KEY FACTORS INFLUENCING CREDIT RISK OF ISLAMIC BANK: A MALAYSIAN CASE

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Abstract

The rapid and dynamic changes in the global financial landscape pose various risks to banking institutions. Operating side by side with conventional banks, Islamic banks are equally vulnerable to risks. The future of Islamic financial institutions will depend to a large extent on how well they manage risks. This ability could be enhanced if the factors affecting these risks are systematically identified. This paper examines the factors affecting credit risk, being the main risk faced by banking institutions and systematically identifies the key factors influencing credit risk formation in Islamic banking operations in Malaysia. A comparison of these factors between Islamic and conventional banking operations is highlighted. Several policy implications are addressed to promote risk management culture in Islamic banking industry.

Key words: banking institutions, credit risk, Islamic banking.

Introduction

The rapid and dynamic changes in the global financial landscape pose various risks to banking institutions. Operating side by side with conventional banks, Islamic banks are not spared but equally vulnerable to risks. The exception is that the nature of risks facing Islamic banking is unique. This uniqueness arises from the composition of its assets and liabilities.

On the asset side, investments, whose funds are Shari'ah based, can be undertaken in the form of profit sharing modes of financing (Mudarabah and Musharakah), fixed-income modes of financing such as Murabahah (cost-plus or mark-up sale), installment sale (medium/long term murabahah), Istisna /salam (object deferred sale or prepaid sale) and Ijarah (leasing). In contrast, on the liability side, its deposits can either be kept in the form of current accounts or in investment accounts. Current account depositors get their deposits on demand whilst investment depositors in Islamic bank are rewarded with the opportunity to share with the bank the profit and business risks (or losses) of the investment activity. The different nature of its asset and liability composition and the profit and loss sharing basis change the nature of risks that Islamic banks face (Khan and Ahmed, 2001).

Past studies have covered extensively on risk and factors contributing to risks of financial institutions in the conventional banking system (Khan and Ahmed, 2001; Hassan, 1993,1994; Berger and DeYoung, 1997; Angbazo et al., 1998;Ahmad, 2003). Despite its importance to

achieving good risk management in Islamic banking, these factors have not been widely investigated and documented. Previous attempts to study Islamic banking mainly evolve on conceptual issues underlying interest free system (Hassan and Bashir, 2002). The issue of the viability of Islamic banks has not received great attention. Hence, given the unique nature of Islamic banking and the dynamic changes in the global financial markets, which pose numerous risks to banks, there is a need to identify empirically, key factors influencing risk formation in Islamic banks – an area that has not been widely studied.

Credit risk is one of the main risks that seriously affect banks' viability as evident from the 1997 financial crisis. To this extent, Sarker (1999) found that the amount of bad debt in Islamic banking is growing. Further, Khan and Ahmed (2001) find that bankers of the view that there is a lack of understanding of risks involved in Islamic banking. This gap justifies new efforts to examine as to why Islamic banking experiences increasing bad loans and high credit risk. This entails an investigation on the factors influencing Islamic banking credit risk. To ensure that the viability and sustainable growth of Islamic banking is maintained, it is important that these factors be identified early to ensure necessary precautions and preventions are taken. It is a modest attempt in this paper to (i) investigate the factors influencing credit risk of Islamic banking and (ii) identify whether there exists any difference between credit risk determinants of Islamic banking and conventional banks in Malaysia.

By examining closely the relationship between bank specific factors and credit risk of Islamic banking and conventional banks, this paper aims to contribute to the existing literature in several ways. First, the paper provides descriptive statistics about Islamic and selected conventional banks risk characteristics. Second, it uses regression analysis to determine the underlying factors influencing risk of Islamic banking and that of the major six anchor banks on interest-based banking system. This is done by carefully identifying and examining for each year, each risk predictor of Bank Islam Malaysia (BIMB) and the Islamic windows of 6 anchor banks (for *Islamic banking*) as well as risk predictors of the 6 anchor banks from their conventional banking performance (for *conventional banking*). The analysis shed lights as to what factors critical to influencing credit risk in Islamic banking in Malaysia. The identification of these factors provides information that the bank management and regulators should pay attention to, in order to improve risk management in Islamic banking. Third, the paper contributes to the current literature, new information on the similarities and differences between credit risk predictors of Islamic banking and conventional banking.

