MANAGEMENT & ACCOUNTING REVIEW

C O N T E N T S

Determinants of Islamic Bank's Leverage Ratio in Malaysia

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ABSTRACT

The significance of a bank's leverage ratio and its determinants is undeniable. The ratio denotes particularly the debt used by the bank to generate income for the investors as well as shareholders. Thus, it warrants the bank's ability to finance and generate income. Besides the ratio itself, it is of importance to explore the determinants of the ratios. Past literature has established the determining impact of a bank's performance and bank's size on the leverage. However, these determinants have not been explored in the context of Malaysian banks, particularly Islamic banks. In addition, a unique reserve used by Islamic banks in Malaysia known as the profit equalization reserve may also be a significant determinant of the leverage ratio because it is used as a cushion for risks related to the investment products of Islamic banks. As such, this study examined the relationship between leverage ratio, bank's performance, size and profit equalisation reserve in Malaysian Islamic banks. Using GMM estimators, both difference and system, a significant relationship was found between the current leverage ratio and previous leverage ratio and profit equalization reserve. Overall, the results are consistent with the past studies. In addition, the determining impact of the profit equalization reserve on leverage ratios of Islamic banks in Malaysia was also discovered.

INTRODUCTION

The relationship between leverage ratio and firm performance and behaviours has been abundantly discussed in the past literature (Bhagat, Bolton, & Lu, 2015; DeAngelo & Stulz, 2015; Firth, Lin, & Wong, 2008; Foong & Idris, 2012; Lang, Ofek, & Stulz, 1995; Myers, 1977; Umar & Sun, 2016; Zeitun, Rami; Saleh, 2015). The scope of literature on leverage also has extended into exploring the relationship between leverage with investment structures and risk taking behaviours. For example, according to Modigliani & Miller (1958), leverage is irrelevant to the investment structure. Nevertheless, some studies have evidence on the impact of leverage on investment structures (Lang, Ofek & Stulz, 1996; Aivazian, Ge & Qiu, 2005; Firth, Lin & Wong, 2008). Overall, the other studies also have investigated the relationship between leverage and risk taking behaviours of financial and non-financial institutions (Aricia, Laeven & Marquez, 2013; Koch, 2014; DeAngelo & M. Stulz, 2015). Since this study is considered preliminary in term of the Malaysian banks' leverage ratios, it merely focuses on the relationship between leverage ratio, bank's performance and size. Furthermore, since this study embarks on Islamic banks, the inclusion of profit equalisation reserve is therefore crucial since the reserve is a unique practice of the banks in Malaysia. The reserve is created to maintain stable returns to investment account holders and bank shareholders. Although it is built to cushion for the rate of return risk as well as displaced commercial risk, its practical insights are scarcely discussed especially in connection with leverage ratio and performance of the banks.

LITERATURE REVIEW

Leverage of a bank denotes the debt or other financial instruments or borrowed capital used by the bank to generate more income for the investors as well as the shareholders. The issue of leverage is important for banks since it signals their financial needs particularly in their ability to lend or finance, generating returns for their depositors and shareholders as well as to signal their potentials to perform. However, there are two significant ways of perceiving the relationship between leverage and bank's performance. A positive relationship can be anticipated between bank' leverage and performance due to the pressure the banks hold to avoid severe loss. As a

result, the pressure pushes them to maximise their potentials (Jensen, 1986; Myers & Majluf, 1984). On the other hand, a negative relationship can be perceived to emerge from the demotivating behaviours of banks due to the theory of agency (Jensen & Meckling, 1976; Lang et al., 1995; Myers, 1977). Still, some limitations of the former are due to family ownership that minimize the theory of agency's conflict (Anderson, Mansi, & Reeb, 2003) and as Myers put it, 'firm with ample financial slack' that are less concerned with their debt level (Myers & Majluf, 1984; Zeitun, Rami; Saleh, 2015). According to Firth et al., (2008) and Myers (1977), the performance of banks with low growth opportunities may be negatively related with high leverage since they perceived leverage demotivating them to undertake low gained investments. This finding is, again, in contrast with the results of Bhagat et al. (2015) who posited that banks pursue excessive risk taking through high leverage.

Technically, there are two types of leverage ratios employed in the literature as used by Chen (2013), the market leverage ratio and the book leverage ratio. The former refers to the leverage ratio of an institution as perceived by investors. This is calculated using the outstanding shares and the earnings of the institution. The latter, the book leverage ratio is the value of the bank as recorded in the institution's financial statement. This is normally calculated using the total liabilities and the total assets, or total equity or shareholders' equity (Bhagat et al., 2015; Foong & Idris, 2012; Umar & Sun, 2016). Still, there are other calculations used to measure and categorize levered institutions, such as, by looking at the total debt and total loan to total asset (Zeitun, Rami; Saleh, 2015). Despite some disputes surrounding the determinants of leverage as indicated in Lemmon, Roberts, & Zender (2008) and Menichini (2015), i.e. the time invariance of firm specifics, the same variables were employed in the past studies.

