Equity investor Protection and Financial Performance of Islamic Banks: An Econometric Analysis

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The last decade witnessed dramatic growth of the Islamic banking and finance sector, which had largely been credited to its adoption of the profit and loss sharing principles. However, in practice, the Islamic banks mostly reply on debt-like financing methods such as mark-up and leasing finance instead. Consequently, the equity investors are exposed to default risks. This study empirically examines the impact of equity investor protection on financial performance of Islamic banks based on an unbalanced panel data collected from 91 Islamic banks and financial institutions worldwide across 1991-2010. Econometric techniques are adopted to specify the models. The instrument variable model (IV) using General Method of Moments (GMM) is selected as the most appropriate model by passing a number of tests by model corrections, covering instrument relevance, instrument exogeneity, multicollinearity, heteroskedasticity, autocorrelation, under-identification, weak-identification and over-identification tests. Results show that stronger investor protection results in better financial performance in the Islamic banking and financial institutions. The paper concludes with acknowledging the limitations and discussion of future research directions.

Key words: Equity investor protection, Islamic banks, panel data analysis, instrument variable model, IV-GMM

1. Introduction

Despite the rapid growth of the Islamic banks in the past decades, rigid empirical test between investor protection and financial institution's performance is long overdue. Many attempts are focused on deciding the determinants of financial performance; little attention has been particularly given to the impact of investor protection (Alexakis and Tsikouras 2009; Haque 2010).

Given the gap identified above, the following research questions is proposed

What is the impact of investor protection on financial performance of the Islamic financial institutions and banks?

The paper will contribute to the literature in two aspects: (1) advanced econometric techniques, i.e. combination of cluster analysis, general method of moments (GMM) and error correction options, are used to produce robust results; (2) results of five models are compared to identify consistent evidence to the research questions.

The rest of the paper proceeds as follows, Section Two reviews relevant literature on performance determination, pertinent to investor protection; Section Three describes the data,

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sample, variables and methodology; Section Four summarises the results, followed by discussions,

2. Literature review

2.1 Investor protection

The empirical literature on Islamic banks mainly focused on rapid growth and regulatory issues but little have been tested on investors' protection. Recent research on corporate governance has shown that there is no separate governance in Islamic banks and most of the central banks in Muslim states applied current system to govern in Islamic Banks. However, Malaysian central banks have established separate legal system to regulate for Islamic banks.

Investors' protection turns to be crucial to investors because, in many states pre-emption of minority stakeholders and large creditors by the controlling shareholders are not acceptable. Rafeal La Porta et. al (Investors Protection – World bank 1999). The main shareholders in Islamic banks are the sovereign states and Sharia board safe guard the interest of investors' for any expropriation by these shareholders. The relationship between the bank and investor based on Mudarabaha contract whereby share the risk and reward, however, the return on their investment depends on the performance of the managers and non interference of state which is influential shareholder.

The legal approach to corporate governance in Islamic banks holds the key issue of protecting the investors' from outside parties, whether the main shareholders or creditors not to undermine the interest on investors and more dependent on the law and the Sharia board. The minority shares which are investment account holders in Islamic banks demand the rights to be treated in the same as influential shareholders in dividend policies.

The empirical evidence on this paper found that the rights of minority shareholders are protec ted. We tested ROA and ROE and the endogenous variables – investor's protection measured by dividend pay-out and net interest revenue and showed positive results. Further research needs to be tested how the banks can signal future profitability by paying dividends. Jesen and Meckling (1976) addressed agency problems between corporate and minority shareholders. Furthermore, at this stage no empirical evidence tested in Islamic agency problem between corporate and minority shareholders, and thus, require further research to find out any gap in the literature.

2.2 Practices of Islamic banks

Islamic banking derives its contract methods from Islamic trade operations, where capital owners provide funds and entrepreneurs contributing only their work and management skills (Khan and Bhatti 2008). the main characteristic that distinguishes Islamic banking from non-Islamic banking is that the former does not offer interest bearing deposit accounts(Archer and Karim 2009), and instead offers profit sharing based investment accounts through the Mudarabah contract model. The profit sharing investment accounts are considered to be a substitute for the deposits of non-Islamic banks. These deposits, unlike other kinds of deposits, are not designed for high net-worth business people (Grais and Pellegrini 2006) but for small business people who are seeking low risk investment. Nevertheless, Islamic banks do mix investment accounts (bilateral Mudarabah) with current accounts and shareholder funds (Grais and Pellegrini 2006).