This paper is organized as follows. Section 2 outlines the performance of dual banking systems in Malaysia. Section 3 entails review of related literature. Section 4 describes the methodology followed by analysis of results in Section 5. Section 6 concludes the paper with contribution of the study and policy implications.

2.   Performance of Islamic Banking Systems in Malaysia

In 1984, the Islamic banking was introduced in Malaysia with the establishment of Bank Islam Malaysia Berhad. The revival of Islam worldwide has paved the way for Islamic banking growth as more people consciously seek to lead their lives in accordance with the *Syariah*. In tandem with the global trend, Islamic banking in Malaysia has achieved a rapid expansionary performance since its inception in 1984. Its commendable performance and its presence as an alternative banking with good growth potential have in fact, been the hallmark for Islamic banking among many Muslim countries.

The sudden impetus to the growth was attributed by the innovative measure taken by Bank Negara Malaysia to allow conventional banks, finance companies and merchant banks to offer Islamic banking services or *Islamic windows* through the creation of Interest-free Banking Schemes. This scheme introduced in 1993 was later improved to be the present *Skim Perbankan Islam (SPI)*. As at end 1999, there are 46 SPI windows. The number of banks has increased since then, with the current policy of permitting foreign banks to offer Islamic banking products

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and services. The total deposits and financing of Islamic banking grew from RM2.2 billion and RM1.1billion in 1993 to RM47.1billion and RM 43.7billion by December 2003. Its market share (represented by the percentage of loans over the total loans of the banking system) increased from 0.3% in 1984 to 9.7% in 2003. With a greater number of players and the incorporation of a second Islamic bank; Bank Muamalat Berhad in 1999, the Islamic banking is poised for further growth and is competing aggressively with the conventional banking, particularly in extending financing to customers. These funds are extended to different sectors of the economy.

In the case of conventional banks, the funds are extended to customers as loan, advances or financing. These modes are interest-based and credit risk is borne entirely by a conventional bank. But for Islamic banking, the financing extended to customers is mostly in the form of credit sale (al-murabahah and ijara wa iqtina) in which an Islamic bank will purchase goods on a cash basis and sell to customers on credit terms. This financing (known as cost-plus or mark-up sale) accounts for more than 90 percent of its total assets (Rosly and Abu Bakar, 2003) in Malaysia. The second largest financing mode is on profit sharing (Mudarabah and Musharakah). Unlike conventional banks, the depositors of an Islamic bank through the profit and loss sharing basis absorb the credit risk.

The recent development in Islamic banking in Malaysia is the establishment of the Islamic Financial Services Board (IFSB). IFSB has the important mandate of developing prudential standards to cater to the unique features of Islamic banking operations. One of the focus areas in Islamic banking is on instituting robust risk management practices and system.

3.   Literature Review

Credit risk in banking is commonly defined as the probability of a borrower defaulting his loan commitments. Credit risk in an Islamic bank is in the form of settlement/payment risk arising when one party to a business transaction pays money (for example Salam or Istina contract) or deliver assets (Murabahah contract) before receiving its own assets or cash, thereby exposing it to potential loss.(Khan and Ahmed, 2001)

A research to Islamic financial institutions in 28 countries by Khan and Ahmed (2001) find that credit risk is found highest in Musharakah (3.69 from a score of 5) followed by Mudarabah (3.25). Their findings highlights that the bankers perceive profit-and –loss sharing (PLS) modes to have higher credit risk. Mark-up risk is found highest in product- deferred contracts of Istina (3.57). Sundararajan and Errico (2002) opine that while PLS modes may shift the direct credit risk of Islamic banks to their investment depositors, they may also increase the overall degree of risk of the asset side of banks' balance sheet since the assets under this mode are uncollaterised. Their deductive intuition is that in principles, the ratio of riskier assets to total assets should typically be higher in an Islamic bank than in conventional bank.

