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## **Working Paper in Islamic Economics and Finance No. 0706**

### **Islamic Bank Performance and Capital Structure<sup>1\*</sup>**

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### Abstract

The choice between debt and equity financing has been directed to seek the optimal capital structure. Under the agency costs hypothesis, a high leverage or a low equity/asset ratio reduces the agency costs of outside equity and increases firm value. Several studies show that a firm with high leverage tends to have an optimal capital structure and therefore it leads to produce a good performance, while the Modigliani-Miller theorem proves that it has no effect on the value of firm. The importance of these issues has only motivated researchers to examine the presence of agency costs in the non-financial firms. In financial firms, agency costs may also be particularly large because banks are by their very nature informationally opaque – holding private information on their loan customers and other credit counterparties. In addition, regulators that set minimums for equity capital and other types of regulatory capital in order to deter excessive risk taking and perhaps affecting agency costs directly to change banks' capital structure. In this paper we attempt to prove the agency cost hypothesis of Islamic Banks in Malaysia, under which high leverage firm tends to reduce agency costs. We set the profit efficiency of a bank as an indicator of reducing agency cost and the ratio equity of a bank as an indicator of leverage. Our findings are consistent with the agency hypothesis. The higher leverage or a lower equity capital ratio is associated with higher profit efficiency.

*Keywords:* C33; G21; G32;

*JEL classification:* agency cost; capital structure; Islamic bank performance; panel data;

## 1. Introduction

Firms hire agents to manage their business professionally. However, this agency can be costly when the manager expands the firm through acquisition that reduces its share price, pursues his own interest, or he attempts to maximize shareholder value but he is unlucky. In effect, the agency costs of outside ownership equal the lost value from professional managers maximizing their own utility, rather than the value of the firm. Theory suggests that the choice of capital structure may help mitigate this agency cost. Under the agency costs hypothesis, a high leverage or a low equity/asset ratio reduces agency costs of outside equity and increases firm value by constraining or encouraging managers to act more in the interests of shareholders.

After the seminal contribution by Modigliani and Miller (1958) that shows the independency value of a firm to its capital structure in frictionless world, a vast literature on such agency-theoretic explanations of capital structure has been developed (see Harris and Raviv (1991), and Myers (2001) for reviews). Greater financial leverage may affect managers and reduce agency costs through the threat of liquidation, which causes personal losses to managers of salaries, reputation, perquisites, etc. (e.g., Williams 1987), and through pressure to generate cash flow to pay interest expenses (e.g., Jensen 1986). Higher leverage can mitigate conflicts between shareholders and managers concerning the choice of investment (e.g., Myers 1977), the amount of risk to undertake (e.g., Jensen and Meckling 1976, Williams 1987), the conditions under which the firm is liquidated (e.g., Harris and Raviv 1990), and dividend policy (e.g., Stulz 1990). The empirical evidences on this hypothesis use the sample of non-financial firms.

However, in the financial firms, agency costs may also be particularly large because banks are by their very nature informationally opaque—holding private information on their loan customers and other credit counterparties. In addition, regulators that set minimums for equity capital and other types of regulatory capital in order to deter excessive risk taking, and perhaps affecting agency costs directly affect bank capital structure. Issues such as corporate governance, agency costs, and capital structure also play important role because of the crucial roles played by banks in providing credit to non-financial firms, in transmitting the effects of monetary policy, and in providing stability to the economy as a whole.

The importance of these issues has motivated researchers (see, Berger and Udell (2002)) to examine the presence of agency costs in the banking literature. Although, this study provides additional evidence on the impact of capital structure on bank performance, but it differs from the previous in three aspects: first, we use a sample of Islamic banks in Malaysia. In this sample, the money provided by shareholder (*rabb-ul-mal*) is clearly disclosed to generate income that may increase the bank's performance. Second, the utilization of *musharakah* contract allows the shareholder to share the profit or loss of the joint investment. This implies that the lower leverage may induce bank to gain a higher profit.

This paper is organized as follows. Section 2 reviews the agency-theoretic

explanations of capital structure. Section 3 proposes the model of capital structure and the data collection. Section 4 discusses the estimation results and economic intuition. Finally, Section 5 recommends some policy implications and conclusions.