PSIA transactions

Islamic banks provide financial intermediation services (as do non-Islamic banks) and mobilise resources between the savers and deficit holders (Iqbal and Llewellyn 2002).
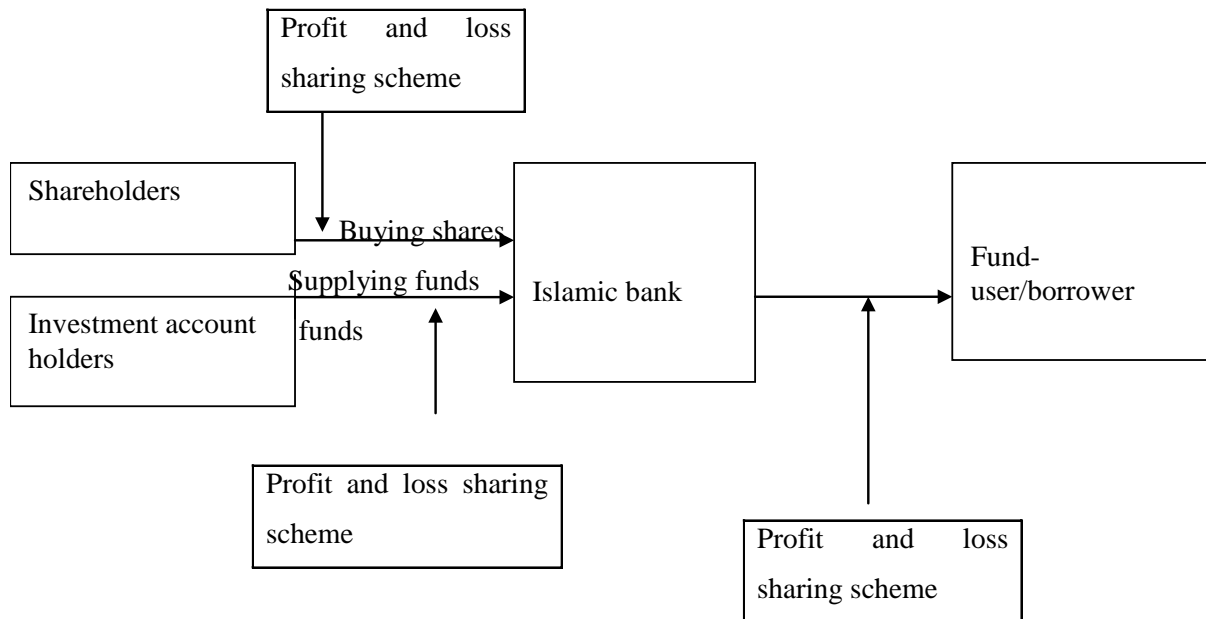
Figure 1. Profit and loss sharing transactions

Figure 1 is a simplified diagram that explains the structure of the Mudarabah contract. Under this structure, the Islamic bank accepts deposits through Mudarabah contract as an intermediary, where the depositor enters into a profit sharing partnership or agency contract with the bank as a *Mudarib* (partner/agent). Also, as noted previously, the Islamic bank (as a principal fund-provider) can enter into a partnership or agency contract with an entrepreneur who only contributes the management skills (El-Hawary; Grais and Iqbal 2007). Thus, the capital is provided by the fund supplier, who operates as a sleeping partner, and work is provided by the entrepreneur (Archer and Karim 2009).

Deposits in Islamic banks are divided into current accounts and investment accounts (Grais and Pellegrini 2006; Archer and Karim 2009). For current accounts (CAs), the depositors do not have any purpose other than safekeeping their money in the bank (El-Hawary, Grais and Iqbal 2007). The deposits in current accounts are considered to be a debt, and therefore Islamic banks guarantee to pay these back in full to the depositors. Nevertheless, Islamic banks can use the current account deposits for their own purpose and take the responsibility for any risk and loss (Grais and Pellegrini 2006).

Investment accounts can be divided into restricted investment accounts (RIAs) and unrestricted investment accounts (UIAs). The Islamic bank only invests RIAs in projects that they have been specifically instructed to invest in by the depositors. Thus, these are similar to conventional mutual funds, although unlike mutual funds they are not managed by a legal entity that is separate from the Islamic bank (Archer and Karim 2009). In contrast, UIAs allow the Islamic bank freedom to invest deposits in any investment vehicle that is not prohibited by Islamic law. Islamic banks treat the RIAs as an off balance-sheet item and normally report these on the footnotes of the financial position statements; UIAs, on the other hand, are reported on the balance sheet of the bank as an asset (Archer and Karim 2009). As a principal fund supplier, the Islamic bank provides deposits to a fund user without restricting the investment to a specific class of assets, geographical location, industry, or time (Archer and Abdel-Karim 2009; El-Hawary, Grais and Iqbal 2007; El-Gamal 2005).