Most of the studies on leverage tend to explore the relationship with the leverage ratio and the performance of an institution, including risk taking behaviours. For instance, leverage and performance in general insurance firms with a moderating test using product diversity (Foong & Idris; 2012), leverage during pre- and post-financial crisis to signal banks' performance during the period (Chen, 2013; Kalemli-Ozcan, Sorensen, & Yesiltas, 2012b; Zeitun, Rami; Saleh, 2015), leverage and stock liquidity (Umar & Sun, 2016), leverage and profitability (Laryea et al., 2016) and leverage

and risk-taking behaviour (Bhagat et al., 2015). Mixed findings could be observed from these studies. While Chen (2013) found that market leverage is a significant determinant of bank performance, Lang *et al. (199*5) found that there is a negative relationship between leverage and firms' growth. In addition, it was also found that there is a difference between small banks and large banks in term of their leverage's relationship with stock liquidity (Umar & Sun, 2016). While small banks evidenced a negative relationship between stock liquidity and leverage, larger banks indicated a positive relationship. Thus, the size of banks also matters. This was also studied by Bhagat et al. (2015) and Gropp & Heider (2009).

Although performance and size of banks are evidently related to leverage, discretionary financial instruments are less likely studied with leverage ratios. Non-performing loan and loan loss provision are among speculative instruments used in detecting income smoothing in financial institutions (Misman & Ahmad, 2011). Later, profit equalisation reserve has emerged as another significant provision in income smoothing and capital management (Md Ramli, Shahimi, & Ismail, 2012; Taktak, 2011; Taktak, Zouari, & Boudriga, 2010). IFSB (2010) described PER as provisioned amounts of the gross income from the profit sharing investment to be utilized for smoothing returns paid to the investment account holders and the shareholders, and consists of a profit sharing investment account (PSIA) portion and a shareholder's portion. It is noteworthy however that the practical side of the reserve provision is made from the commingled deposits. Only after the deduction has been made, the amount of income can be made available to the depositors as well as the shareholders (Md Ramli et al., 2012). As a result, it may be correlated with the reported return on asset for that financial year, as well as the leverage ratio.

The function of the reserve is to offer the Islamic banks a cushion to mitigate their exposure to displaced commercial risk (DCR) and rate of return (Zainol & Kassim, 2010) and related problems of asset–liability mismatch. Therefore, it is interesting to explore the effect this reserve has on the leverage ratios of the banks.

This paper is divided into 6 sections. Following the introduction and literature review, Section 3 elaborates the hypothesis development. Section 4 discusses the data and methodology and Section 5 provides the descriptive

statistics as well as regression results while section 6 concludes the findings with some suggestion for further related studies.

HYPOTHESES DEVELOPMENT

Leverage ratio of a bank is the total debt that a bank holds to its total capital. Technically it implies that an increase in the leverage ratio means that the banks can lend more money to its customers. Theoretically, the ability to lend or finance may render the banks optimal potentials to raise more income. Consequently, the banks that report higher earnings as well as larger banks should be able to evidence higher leverage. These assumptions have been revealed true in the literature (Bhagat et al., 2015; Chen, 2013; Gropp & Heider, 2009; Laryea et al., 2016; Umar & Sun, 2016). This study is an attempt to prove a similar position for the Malaysian Islamic banks.

The nature of Islamic banks is unique compared to the conventional banks since it adheres to Islamic principles. According to the Islamic principles, the Islamic banks cannot rely on a fixed rate of income which is normally generated from interest. Therefore, it is vital that they depend on investment-based products namely based on *mudharabah and musyarakah (Siddiqui,* 2007). With this, they are exposed to a mixture of risks, such as rate of return risk which is inclusive of the displaced commercial risk. In practice, the Islamic banks throughout the world, rely on several mechanisms to mitigate these risks. But, most of Islamic banks rely on the profit equalisation reserve (PER) as a tool to mitigate the displaced commercial risk (Archer, Karim, & Sundararajan, 2010; V. Sundararajan, 2011; V. Sundararajan, 2007). This reserve impacts on the amount of earnings of the Islamic banks as indicated by Md Ramli et al. (2012). Since this study employs the return on asset as indicator of banks' performance, it is interesting to include this reserve as an instrumental variable. This is because this reserve may not be theoretically correlated with other error terms, like financial crisis.