## 2. Prior Studies

The pioneer modern theory of capital structure began with the paper of Modigliani and Miller (1958). They prove that the choice of between debt and equity financing had no material effects on the value of firm or on the cost of availability. Since, then, various studies have been directed to explore the optimal capital structure in the absence of Modigliani-Miller's assumption. Jensen and Meckling (1976), for example, argue that an optimal capital structure can be obtained by trading off the agency cost of debt against the benefit of debt. The implication of this argument is that firms, which have fewer opportunities for asset substitution such as banks and mature firms, will have higher debt levels, *ceteris paribus*. Moreover, firms which have plenty of cash inflows but have a slow growth should have more debt. Large cash inflows without investment prospects create the resources to consume perquisites, build empires, overpay subordinates, etc. Increasing debt reduces amount of cash flows and increases manager fractional ownership of the residual claim. Jensen (1986) predicts that the firms that have optimal capital structure should be characterized by high leverage. Previous study by Myers (1977) finds that higher leverage can mitigate conflict between shareholders and manager concerning the choice of investment.

For firms that need to finance a new investment, Myers (1984) recommends using a low risk debt than increasing equity. The reason is that if there is an asymmetric information where investor is less well-informed than current firm insiders about the value of firm's assets, then it leads to a mis-priced of equity in the market. Investors do not believe on the new profitable project and make the security is so severely undervalued.

Berger (2002) supports Myer's argument. He argues that increasing the leverage ratio should result in lower agency costs of outside equity and improve firm performance, all else held constant. He suggests that under the efficiency risk hypothesis, more efficient firms choose lower equity ratio than other firms, because higher efficiency reduce the expected costs of bankruptcy and the financial distress. Higher profit efficiency may create a higher expected return for a certain capital structure, and this condition does not protect firms against future crises. Profit efficiency is strongly positively correlated with expected return and higher expected return is substituted for equity capital to manage risks.

The empirical studies on those relationship have been conducted, among others are Titman and Wessel (1988), Mester (1993), Pi and Timme (1993), Gorton and Rosen (1995), Mehran (1995), McConnell and Servaes (1995) DeYoung, Spong and Sullivan (2001). Although these empirical literatures have been successful in the sense that many of the capital structure plus some control variables are correlated with firms' performance, but the focus is concentrated on non-financial firms.

Hence, in this study, we attempt to utilize the sample of banks. Although banking is a regulated industry, banks are subject to the same type of agency costs and other influences on behavior as other non-financial firms. Banks in the sample are subject to essentially equal regulatory constraints, and we focus on differences across banks, not between banks and other firms. Most banks are well above the regulatory capital minimums, and our results are based primarily on differences at the margin, rather than the effects of regulation.

### 3. The Model and Data

In this paper, we follow Berger and Udell (2006) that relate bank's profit and capital structure. The model is written as follows:

$$EFC_{it} = \gamma_0 + \beta_1 CAP_{it} + \beta_2 SDROE_{it} + \beta_3 SIZE_{it} + \beta_4 LOAN_{it} + \beta_5 SEC_{it} + \beta_6 HERF_{it} + v_{it}$$

where *EFC* measure the bank's profit efficiency, *CAP* is the ratio of equity capital to gross total assets. It is also a standard measure of leverage in banking research, which known as a capital ratio. *SDROE* is standard deviation over time of the bank return on equity, *SIZE* is a dummy of the firm's size, *LOAN* is total loan that is delivered by bank including consumer loans, business loans and real estate loans, *SEC* is the bank's investment in securities and *HERF* is a deposit Herfindahl index of local market concentration.

The dependent variable in this study is *EFC*. We measure this variable using return on asset (*ROE*). The explanatory variable is capital to total asset ratio (*CAP*). We use financial equity capital divided by gross total assets. To measure the bank's risk, we use standard deviation of return on equity (*SDROE*). It is defined as standard deviation over time of the bank's return on equity. Size of company (*SIZE*) defines as dummy variables, value of 1 if the bank has assets more than RM 1 billion and value of 0 if the bank has assets less than RM 1 billion. *LOAN* is constructed from the total value of loan of the bank. *SEC* is measured by the total banks' investment in securities. *HERF* is an index of market concentration using Herfindahl index. The data is obtained from 15 Malaysia Islamic Banks' Annual Report from 1997 until 2004.

To estimate the model, first, we check the stationarity of data by using the unit root test. The presence of non-stationary variables might produce spurious regression result. A spurious regression result has a high  $R^2$  and t-statistics that appear to be significant, but the results are without any economic meaning.