As noted previously, the Islamic banking system does not guarantee either the capital or return of the invested amount to the investment account holders (Grais and Abdel-Karim

2006). Consequently, the future income flow of the investment is uncertain, and will depend on the profitability of the business venture (Archer and Karim 2009; El-Gamal 2005).

As the risk of the business venture is transferred to the depositors, this has meant that many investors are reluctant to provide funds to Islamic banks for investment under the Mudarabah contract (Zaher and Hassan 2001; El-Gamal 2005). Furthermore, Islamic banks have become reluctant to lend the funds of depositors to other entrepreneurs, as the latter share the profit but not the risk (Zaher and Hassan 2001).

This problem has led the majority of Islamic banks to abandon the profit and loss sharing based Mudarabah financing model, and instead to rely on debt-like financing instruments such as the mark-up approach of Murabaha and the leasing finance of Ijaraha (Djojosugito 2008). Nevertheless, Islamic banks that still use Mudarabah financing model for raising capital employ conventional techniques, such as the use of profit equalization reserves (PER). Under this strategy, Islamic banks keep savings which can be deducted from the profits of shareholders, to smooth the returns paid to PSIA holders or cover their periodic losses (Grais and Pellegrini 2006; Archer and Karim 2009; Alexakis and Tsikouras 2009).

In addition, Islamic banks can voluntarily reduce their own profits (as a Mudarib) to increase the returns of the PSIA holders (Archer and Karim, 2009). Islamic banks have adopted this earnings management and accounting manipulation strategy to compete with non-Islamic banks and use this to provide their customers with similar rates of return to those paid by non-Islamic banks (Archer and Karim 2009; El-Gamal 2006). Therefore, this practice guarantees returns in a way that is similar to non-Islamic banks and dissimilar to the profit and loss sharing principles of the Shariah (Grais and Pellegrini 2006; El-Gamal 2006).

2.3. Corporate governance issues in Islamic banks

In the past, control and management of firms were inseparable, as businesses were small and normally owned and managed by a single person. However, as firms have become larger and more complex, a distinction between management and ownership has become necessary (Santiago-Castro and Brown 2009). This separation of the management and the ownership has led to a conflict of interests and agency problems between the owners and managers (Dey 2009). Corporate governance provides a set of regulations for the supervision of operation of companies such as banks to ensure that they are efficiently operable. This allows the firm to generate economic value for the shareholders, depositors, and other stakeholders (Santiago-Castro and Brown 2009).

Non-Islamic banks are subject to external and internal auditing systems, with proper reporting and accounting standards (Alexakis and Tsikouras 2009). The Basel Committee was established to strengthen the supervisory and regulatory practices of banks, and introduced a minimum capital weighing requirement for these banks, to reduce the risk of default. As a result, banks are required to set aside capital reserve for risky long-term loans (Archer and Karim 2009; Alexakis and Tsikouras 2009). Similarly, Islamic banks are subject to both external and internal corporate governance principles (Safieddine 2009), and managers of Islamic banks are required to apply both the conventional corporate governance and Shariah law principles. In effect, breaching one of these is seen as a breach of the agency contract (Khan and Bhatti 2008).

Figure 2 is a simplified diagram that explains the corporate governance of Mudarabah contract. As can be seen from the diagram, Islamic banks have two boards of directors: a Shariah supervisory board (SSB) as well as a more traditional board of directors. The SSB is an independent body of Islamic scholars who specialise in Islamic jurisprudence and Islamic commercial law (Grais and Pellegrini 2006). The task of the SSB is to ensure that the

