pp. 895-947.

Betz, F., Oprică, S., Peltonen, T. A. & Sarlin, P. (2013). Predicting distress in European banks. Macroprudential Research Network, no. 1597.

Boyd & Graham (1986), Risk, regulation and Bank holding company expansion into nonbanking, Quarterly Review, 10(2).

Boyd, Graham & Hewitt (1993). Bank holdng company mergers with nonbank financial firms: Effects on the risk of failure, Journal of Banking & Finance, 17(1), pp. 43-63.

Demirguc-Kunt, A. & Detragiache, E. (1998). The Determinants of Banking Crises in Developing and Developed Countries. IMF Stuff papers, pp. 81-109.

Demirgüç-Kunt, A. & Maksimovic, V. (1998). Law, Finance, and Firm Growth. The Journal of Finance, 53(6), pp. 2107-2137.

Demirguc-Kunt, A. & Huizinga, H. (2012). Do We Need Big Banks? Evidence on Performance, Strategy and Market Discipline. Journal of Financial Intermediation, 22(4), pp. 532-558.

Demyanyk, Y. & Hasan, I. (2010). Financial Crises and Bank Failures: A Review of Prediction Methods. The International Journal of Management Science, 38, pp. 315-324.

Eisenbeis, R. A. & Kwast, M. L. (1991). Are Real Estate Depositories Viable? Evidence from Commercial Banks. Journal of Financial Services Research, pp. 5-24.

Geanakoplos, J. (2010). The Leverage Cycle. Cowles Foundation Discussion Paper no. 1715R.

Hannan, T. H. & Hanweck, G. A. (1988). Bank Insolvency Risk and the Market for Large Certificates of Deposit. Journal of Money, Credit and Banking, 20(2), pp. 203-211.

Haron, S. (2004). Determinants of Islamic Bank Profitability. Global Journal of Finance and Economics,1(1), pp. 1-22.

Haron, S. & Azmi, W. N. (2009). Islamic Finance and Banking System: Philosophies, Principles and Practice. Kuala Lumpur, McGraw-Hill.

Hefferman, S.& Fu, M. (2008). The Determinants of Bank Performance in China. SSRN Working Paper Series, 25th August 2008.

Jaizah, O. (2013). Analysing Financial Risks in Malaysian Islamic Banks: Exploring Integrative Predictive Methods. Durham theses, Durham University. Available at Durham E-Theses Online: http://etheses.dur.ac.uk/6377/

Kanwal, S., & Nadeem, M. (2013). The Impact of Macroeconomic Variables on the Profitability of Listed Commercial Banks in Pakistan. European Journal of Business and Social Sciences, 2(9), pp. 186-201.

Kazemian, S. Et. Al (2017). Monitoring mechanisms and financial distress of public listed companies in Malaysia, Journal of International Studies, 10(1) pp. 92-109.

Lepetit & Strobel (2015). Bank insolvency risk and z-score measures: A refinement. Finance Research Letter, 13(c), pp. 214-224.

Liang, J. N. & Savage, D. T. (1990). The Non-Bank Activities of Bank Holding Companies. Federal Reserve Bulletin, pp. 280-292.

Martin, J.D. & Keown, A.J. (1977). Interest rate sensitivity and portfolio risk, The Journal of Financial and Quantitative Analysis, 12(2), pp. 181-195.

Mazila, M. Y., Yaasmin, F. & Fauziah, M. Y. (2014). Financial Risks and Performance Relationship of Banks in Malaysia. Journal of Global Business and Economics,9(1).

Mirzaei, A. (2011). The Effect of Market Power on Stability and Performance of Islamic and Conventional Banks. Islamic Economic Studies, 18(1 & 2).

(Naimy, 2005). Overall Lebanese Banks' performance: A risk-return framework. International Business & Economic research Journal, 4(1)

Nurul, H. & Abdul, R. (2012). Financial Risks-Detection Model for Islamic Banks. International Journal of Trade, Economics and Finance, 3(3).

Saleh, S, A & Zeitun, R. (2006). Islamic Banking Performance in the Middle East: A Case Study in Jordan. Review of Islamic Economics, 2(1), pp 41-62.

Senbet, L. W. &Wang, T. Y. (2012). Corporate Financial Distress and Bankruptcy: A Survey. Forthcoming, Foundations and Trends in Finance.