Thus, based on the discussion above, the following hypotheses were developed;

Hl: There is a significant relationship between leverage ratio and bank performance

H2: There is a significant relationship between leverage ratio and bank size

H3: There is a significant relationship between leverage and the bank profit equalization reserve

METHOD

Data was collected from annual reports of 16 Islamic banks in Malaysia, both local and foreign from the year of 2008 to 2014. This is almost the subsequent years as Md Ramli *et al. (2012),* conducted their study from 2003-2010 on all Malaysian Islamic banks that comprised of 15 banks at that time.

The data used in the empirical analysis were those obtained from publicly available annual reports according to each bank's individual cycle, i.e. March, September and December. The initial dataset comprised of a strongly balanced panel of 16 Islamic banks for the 7-year period but due to unavailability of data on profit equalisation reserve (PER), merely 11 Islamic banks are maintained. The final dataset provided a range of 7 variables for 11 Islamic banks in Malaysia for 7 years period. The key dependant variable is the bank's leverage ratio. The ration is calculated by total liabilities over total equity of the bank. The three independent variables consist of the return on asset (roa) of the bank, size of the bank (size) and the profit equalisation reserve of the bank (per) as reported in the financial statements. Due to the intuition of endogeneity in the independent variables, profit equalisation reserve and financial year (*t*) *were* treated as exogenous variables. We employed the GMM estimators since it is a more advanced estimation compared to the OLS, fixed and random effects, as well as two least square regression models. This estimation works better in the form of treating endogeneity that arises from among others, reversed causality. The estimation model and details of the variables are indicated in the table below. The GMM estimator is of the following form:

$$yit= \delta yit\text{-}l + \{3ixit+\{3iwit+\varepsilon it\dots\dots\dots \qquad (1)$$
$$i= 1, \dots, N, \ t=1, \dots, N$$

where i *is* the bank specific and t *is* the financial year. While x captures the independent variables, w captures the time dummies. The variables' details are provided as follow;

Variable Dependent Variable	Details	+/-	Ref.
leverage	equals to total liabilities to total equity		(Foong & Idris, 2012; Umar & Sun, 2016)
Independent Variable			
Roa	Equals to earnings before taxation and zakat to total asset	+	(Bhagat et al., 2015; Zeitun, Rami; Saleh, 2015)
Per	equals to profit equalisation reserve to total asset	+	original
Size	equals to logarithm of asset	+	(Bhagat et al., 2015; Gropp & Heider, 2009)
ε_{it}	Idiosyncratic error		

RESULTS AND DISCUSSION

Table 1 presents the summary of all variables employed for this study. The leverage ratio reports the minimum ratio of 2% and the highest is 25%. The mean and standard deviation values are 11% and 4% respectively. This result is different from Foong & Idris (2012) where the leverage ratios was studied across general insurance firms in Malaysia, but quite consistent with Umar & Sun (2016) that reported leverage ratios of banks in BRIC countries. The mean value of return on asset (roa) is 1.4% and standard deviation is 0.9%. This is not consistent with Zeitun, Rami; Saleh (2015) who reported return on asset of firms in GCC countries at 0.006%, but consistent with Misman & Ahmad (2011) who reported the mean value of net income and earnings before taxation at 0.1% and 0.9% respectively. Profit equalisation reserve evidences a 0.1% mean value and a standard deviation of 0.2%. This shows that only a small provision is allocated for the reserve. However, it is different from Md Ramli *et al.* (2012) due to the different calculation employed for the reserve and financial year selected. Size of the bank on the other hand, reports the mean value of 23 and standard deviation of 1.7.

Table 1: Summary of Variables

Var	Obs	Mean	Std. Dev.	Min	Max
roa	77	1.469722	0.900438	0.078096	4.197488
per	77	0.102688	0.285976	0	1.74393
size	77	23.88848	1.700043	21.80975	28.69681

Table 2 presents the correlational matrix of the variables. All tests were checked for significance collinearity by reviewing the variance inflation factor (*vif)* for each variable. The correlation coefficients among the independent variables are low (less than 0.80) suggesting the absence of multicollinearity problems and the variance inflation factor (*vif)* indicates a value of below 4.0, again to reject the multicollinearity problem.

Table 2: Correlation Matrix

	leverage	roa	per	size
leverage	1			
roa	-0.2648	1		
per	-0.2335	0.3176	1	
size	-0.372	-0.2476	-0.2837	1

We employed the GMM estimators for this study. Considering that the panel data consists of a small-time series (*T)* compared to the large (*N*), we relied on the results of the system GMM, and report the difference in the GMM for the mixed results on the effect of bank's size on leverage ratio and for robustness check. The model is correct at the prob>chi=0.000, the wald x^2 is insignificant for all models and at 108.33 for the GMM system model. The Arellano and Bond's zero autocorrelation test indicated that the residuals are not affected by the second order serial autocorrelation, at a value of >0.005.