operations and contracts of the Islamic banks are Shariah compliant. SSB members are elected by the shareholders, based on the recommendations of the board of directors (Grais and Pellegrini 2006). The SSB usually publish their opinion in annual reports, outlining the level of Shariah compliance by the financial transactions and in the operations of the Islamic banks (Grais and Pellegrini 2006; Alexakis and Tsikouras 2009). Furthermore, the SSB ensure that the profits and losses allocated to the investors are in compliance with the Shariah principles (Alexakis and Tsikouras 2009).
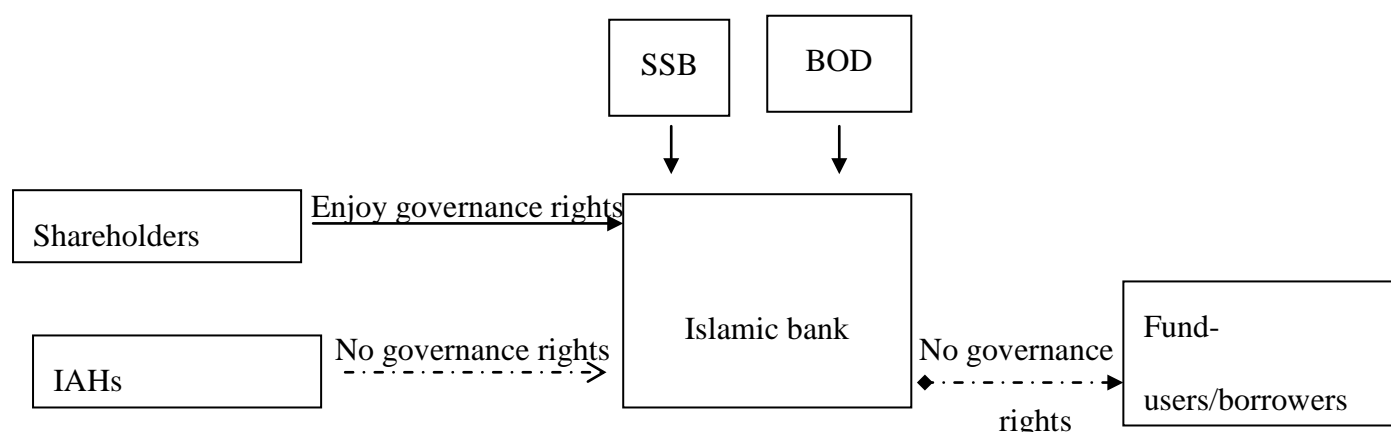

Figure 2.   Corporate governance

2.4 Uniqueness of agency problems in Islamic banking

The agency theory in Islamic banking is unique, since the ownership structure and the nature of Islamic banking operations is different from that of non-Islamic banks (Hasan 2008). The shareholders and investment account holders are the principal investors in an Islamic bank, however, PSIA holders entrust their deposits to an agent (the management of Islamic bank) that is appointed by shareholders and only answerable to them (Ismail, Abdul Gafar, and Toharin 2009). Investment account holders are not considered equity-holders or debt-holders who are entitle to governance rights or the protection of the credit holders. Therefore, the investment accounts holders will fall into the category of quasi-equity holders (Zuhair 2008; Safieddine 2009; Archer and Abdel-Karim 2009; Alexakis and Tsikouras 2009).

The Mudarabah contract is normally made *ex-ante* and the agent (whether it is a bank or an entrepreneur) can hide information about the project from the investment account holders (Llewellyn and Iqbal 2002) and at the same time would not allow them to obtain access to the information of the business venture throughout.

Conflicting economic interests of fund users with that of the capital providers may give the first group incentives to advance their own interests at the expense of the latter group (Zaher and Hassan 2001; El-Gamal 2005; Safieddine 2009). For instance, managers of the Islamic banks may underreport the earnings or overstate the losses of the investment account holders, as the PSIAs are not allowed to exercise governance control rights over their investment under Mudarabah contract (El-Gamal 2005; Safieddine 2009; El-Gamal 2005; Djojosugito 2008).

In the non-Islamic banking system, deposits from the investment account holders (IAHs) are protected by a deposit insurance policy, which requires these banks to keep reserve ratios and

capital adequacy to minimise the risk of loss. Therefore, IAHs are considered creditors and first claimants of the bank's assets in the event of the bankruptcy (Archer and Karim 2009).

Islamic banks use same contractual structure (the Mudarabah contract) for both their retail banking activities and investment activities, because of its flexibility to manage and to avoid transparency (Archer and Karim 2009). Islamic banks benefit from using one contractual contract as the risk of the business is borne by the investment account holders who are not entitled to governance rights (Safieddine 2009; El-Gamal 2005; Akacem, Mohammed, Gillian and Lynde 2002 Rosly and Zaini 2008).

The problems of adverse selection and moral hazards in the investment accounts caused by the Mudarabah contract (Ahmed 2008; Hasan 2008; Safieddine 2009), create unique agency problems in the Islamic banking system. To address this, a

Corporate governance system that aligns the interests of the PSIAs, Islamic banks, and entrepreneurs is required (El-Gamal 2005; Chapra and Ahmed 2002; Safieddine 2009). And a empirical test of the relationship between investor protection and firm financial performance is yet to be undertaken covering as many banks as possible, which is assumed by this research.

3. Data and methodology

3.1 Data and sample

The data is directly obtained from Bankscope. We manually abstracted 91 Islamic banks/financial institutions in 31 countries across 1991-2010. Given the availability of data, a unbalanced panel data set, including 628 observations of 15 variables.

3.2 Variables

3.2.1 Dependent variables

ROA and ROE, the performance measures, are used as the dependent variables. ROA and ROE are widely used in the literature to measure the operation related performance. The definitions of endogenous variables are largely drawn from Hassan and Bashir (2002).