Short, B.K., (1979). The Relation Between Commercial Bank Profit Rates and Banking Concentration in Canada, Western Europe and Japan. Journal of Banking and Finance, 3, pp. 209-219.

Sinkey, J. F. Jr. & Nash, R. C. (1993). Assessing the Riskiness and Profitability of Credit Card Banks. Journal of Financial Services Research, 7(2), pp. 127-150.

Siti, R. M. & Roza, H. Z. (2013). Comparison On Stability Between Islamic and Conventional Banks in Malaysia. Journal of Islamic Economics, Banking and Finance, 9(3).

Suria, R. S. & Roza, H. Z. (2013). The Performance of Islamic Banks and Macroeconomic Conditions. Isra International Journal of Islamic Finance, 5(2).

Wadhwani, S. B. (1986). Inflation, Bankruptcy Default Premia and the Stock Market. The Economic Journal, 96 (381), pp. 120-138.

Wheelock, D. C. & Wilson, P. W. (2000). Why Do Banks Disappear? The Determinants of U.S. Bank Failures and Acquisitions. The Review of Economics and Statistics, MIT Press, 82(1), pp. 127-138.

APPENDIX:

Table 2: Tests for selection of models.

Panel A: Islamic Banks for Z-score and Non-Performing loan (NPL)

	Lagrange Multiplier Tests	Redundant Fixed effects Tests	Hausman Test
Chi-Sq. statistic, d.f			10.1985; 7 (0.1776)
			6.74112;7 (0.4563)
Cross-section F		6.8807;15,95 (0.0000)	
		3.3881;15,103 (0.0001)	
Cross-section Chi-square		86.7833;15 (0.0000)	
		50.5342;15 (0.0000)	
Breusch-Pagan	26.7823 (0.0000)		
Cross-section	18.3957 (0.0000)		
	28.1511 (0.0000)		
Both	19.2138 (0.0000)		

Panel B: Conventional Banks for Z-score and Non-Performing loan (NPL)

	Lagrange Multiplier Tests	Redundant Fixed effects Tests	Hausman Test
Chi-Sq. statistic, d.f			26.3887(0.0004)
			29.124;7(0.0001)
Cross-section F		2.2162;25;181 (0.0015)	
		2.4651;22,174(0.0006)	
Cross-section Chi-square		57.1486;25 (0.0003)	
		55.3486;22(0.0001)	
Breusch-Pagan	0.10015 (0.7517)		
Cross-section	7.0544(0.0079)		
	1.7221(0.1894)		
Both	7.4252(0.0064)		

Panel C: Islamic and Conventional Banks for Z-score and Non-Performing loan (NPL)

	Lagrange Multiplier Tests	Redundant Fixed effects Tests	Hausman Test
Chi-Sq. statistic, d.f			48.62;7(0.0000) 15.63;7(0.0287)
Cross-section F		6.2001;41,283 (0.0000) 2.5834;38,284(0.0000)	
Cross-section Chi-square		212.78;41 (0.0000) 97.97;38(0.0000)	
Breusch-Pagan	55.70(0.0000)		
Cross-section	18.94(0.0000)		
	56.55(0.0000)		
Both	22.17(0.0000)		

Note: Values in the parentheses are p-values.

Table 4: Diagnostic Tests

Normality Test (Standardized residuals)		Residual Dependence Test (Cross section)	
Panel A: Islamic Banks			
Jarque-Bera	145.9802 (0.0000) 89.7643 (0.0000)	Breusch-Pagan LM	232.1342 (0.0000) 195.5628 (0.0000)
		Pesaran Scaled LM	7.2382 (0.0000) 4.87756 (0.0000)
Panel B: Conventional Banks			
Jarque-Bera	1036.687 (0.0000) 3814.53 (0.0000)	Breusch-Pagan LM	450.94(0.0000)
		Pesaran Scaled LM	11.75(0.0000)
Panel C: Islamic Banks and Conventional Banks			
Jarque-Bera	3186.42 (0.0000) 8063.14 (0.0000)	Breusch-Pagan LM	949.54 (0.0000)
		Pesaran Scaled LM	11.59 (0.0000)

Note: Numbers in parentheses are p-value