Samad and Hasan (1999) study on Malaysian Islamic banking reveals that Bank Islam performance of risk from 1984-1997 in risky business measured by debt-equity ratio (DER), debt to total Assets (DTAR) and Earning Multiplier (EM) increased over the years. DER and EM are significantly related to profitability. In comparison with two conventional banks; Bank Pertanian and Perwira Affin Bank, Bank Islam risk indicators are lower. The reason for low risk of the Islamic bank is that its investment in government securities is much larger than the conventional banks.

In a study over 1984-1994 period, Makiyan (2003) find that in the Iranian Islamic banking system, the supply of loan is significantly dependant on the changes in total deposits, the changes in the rate of inflation and the changes the time lags of the variables but it is not related to the changes in the expected rate of return on loans assigned to various economic sectors.
As for conventional banks, Brewer, Jackson and Mondschean (1996) find that loan sectors are associated with risk. Fixed-rate mortgage loans, investment in service corporations

and real estate loans are found to be significant but negatively related to risk. Non-fixed rate mortgage loan is however, significant and positively related to risk.

Berger and DeYoung (1997) find lagged risk-weighted asset (RWA) is significantly and positively related to credit risk measured by NPL to total loans. They rationalized that a relatively risky loan portfolio will result in higher NPLs. Lagged Capital measured by equity capital to total assets shows mixed results. For thinly capitalized banks, lagged Capital coefficient estimate is significantly but negatively related to risk. This finding supports the moral hazard hypothesis, and suggests that, on an average, thinly capitalized banks take more risky loans, which potentially could lead to higher NPLs

LLP (loan loss provision to average loans outstanding) has been identified in banking literature as a proxy for credit risk (Rose, 1996: 196). Ahmed (1998) find LLP to be positive and is significantly associated with NPL. Hence, a higher LLP indicates an increase in risk and deterioration in loan quality. Fisher, Gueyie and Ortiz (2000) find similar results where LOANQUAL (LLP to total loans) is positively related to risk. They also find Size, (LOGTA), is negative and is significantly related to risk.

4.   Methodology

4.1   Data

The data comprises Islamic banking data and conventional banking data. The Islamic banking data is extracted from the audited annual reports of Bank Islam Malaysia and the audited financial statements of SPI from 6 anchor banks – AmBank Berhad, Maybank Berhad, Eon Bank Berhad, Public Bank Berhad, Affin Bank Berhad and RHB Bank Berhad. The conventional banking data is compiled from the income statements and balance sheets of the 6 anchor banks: AmBank Berhad, Bumipura-Commerce Bank Berhad, Maybank Berhad, Eon Bank Berhad, Public Bank Berhad, Affin Bank Berhad and RHB Bank Berhad. The data is from 1996 to 2002.

4.2   Modeling Credit Risk Determinants

Based on a survey of related literature on risk determinants (Ahmad, 2003;Hassan, 1992,1993; Hassan et al.,1994; Shrieves and Dahl,1997;Angbazo et al,1998), several variables have been identified to form the regression model. NPL to total loans is taken as a proxy for credit risk (Rose, 1996; Berger and DeYoung, 1997; Corsetti, Persenti and Roubini,1998). The estimated predictors consist of seven variables: management efficiency (MGT), leverage (LEV), risky sector loan exposure (RSEC), regulatory capital (REGCAP), loan loss provision (LLP), funding cost (FCOST), Risk-weighted assets (RWA), natural log of total assets (LNTA) and proportion of loan to deposit (LD).

It is expected that credit risk (CR) have a negative relationship with MGT, LNTA and REGCAP. Lower efficiency in managing earning assts would probably lead to higher credit risk; size and capital are risk- related as smaller capitalized bank tend to have lower capacity to absorb losses. On the other hand, LLP, FCOST, RSEC, LEV, RWA and LD are expected to have positive relationship with CR. A bigger loan loss provision is required if a bank anticipated its credit risk to be higher. Costs related to funding the operations such as loan monitoring, rescheduling and recovery efforts in the event of high problem loans are expected to increase. Similarly, greater exposure to risky sectors and a larger proportion of risk-weighted assets tend to have higher probability of credit risk.