The fact that the time series data are non-stationary, i.e., they are generated by random process and can be written as follows:

$$Z_t = Z_{t-1} + v_t$$

where  $v_t$  is the stochastic error term that follows the classical assumptions, which means, it has zero mean, constant variance and is non-autocorrelated (such an error term is also known as white noise error term) and  $Z$  is the time series. As the data used in this paper is panel data, so we use the Levin, Lin and Chu and Im, Pesaran and Shin W test to check the level of stationary. Second, the different estimation method will be done that look into the no effect, fixed effect and random effect. It is due to the central assumption in random effects, i.e., the random effects are uncorrelated with the explanatory variables. One common method for testing this assumption is to employ the Hausman test to compare the fixed and random effects estimates of coefficients.

#### 4. Findings

Table 1 presents the unit root test results for all variables. As shown in Column two and three, all variables reject the null hypothesis at the 5% level, but not in the case of Im, Pesaran & Shin-W test.

**Table 1**  
**Unit Root Test Results**

<i>Variables</i>	<i>Level I(0)</i>		<i>First Difference I(1)</i>	
	<i>Levin, Lin &amp; Chu</i>	<i>Im, Pesaran &amp; Shin-W</i>	<i>Levin, Lin &amp; Chu t</i>	<i>Im, Pesaran &amp; Shin-W Stat</i>
ROE	-0.836	-5.544	-5.9618*	-4.567*
SDROE	-11.907*	-3.305*	na	na
CAP	-10.866*	-2.855**	129.407*	-45.168*
SIZE	-2.132**	0.206	na	na
LOAN	3.913	5.992	-5.883*	1.804
SEC	-6.026*	-0.676	-30.541*	-9.797*
HERF	-15.928*	-5.482*	-6.832*	1.381**

Note: The Levin, Lin & Chu and Im, Pesaran and Shin-W statistics were generated by model with individual intercept.

\* denotes rejection of the null at 1% level

\*\* denotes rejection of the null at 5% level

Since not all variables are stationary at level, then the test is extended to the test for first difference. The result in column four and five show that most of the variables are stationary at 1% level, therefore it is an I(1) stochastic process.

The estimated regression for the relationship between bank performance and capital structure is reported in Table 2 for ordinary least square (column two), fixed effect (column three) and random effect (column four).

**Table 2**  
**Estimation Results**

<i>Variable</i>	<i>OLS</i>	<i>Fixed</i>	<i>Random</i>
Constant	0.352	0.382*	0.349
CAP	-1.019*	-0.989*	-0.994*
SDROE	0.462	1.099	0.554
SIZE	0.032	-0.037	0.029
LOAN	-6.94E-09	-2.28E-08	-1.36E-08
SEC	-1.28E-07*	-8.68E-08	-1.13E-07*
HERF	0.0002*	5.85E-0.5	0.0002**
R2	0.343	0.581	0.314
R2(adj)	0.289	0.440	0.257
F-stat	6.373*	4.106*	5.572*
DW	1.785	2.682	2.113

\* denotes significant at level 1%

\*\* denotes significant at level 5%

In the random effect model, the intercept is assumed to be random drawing from a much larger population with a constant mean value. The implication of this statement is that we use Random Effect Model when the sample is so large and we select the data randomly to represent our analysis. As this research uses data from all of Islamic Banks in Malaysia, therefore we prefer to choose Fixed Effect Model as a representative model. Moreover to strengthen the result, we analyses the result of estimated regression using Hausman Test.

As shown in Table 3, the results reveal that Hausman test is not significant. The thesis underlying is that the Fixed Effect and Random Effect estimators do not differ substantially. Hence, we use the fixed effect model as our representative model.

**Table 3**  
**Result of Hausman Test**

	Chi-Square Stat	df	Prob
Cross Section Random	3.683	6	0.695

The result strengthen the fact that the more levered bank is better than the less or unlevered bank. An increase in capital actually is not recommended. The negative sign of variable CAP reflects that the higher of capital of one bank, the lower of its efficiency or performance.

The sign for LOAN and SEC is negative but they are not significant. The negative sign of security investment and bank loans suggest that there is a caution of bank performance. Meanwhile, the positive sign of size parameter implies that a bank with larger assets tends to reach a better performance.