3.2.2 Endogenous variables

Endogenous variables in focus, measuring investor protection, include Dividend pay-out and Inc Net of Dist/Avg[5] Equity. Dividend pay-out is a measure of the profits after tax redistributed to shareholders in US million $. In general the higher the dividend pay-out the better but not if it is at the cost of restricting reinvestment in the bank and its ability to grow its business. Inc Net of Dist/Avg Equity is the return on equity after deducting the dividend from the return and this ratio shows by what percentage the equity has increased from internally generated funds, in other words, the higher the better.

3.2.3 Control variables

Control variables include Total Assets, Equity to Total Assets, Other Operating Income/Avg Equity, Cost to Income Ratio, Recurring Earning Power, Liquid Assets/Tot Dep & Bor, Net Int Rev/Avg Assets, Interbank Ratio, and Equity/Liabilities.

Total Assets is the total assets of each bank in a given year in US million $. Equity to Total Assets is the ratio which measures the ability of the bank to withstand losses. A declining trend in this ratio may signal increased risk exposure and possibly capital adequacy problem.

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[5] Avg. stands for the arithmetic mean of the value at year t and year t-1.

Other Operating Income/Avg Equity indicates to what extent fees and other income represent a great percentage of earnings of the bank. As long as this is not volatile trading income it can be seen as a lower risk form of income. The higher this ratio, the better.

Cost to Income Ratio measures the overheads or costs of running the bank, the major element of which is normally salaries, as percentage of income generated before provisions. It is a measure of efficiency although if the lending margins in a particular country are very high then the ratio will improve as a result.

Recurring Earning Power is a measure of profits after tax adding back provisions for bad debts as a percentage of Total Assets. This ratio is a return on asset performance measurement without deducting provisions.

Liquid Assets/Tot Dep & Bor is a deposit run off ratio and looks at what percentage of deposit and borrow could be met if they were withdrawn suddenly. The higher this percentage, the more liquid the bank is and less vulnerable to a classic run on the bank.

Net Int[6] Rev/Avg Assets indicates that the item is averaged using the net income expressed as a percentage of the total balance sheet.

Interbank Ratio equals the money lent to other banks divided by money borrowed from other banks. If this ratio is greater than 100, it indicates the bank is net placer rather than a borrower of funds in the market place, hence more liquid.

Equity/Liabilities ratio indicates the equity funding and capital adequacy.

3.2.4 Instrument variables

Instrument variables used here include Net Int Rev/Avg Assets, Interbank Ratio, and Equity/Liabilities. Definition and measure are mentioned in Section 3.2.3.

3.3 Methodology

The relationship between financial performance and its determinants can be expressed mathematically as follows

$$y_{i,t} = f(x_{i,t}) + u_{i,t} \tag{1}$$

, where $y_{i,t}$ is a vector of dependent variables, consisted by ROI and ROE, $x_{i,t}$ is a vector of endogenous variables, including Total Assets, Equity to Total Assets, Dividend pay-out, Inc Net of Dist/Avg Equity, Other Operating Income/Avg Equity, Cost to Income Ratio, Recurring Earning Power, Liquid Assets/Tot Dep & Bor, Net Int Rev/Avg Assets, Interbank Ratio, and Equity/Liabilities; $u_{i,t}$ is the error term. Index i denotes panels, or Bankid here; t denotes year.

Eq. (1) – (3) are specified using five approaches (Stock and Watson 2008), namely

  i. Ordinary Least Squares (OLS) analysis using cross-sectional data, controlling year and clustering banks, putting it mathematically

$$y_{i,t} = \alpha_i + \beta x_{i,t} + u_{i,t} \tag{2}$$

, where α_i is the intercept; β is a vector of coefficients to be estimated; $u_{i,t}$ is the error term.

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[6] Stands for income.

    ii.   Fixed effect model using panel data

$$y_{i,t} = \beta x_{i,t} + \lambda_t + \xi_i + u_{i,t} \tag{3}$$

, where λ_t is the time (year); ξ_i is fixeded effect and is the bank fixeded effect; $u_{i,t}$ is the error term.

    iii.   Random effect model using panel data

$$y_{i,t} = \alpha + \beta x_{i,t} + u_{i,t} \tag{4}$$

, where α is the average ROI/ROE for the entire population.

    iv.   Instrumental variable (IV) modelling using panel data, the instruments are Net Int Rev/Avg Assets, Interbank Ratio, Equity /Liabilities.

$$y_{i,t} = \alpha + \beta_1 x_{i,t} + \beta_2 w_{i,t} + u_{i,t} \tag{5}$$

, where β_1 is the vector of coefficients to be estimated for endogenous variables; $w_{i,t}$ is the vector of instruments.

    v.   IV model using GMM as the estimator and additional options are exercised to obtain fixed effects and robust results. Eq. (5) has also been adopted in this model, except that Generalized Methods of Moments (GMM) is used as the estimator.