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4.3   The Model

The equation for the model used in this study is:

$$CR_{it} = \lambda_0 + \lambda_1 lnMGT_{it} + \lambda_2 lnLEV_{it} + \lambda_3 lnRSEC_{it} + \lambda_4 lnREGCAP_{it} + \lambda_5 lnLLP_{it} + \lambda_6 lnFCOST_{it}$$
$$+ \lambda_7 lnRWA_{it} + \lambda_8 LNTA_{it} + \lambda_9 lnLD_{it} + \varepsilon_{j,t}$$

Where dependent variable is:

CR_{it} = non-performing loan for the current year to total loan of bank i in year t

MGT_{it} = earning assets to total assets of bank i in year t

LEV_{it} = tier 2 capital to tier 1 capital of bank i in year t

$RSEC_{it}$ = risky sector loans (RSEC) to total loans bank i in year t

   RSECT = property loans *(residential properties loans + non-residential property loans + real estate loans + construction loans)* + purchase of securities loans + consumption credit loans

$REGCAP_{it}$ = tier 1 capital to total assets of bank i in year t

LLP_{it} = loan loss provisions to total loans of bank i in year t

$FCOST_{it}$ =   loan loss provisions to total loans of bank i in year t

RWA_{it} =   loan loss provisions to total loans of bank i in year t

$LNTA_{it}$ =   loan loss provisions to total loans of bank i in year t

LD_{it} =   loan loss provisions to total loans of bank i in year t

All the variables are transformed into log to correct for non- linearity and to reduce multi-collinearity. White (1980) procedure is used to ensure that the coefficients are heteroskedastic.


5.   Empirical Results

This section presents and analyses the descriptive statistics, independent t-test of means of Islamic and conventional banking independent variables and regression results. Table 1 and Figure 1 show that the credit risk of Islamic banking followed closely the trend of the industry and that of the conventional banking. Its credit risk is higher than the industry since 1998 but recorded an improvement in 2002. This trend, which shows high credit risk borne by Islamic banking is similar to the findings of Samad and Hassan (1999).

Table 1: Credit Risk (CR) of Malaysian Financial Institutions

	1996	1997	1998	1999	2000	2001	2002
Islamic banks(%)	2.0	1.9	22.1	7.7	7.4	15.4	6.1
Industry(%)	3.7	4.1	8.1	6.4	6.3	6.1	7.5
anchor banks(%)	4.4	6.7	16.3	14.0	9.0	12.4	10.4

Figure 1 shows the trend in credit risk of Islamic banking and conventional banking over the test period 1996-2002 relative to the overall industry.

Figure1: Credit Risk (CR) of Banking Institutions
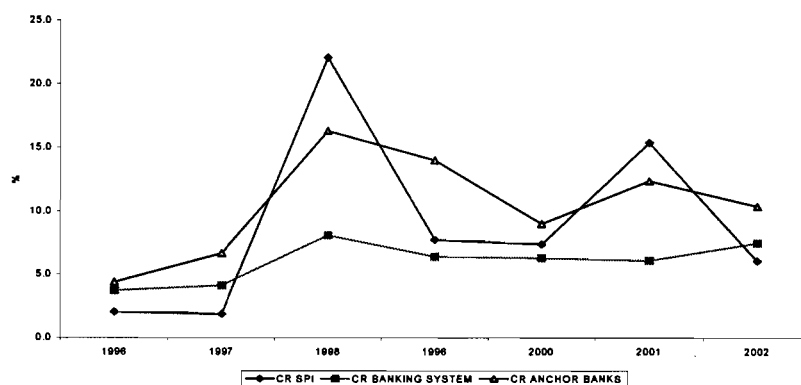
To see the difference between credit risk predictors of Islamic banking and conventional banking, independent t-test was conducted. Table 2 highlights the statistical means of each predictor and the test of equality. The analysis show that means of seven (7) Islamic banking risk predictors are significantly different from their conventional counterparts. The two predictors that are not significantly different from those of conventional banking are management efficiency (MGT) and loans to risky sector (RSEC). The latter statistic suggests that the composition of Islamic banking loan portfolio in risky sectors mirrors the loan sectoral exposure of the anchor banks. This partly explains why credit risk means of the two groups are not significantly different from one another.