Table 3 documents the estimated coefficient for the lagged dependant variable as significant for the GMM system model. This significant value shows that the previous year's leverage ratio has a positive impact on the current year leverage ratio of Islamic bank in Malaysia. This result is anticipated since the debt equity ratio of previous year signals the financial position of the bank thus assisting the banks' decision maker to construe the leverage ratio for the current year. This is also due to the long-term

liabilities held by the banks and possibly to due to the stable determinants of leverage, even across country cross sections as indicated by Kalemli-Ozcan, Sorensen, & Yesiltas (2012).

The return on asset (roa) to proxy for bank's performance yielded a negative relationship with leverage ratio. The negative relationship can be explained by the effect of the agency theory. As indicated in the previous studies, banks that perform better would less likely to resume risky taking behaviours due to the agency theory and as a result, less levered (Firth et al., 2008; Jensen & Meckling, 1976; Lang et al., 1995; Myers, 1977). This is in contrast with our null hypothesis that highly performed banks are levered banks that engage in more risk-taking behaviours (Bhagat et al., 2015). This negative relationship was also found by Foong & Idris (2012), but the value found in this study is insignificant. Thus, we reject the null hypothesis.

The profit equalisation reserve is a discretionary reserve, owned partly by the depositors and shareholders. Being partly liability and equity, we posited a positive relationship between this reserve and leverage ratio. As documented in Table 3, this reserve is positively related to the leverage ratio. This shows that whenever the provision of PER is higher, the banks are more levered and thus, implying more risk-taking behaviours. The relationship is statistically significant at 5%.

Size of the bank in contrast shows a negative relationship with leverage ratio of the banks, but not statistically significant. On the other hand, the GMM difference model reports a significant relationship between the leverage ratio and the bank's size. The different relationships produced GMM difference and GMM system is possible. Heid (2015) has explained on this on the second procedure of the GMM system where as Roodman (2009) argued, that there is fixed effect present in the level errors. As a result, we accept the GMM system result, and reject the null hypothesis.

Table 3: Regression Analysis

	gmm difference leverage	gmm difference robust leverage	gmm system leverage	gmm system robust leverage
leverage	0.141	0.0678	0.702***	0.0652
	(1.19)	(0.35)	(7.78)	(0.30)
roa	-0.292	-0.496	-0.652	-0.230
	(-0.74)	(-0.92)	(-1.55)	(-0.35)
per	2.132	-0.632	3.357*	2.549
	(1.49)	(-0.19)	(2.25)	(0.89)
size	2.605***	1.928	-0.200	2.782
	(3.88)	(1.27)	(-0.91)	(1.57)
_cons			9.457	-55.26
			(1.51)	(-1.32)
Arellano-Bond test for Ar(2)				
(*p*-value)	(0.598)	(0.609)	(0.407)	(0.407)
Sargantest (p-value)	(0.693)	(0.859)	(0.693)	(0.693)
N	55	55	66	66
t statistics in parentheses				
="* p<0.05	** p<0.01	*** p<0.001"		

CONCLUSION

This is a preliminary study on the relationship between bank's performance, size and profit equalisation reserve on leverage ratio of Islamic banks in Malaysia. The Malaysian Islamic banks are moderately levered at 11%. The significant determinants of an individual bank's leverage ratio are the previous year leverage ratio as well as the profit equalization reserve.

In this study, the determinants of the leverage ratios are the return on the asset to imply the bank's performance, the profit equalization reserve to signal risk taking behaviours of the banks through the investments that are secured by the reserve (cushion for the displaced commercial risk), and size of the bank and the return on asset. It has been established in the literature that bank performance and bank size are significant determinants of the

banks. This study has shown that it is not accurate for the Malaysian Islamic banks. As indicated before, the bank's performance yielded an insignificant negative relationship with the leverage ratio. This study also did not find a significant relationship between the leverage ratio and the bank's size. Size of the bank shows a negative relationship with the leverage ratio of the banks, but not statistically significant.

The profit equalisation reserve is a discretionary reserve, owned partly by the depositors and shareholders. Being partly liability and equity, it was posited that there is a positive relationship between this reserve and leverage ratio. It was found that this reserve is positively associated with leverage ratio, that is whenever the provision of reserve is higher, the banks are more levered and thus, implying more risk-taking behaviours.

Although bank's performance and bank size relationships with the leverage ratios were not proven in this study, these results may still shed some lights on particularly, the leverage ratio determinants i.e. previous year leverage ratio and profit equalization reserve, in Malaysian Islamic banks and provide some insights on the function of the profit equalisation reserve in the banks.

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