In order to yield robust results, all the models are applied cluster analysis to minimise the heterogeneity among banks in different countries. In addition, robust option has been selected to correct heterogeneity.

The STATA 11.2 software is used to empirically specify the above models. Recently release XTIVREG2 package is couple GMM and fixed effect together for IV models using panel data.

4. Results and discussion

4.1 Descriptive statistics

This section only highlights some descriptive statistics of the variables included in the analysis. As shown in Table 2, eight out of fifteen variables have missing values. It is telling to observe that most of the ratios have negative values, which signals flags for the operation of the businesses.

Table 2 Descriptive statistics

Variable	No. of Obs.	Mean	Std. Dev.	Min	Max
Year	628	2005.314	3.416164	1991	2010
Bank ID	628	47.00637	25.86032	1	91
ROA	628	1.271083	4.268083	-45.31	53.09
ROE	628	10.97068	16.92806	-118.28	69.92
Total Assets	628	677855.1	1.03E+07	8.24	1.92E+08
Equity to Total Assets	628	16.73054	20.22036	-31.3	99.6
Inc Net of Dist/Avg Equity	317	8.356845	13.85171	-76.03	79.25
Other Operating Income/Avg Equity	621	2.371578	2.984578	-8.57	28.19
Cost to Income Ratio	598	58.8801	57.83412	-141.09	950
Recurring Earning Power	628	2.635462	5.389725	-19.39	53.09
Liquid Assets/Tot Dep & Bor	456	42.16689	59.52575	0.03	585.08
Dividend pay-out	314	41.11564	55.30688	-450	579.71
Net Int Rev/Avg Assets	619	3.061066	5.534779	-20.77	74.78
Interbank Ratio	397	163.6523	191.9982	0	941.25
Equity/Liabilities	615	33.90844	96.03311	-23.85	926.5

The spearman correlation coefficients are calculated for each variable pairs (Table 2). Both ROA and ROE are significantly positively correlated with Dividend pay-out, and the Net Interest Revenue and Average Assets ratio, though the coefficients are relatively small.

Correlation coefficient

Table 3 Spearman correlation coefficient

	ROA	ROE	Total Assets	Equity to Total Assets	Inc Net of Dist/Avg Equity	Other Operating Inc/Avg Equity	Cost to Income Ratio	Recurring Earning Power	Liquid Assets/Tot Dep & Bor	Dividend pay-out	Net Int Rev/Avg Assets	Interbank Ratio	Equity/ Liabilities
ROA	1												
ROE	0.5872*	1											
Total Assets	0.0007	0.0426	1										
Equity to Total Assets	0.0829*	-0.1438*	-0.0351	1									
Inc Net of Dist/Avg Equity	0.4589*	0.6535*	-0.0618	-0.0686	1								
Other Operating Income/Avg Equity	0.3307*	0.1558*	0.1579*	0.1685*	0.3006*	1							
Cost to Income Ratio	-0.4828*	-0.4765*	-0.007	0.1460*	-0.5873*	0.0167	1						
Recurring Earning Power	0.5225*	0.2879*	-0.0114	0.0853*	0.6488*	0.2424*	-0.3704*	1					
Liquid Assets/Tot Dep & Bor	0.0217	-0.0889	-0.0581	0.6570*	0.0098	0.1303*	0.1344*	-0.0444	1				
Dividend pay-out	0.1345*	0.1387*	-0.0431	-0.092	-0.1517*	0.0503	-0.043	-0.0228	0.012	1			
Net Int Rev/Avg Assets	0.3494*	0.1825*	-0.1080*	0.0399	0.2583*	-0.0527	-0.054	0.3902*	-0.0375	0.0934	1		
Interbank Ratio	0.0626	-0.03	-0.0598	0.2716*	-0.0617	0.2053*	0.1878*	-0.1258*	0.3639*	0.0307	0.008	1	
Equity/Liabilities	-0.1694*	-0.1602*	-0.019	0.8428*	-0.0714	-0.0329	0.2960*	-0.0349	0.7237*	-0.0729	-0.0225	0.2716*	1

Legend: * $p < 0.05$

4.2 Model results

The data from the sample of 91 Islamic banks and financial institutions worldwide across 1991-2010 are used to empirically test the impact of investor protection on financial performance. Specifically, dependent variables - financial performance are measured by ROA and ROE; whilst the endogenous variables – investor protection are measured by dividend payout and Net Interest Revenue and Average Assets ratio. Five models are estimated, including Ordinary Least Squares Regression (OLS) based on cross-sectional data, which treats each data point as an observation; fixed and random effect model based on panel data; instrument variable model and instrument variable model using General Method of Moments (GMM) estimator. Other variables are used as control variables or instrument variables. The results for ROA and ROE are reported in Table 4 and Table 5 respectively.