Table 2: Results of Independent T-test

	Islamic	Conventional		
Variable	mean	mean	t-test	p-value
MGT	0.668	0.651	0.833	0.408
LEV	0.225	0.390	-2.051	0.044
RSEC	0.397	0.375	0.761	0.450
REGCAP	0.052	0.074	-2.946	0.004
LLP	0.012	0.019	-2.322	0.023
FCOST	0.009	0.049	-10.947	0.000
RWA	0.307	0.538	-3.528	0.001
LNTA	2.743	2.889	-11.004	0.000
LD	0.809	1.013	-2.144	0.036

The funding cost (FCOST) of Islamic banking is very much smaller than the conventional banking because of the absence of interest expense. This is a plus factor to Islamic banking. The mean of loan to deposit ratio (LD) is also significantly different from conventional banking. Table 2 shows that Islamic banking, on average had mobilised 81 percent of its deposits to give out financing to customers. This is a lower ratio compared to conventional banks, which had extended loans whose amounts was 1.013 times more than its deposits. This suggests a high probability of liquidity risk in the event of high default rate.

Table 3 : Results of Determinants of Credit Risk

Variable	Islamic Banking			Conventional Banking		
	Coefficient	t- statistic	probability	Coefficient	t- statistic	probability
MGT	0.659	2.304**	0.029	-0.075	-1.338	0.189
LEV	0.136	1.492	0.148	0.002	0.145	0.885
RSEC	0.065	0.473	0.640	0.122	2.721***	0.009
REGCAP	0.346	0.602	0.553	-0.840	-2.447**	0.019
LLP	-2.076	-1.209	0.238	2.247	6.441***	0.000
FCOST	-0.176	-0.148	0.883	-0.143	-0.257	0.798
RWA	0.092	3.446***	0.002	0.133	2.215**	0.033
LNTA	-0.987	-2.320**	0.029	-0.161	-1.296	0.203
LD	-0.003	-0.103	0.919	-0.027	-1.478	0.147
R-squared	0.34			0.756		
DW	1.81			1.8		
N	35			49		

*,** and *** indicate 10,5 and 1 percent level.

Table 3 shows the regression results of the factors influencing credit risk of Islamic banking (represented by BIMB and Islamic windows) and conventional banking (represented by 6 anchor banks). For Islamic banking, three variables i.e. MGT, RWA and LNTA are significantly related to its credit risk. For conventional banking, 4 variables i.e. RSEC, REGCAP, LLP and RWA are significantly influencing its credit risk. The higher R-square of 75.6 percent in conventional banking compared to 34 percent in Islamic banking suggests that these variables collectively have a stronger influence on the credit risk of conventional banks than on the credit risk of Islamic banking.

We highlight here the similarities and differences in the credit risk determinants of Islamic and conventional banking based on the regression results.

- **Similarities**

The coefficient for LEV is positive but not a significant predictor of credit risk in both the Islamic and conventional banking. This finding is consistent with Berger and DeYoung (1997) and finance theory where higher debt has a high probability of higher credit risk from default payments.

The coefficients for FCOST are both negative and statistically not significantly related to credit risk in Islamic and conventional banks. The signs are not as expected but it indicates that both banking systems might have incurred high overheads (plus interest expense in case of conventional banks) in monitoring and controlling functions to ensure credit risk and problem loans are reduced.

The regression results show that RWA is significantly related to credit risk. The positive signs of the coefficients in both cases are consistent with Berger and DeYoung (1997) and Ahmad (2003). This result shows that a higher proportion of risky assets to total assets tend to have higher credit risk. Interestingly, the effect appears more pronounced in Islamic banking judging from its t-value of 3.446 (p=0.002) compared to t-value of 2.215 (p=0.032) conventional banking. This finding confirms the intuitive insight of Sundararajan and Errico (2002).

Both banking systems have positive signs for RSEC coefficients. This indicates that a higher loan or financing extended to risky sectors tend to have higher credit risk. For example, the highest NPL is found in property-related and share financing loans. The difference here is that RSEC is a very significant factor influencing credit risk of conventional banks but not for Islamic banking. This may to a large extent due to a larger exposure of conventional banks to property-

related sectors, construction, share financing and credit consumptions compared to Islamic banking.