## 5. Conclusions

In this paper we attempt to prove the agency cost hypothesis of Islamic Banks in Malaysia, under which high leverage corporate tends to reduce agency costs. We set the profit efficiency of a bank as an indicator of reducing agency cost and the ratio equity of a bank as an indicator of leverage corporate. Our findings are consistent with the agency hypothesis. The higher leverage or a lower equity capital ratio is associated with higher profit efficiency, *ceteris paribus*. We also find that size of bank is negatively correlated to bank's performance. This finding supports the hypothesis that a large size corporate tends to be unlevered.

## References

- Berger, A.N. (1995). "The Relationship Between Capital and Earnings in Banking". *Journal of Money, Credit, and Banking*, 27, 432-456.
- Berger, A.N., and R. DeYoung. (1997). "Problem Loans and Cost Efficiency in Commercial Banks". *Journal of Banking and Finance*, 21, 849-870.
- Berger, A.N., R.J. Herring, and G.P. Szegö. (1995). "The Role of Capital in Financial Institutions". *Journal of Banking and Finance*, 19, 393-430.
- Berger, A.N., and L.J. Mester. (1997). "Inside the Black Box: What Explains Differences in the Efficiencies of Financial Institutions?" *Journal of Banking and Finance*, 21, 895-947.
- Berger and di Patti. (2002). "Capital Structure and Firm Performance: A New Approach to Testing Agency Theory and an Application to the Banking Industry". *Journal of Banking & Finance* 30 (2006) 1065-1102
- DeYoung, R., K. Spong and R.J. Sullivan.(2001). "Who's Minding the Store? Motivating and Monitoring Hired Managers at Small, Closely Held Commercial Banks". *Journal of Banking and Finance*, 25, 1209-1243.
- Gorton, G., and R. Rosen. (1995). "Corporate Control, Portfolio Choice, and the Decline of Banking". *Journal of Finance*, 50, 1377-420.
- Harris, M., and A. Raviv. (1990). "Capital Structure and the Informational Role of Debt". *Journal of Finance*, 45, 321-349.
- Harris, M., and A. Raviv. (1991). "The Theory of Capital Structure". *Journal of Finance*, 46, 297-355.
- Jensen, M.C., 1986. Agency Costs of Free Cash Flow, Corporate Finance and Takeovers. *American Economic Review* 76, 323-339.



- Jensen, M.C., Meckling, W., 1976. Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure. *Journal of Financial Economics* 3, 305–360.
- McConnell, J.J., and H. Servaes. (1995). “Equity Ownership and the Two Faces of Debt”. *Journal of Financial Economics*, 39, 131-157.
- Mehran, H. (1992). “Executive Incentive Plans, Corporate Control, and Capital Structure”. *Journal of Financial and Quantitative Analysis*, 27, 539-560.
- Mehran, H. (1995). “Executive Compensation Structure, Ownership, and Firm Performance”. *Journal of Financial Economics*, 38, 163-184.
- Mester, L.J. (1993). “Efficiency in the Savings and Loan Industry”. *Journal of Banking and Finance*, 17, 267-86.
- Modigliani, F., Miller, M.H., 1958. The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review* 68, 261–297.
- Myers, S.C., 1977. The Determinants of Corporate Borrowing. *Journal of Financial Economics* 5, 147–175.
- Myers, S.C., 1984. The Capital Structure Puzzle. *Journal of Finance* 39, 575–592.
- Myers, S.C. (2001). “Capital Structure”. *Journal of Economic Perspectives*, 15, 81-102.
- Pi, L., and S.G. Timme. (1993). “Corporate Control and Bank Efficiency”. *Journal of Banking and Finance*, 17, 515-30.
- Saunders A., E. Strock and N. Travlos. (1990). “Ownership Structure, Deregulation, and Bank Risk Taking”. *Journal of Finance*, 45, 643-654.
- Stigler, G.J. (1976). “The Xistence of X-efficiency”. *American Economic Review*, 66, 213-16.
- Stulz, R. (1990). “Managerial Discretion and Optimal Financing Policies”. *Journal of Financial Economics*, 20, 3-27.
- Titman, S. and R. Wessels. (1988). “The Determinants of Capital Structure Choice”. *Journal of Finance*, 43, 1-19.
- Williams, J., 1987. Perquisites, Risk, and Capital Structure. *Journal of Finance* 42, 29–49.