Table 4 Model results (ROA)

ROA	OLS	Fixed effect	Random effect	IV	IV_GMM
Dividend pay-out	0.0141***	0.0127***	0.0132***	0.0297***	0.0241**
Total Assets	4.0e-07*	-1.20E-07	2.60E-07	1.8e-06*	1.10E-06
Equity to Total Assets	-0.211	-0.149	-0.197	0.0666*	0.0589**
Inc Net of Dist/Avg Equity	0.0937***	0.0801***	0.0901***	0.104***	0.106***
Other Operating Income/Avg Equity	0.116	0.84***	0.276	0.926***	0.862***
Cost to Income Ratio	-0.00928***	-0.00733*	-0.00937***	-0.0011	-0.00314
Recurring Earning Power	-0.219***	-0.199***	-0.195***	-0.181***	-0.201***
Liquid Assets/Tot Dep & Bor	-0.00209	-0.006	-0.00575	-0.0104*	-0.00756
Net Int Rev/Avg Assets	0.348**	0.299*	0.391**		
Interbank Ratio	0.00026	1.60E-05	-0.00016	instrument variables	
Equity/Liabilities	0.292*	0.173	0.247*		
constant	-1.21*	-1.18*	-1.07*		
R^2	0.842	0.898		0.773	0.821
Number of observations	200	197	200	197	197
Clustered by bank	Yes	Yes	Yes	Yes	Yes

Legend: * $p<0.05$; ** $p<0.01$; *** $p<0.001$

Table 5 Model results (ROE)

ROE	OLS	Fixed effect	Random effect	IV	IV_GMM
Dividend pay-out	0.16***	0.149***	0.156***	0.269***	0.267***
Total Assets	2.00E-07	-2.50E-06	-8.30E-08	7.00E-06	6.40E-06
Equity to Total Assets	-0.147	-0.634	-0.423	-0.399	-0.416*
Inc Net of Dist/Avg Equity	1.05***	0.96***	1.03***	1.13***	1.14***
Other Operating Income/Avg Equity	1.14	4.51***	1.35	5.03***	4.99***
Cost to Income Ratio	0.00654	0.015	0.00571	0.0608*	0.0593*
Recurring Earning Power	-1.61***	-1.57***	-1.57***	-1.44***	-1.45***
Liquid Assets/Tot Dep & Bor	-0.0039	0.0286	-0.00415	-0.0264	-0.0256
Net Int Rev/Avg Assets	2.23***	1.93*	2.35***		
Interbank Ratio	-0.00148	-0.0026	-0.00268	Instrument variable	
Equity/Liabilities	0.191	0.242	0.338		
constant	-4.31*	-3.92	-3.53*		
R^2	0.907	0.912		0.805	0.809
Number of observations	200	200	200	197	197
Clustered by bank	Yes	Yes	Yes	Yes	Yes

Legend: * $p<0.05$; ** $p<0.01$; *** $p<0.001$

4.3 Model selection

4.3.1 Model comparison

Though OLS produces higher R^2, panel data based models are preferred as they are able to capture both the 'between' and 'within' panel effects. Thus OLS can be used as a baseline model for comparison purpose. The hausman test shows that random effect models are better than fixed effect models in specifying the models respectively in Table 4-5.

There is no consensus so far on how to compare the performance of the Random effect model and IV model. However, it is widely acknowledged that traditional models, including fixed- and random effect models suffer from three problems, namely omitted variable bias, measurement error and selection bias. The remedy to these problems is to use Instrument Variable (IV) modelling. Comparatively, IV models with GMM estimator produces more robust results at the cost of efficiency.

Thus we select the IV-GMM model as the most appropriate model. Hence the discussion will be around the results of IV-GMM model.

4.3.2 IV tests[7]

There are two main additional tests for IV models, one is to test whether the instrument variable is an instrument; the other is to test whether the model is under-identified, weak-identified, or over-identified.

A valid instrument must satisfy two conditions, one is instrument relevance, and the other is instrument exogeneity. The former condition is proven to be valid from the Pearson

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[7] All the test results are available upon request.

correlation coefficients test listed in Table 3. The later condition is examined in STATA (using 'orthog' option) and proven to be valid too. First stage F values[8] all shown to be significant, meaning that there is no weak instrument problem in all the specifications (Stock and Watson 2009).