- *Differences*

Three factors; MGT, REGCAP and LLP are found statistically different as credit risk predictors to Islamic and conventional banking.

MGT (management efficiency) coefficient of Islamic banking is positive and significant at 5 percent level. On the other hand, MGT is negatively related to credit risk of conventional banks. This result supports past findings (Ahmad, 2003; Angbazo et al, 1998).The positive sign of the coefficient in Islamic banking suggests that a higher proportion of earning assets to total assets, if not properly managed, would result in higher credit risk where an increase by 0.659 point in management efficiency would lead to a one percent increase in credit risk. For the conventional banks, the negative sign denotes that a lower efficiency in managing its earning assets would lead to a higher credit risk. A possible answer for the opposite signs probably lies in the nature of the earning assets where they are all interest based in conventional banking and loan default is immediately recognized after 3 months of arrears in interests. In Islamic banking, the earning assets are largely on murabahah and mudaraba mode of financing, where the credit risk is transferred to its investment depositors and the loan defaults are not recognized(in the case of mudaraba on the part of the agent-entrepreneur until PLS contract expire (see Sundararajan and Errico,2002).

Table 3 shows regulatory capital (REGCAP) is negative and significantly related to credit risk of conventional banks. This is consistent with moral hazard theory postulate in Berger and DeYoung (1997) where smaller capitalized banks assume higher risk. The result in Islamic banking shows a contrast where REGCAP coefficient is positive and not significant in its association with credit risk. A possible explanation is that Islamic banks do not in dire need to have a big capital base to cushion against losses since risks are absorbed by investment depositors /equity holders and losses are shared between entrepreneur and bank.

The coefficient estimate of LLP is positive and a significant predictor of credit risk in conventional banks. Consistent to past findings (Ahmed, 1998; Ahmad,2003), the result suggest that a larger loan loss provision is required to cover higher non-performing loans and this indicates a deterioration in loan quality as credit risk increases. In contrast, LLP coefficient in Islamic banking is negative but not significantly related to credit risk.

6.   Conclusion

This paper attempts to fill the gap in Islamic banking literature by examining the factors affecting credit risk of Islamic banking in Malaysia. The unique nature of Islamic banking operations provides an insightful intuition that the risk determinants of Islamic banking ought to be different from those factors affecting conventional banking. The findings from this study support the intuition with empirical evidence that there are significant differences between the means credit risk predictors of Islamic and conventional banks. The preceding regression results allow us to shed some lights on the key factors affecting credit risk of Islamic banking. The analysis on conventional banks credit risk determinants permits us to highlight the similarities and differences between the two streams of banking. The findings show that management efficiency, risk-weighted assets and size of total assets have significant influence on credit risk of Islamic banking, while conventional banking credit risk are significantly affected by loan exposure to risky sectors, regulatory capital, loan loss provision and risk-weighted assets. While both observe similar effects of leverage, funding cost, risk-weighted on credit risk, Islamic banking experiences different impact of management efficiency, regulatory capital and loan loss provisions on their credit risk.

The findings suggest several policy implications: First, considering that credit risk of Islamic banking remains relatively high (which is contrary to the general understanding), it is appropriate that serious attention be given to risk management in Islamic banking especially on those factors identified as having significant impact on its credit risk. Second, although Islamic banking has to comply to the same regulatory framework as in conventional banking (Banking And Financial Institutions Act 1989) and Syariah Council, there should be greater and adequate disclosure of information on concentrations of financing assets and risks as in conventional banking reporting. This would help the public to understand better of the extent of the risks involved. Third, since credit risk of Islamic banks is influenced by different set of factors compared to its conventional counterpart, managing credit risk in Islamic banking requires a different approach that caters for its unique banking operations. The establishment of IFSB is timely to address risk management problems. In addition, as inferred by the findings of this study, the efficiency in managing the risky assets is crucial to reduce credit risk. Since hedging is not possible in Islamic banking operations, reducing adverse selections and strengthening internal controls are suggested as measures to increase efficiency in mitigating credit risk in Islamic banks.

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