The under-identification test here adopts the Kleibergen-Paap rk LM statistic, which is automatically report in STATA 11.2 if 'xtivreg2' package is used. All the results reject the null hypothesis that each of the models is under-identified.

The weak-identification test adopts the Cragg-Donald Wald F statistic and the results rejected the null hypothesis that the model is weak-identified.

The over-identification test adopts Hansen J-Statistics and all the results were not able to reject the null hypothesis at 5% significant level, meaning that the model is not over-identified.

Thus, both the IV and IV-GMM model passed all the IV related tests.

4.3.3 Other robustness tests

STATA is able to solve the multicollinearity problem by deleting variables automatically, thus multicollinearity is not a concern here. Heteroskedasticity has been corrected by using cluster techniques and robust options. Auto-correlation has been corrected by using the general least squares (GLS) procedure.

In addition, the estimation of each coefficient in IV-GMM model is nearly consistent in all models. Though stationary test has not been attempted, it is not a concern as the majority of the banks only have complete data for 3-4 years, which is short-term.

4.4 Results and discussion

As IV-GMM model is proven to be the most appropriate model, the analysis below is all based on the IV-GMM models.

Ceteris paribus, the coefficient of dividend pay-out on ROA is 0.0241 and statistically significant at 1% significance level, implying that the dividend pay-out of financial institutions and banks, on average, has a positive impact on the ROA. 1 million US$ increase in dividend pay-out will lead to 0.0241 increase in the absolute value of the ROA.

Ceteris paribus, the coefficient of income net of distribution over average equity ratio on ROA is 0.106 and statistically significant at 0.1% significance level, implying that the income net of distribution over average equity of financial institutions and banks, on average, has a positive impact on the ROA. 1 absolute value increase in income net of distribution over average equity will lead to 0.106 absolute value increase in ROA.

Ceteris paribus, the coefficient of dividend pay-out on ROE is 0.267 and statistically significant at 0.1% significance level, implying that the dividend pay-out of financial institutions and banks, on average, has a positive impact on the ROE. 1 million US$ increase in dividend pay-out will lead to 0.267 increase in the absolute value of the ROE.

Ceteris paribus, the coefficient of income net of distribution over average equity ratio on ROE is 1.14 and statistically significant at 0.1% significance level, implying that the income net of distribution over average equity ratio of financial institutions and banks, on average, has a positive impact on the ROE. 1 absolute value increase in income net of distribution over average equity ratio will lead to 1.14 increases in the absolute value of the ROE.

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[8] It can be retrieved by commanding STATA to report the first stage results.

Comparatively, the income net of distribution over average equity ratio exerts a larger impact on financial performance than the dividend pay-out.

5. Conclusion, limitations and future research

To sum up, from the empirical results shown in Section 4, sufficient evidence yields the answer to our research question that investor protection has a positive impact on the financial performance. The policy implication is improving investor protection, in the means of increasing dividend pay-out and/or increase Inc Net of Dist/Avg Equity ratio, within a particular range which is yet to be identified.

The paper is subjected to four limitations, (1) the analysis fails to consider cross-country heterogeneity; though controlled by panel techniques, it still suffers from omitted variable bias; (2) analysis based on unbalanced panel data suffer from efficiency problem, which may need further corrections to generate efficient estimation results; (3) dividend pay-out and inc net of dist/avg. equity, the only two variables used to measure investor protection, may not be able to capture the whole story of investor protection amongst the diversified sample; and (4) performance measured by ROI and ROE only is not sufficient.

Future research can focus more on the following aspects: (1) performance and investor protection should be measured by a holistic approach (i.e. the investor protection index) and be expanded to multiple dimensions, i.e. efficiency and productivity; (2) the optimal level of investor protection should be pursued further to leverage between the improvement of short-term performance and sustainable development, abiding with the Shariah principles.

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Appendix

Table 1 Variable definition

Variable	Definition and measure
Year	financial year
Bank ID	a unique identifier assigned to each bank
ROA	return on average asset
ROE	return on average equity
Total Assets	total assets of each bank in a given year in US million $
Equity to Tatal Assets	book value of equities over total assets
Dividend pay-out	after tax profits paid to shareholders in US million $
Inc Net of Dist/Avg Equity	return minus distribution over average equity
Other Operating Income/Avg Equity	other operating income over average equity
Cost to Income Ratio	cost over income
Recurring Earning Power	return on assets without deducting provisions
Liquid Assets/Tot Dep & Bor	liquid assets over assets available for borrowers and depositors
Net Int Rev/Avg Assets	net interest revenue over average assets
Interbank Ratio	the money lent to other banks divided by money borrowed from other banks
Equity/Liabilities	equity over liabilities