

Socio-Economic Development and its Effect on Performance of Islamic banks: Dynamic GMM and Quantile approaches

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Abstract:

Islamic banking, being a participatory type of banking system, has entered on the global banking market in full force. Islamic banks are highly incorporated with social issues because of their rules and regulations. Profit not only depends on its own return and investment but also on trust, moral issues which may be more related to banking profitability. Political unrest such as Arab Spring for protecting property rights and preventing corruptions appear to worsen the region's overall economic freedom and economic potential. To test these gaps, this paper has made a humble attempt to investigate the socio-economic factors along with bank specific factors of global Islamic banks using recent tools such as, dynamic GMM and Quantile regression. The dataset used in this study involves 55 full-fledged Islamic Banks from 24 countries across the globe. In this study, Return on Assets (ROA) has been found significantly positive to bank specific factors such as credit risk has and statistically negative to cost to income ratio. But it has been found that the relationship between risk and return is heterogeneous or dissimilar across different quantiles. Findings of the study tend to unravel that the socio-economic factors especially political stability and investment freedom have positive and significant relation to the Islamic bank performance.

Keywords: ROA, Socio-economic freedom, credit risk, Performance, dynamic GMM, Quantile regression

JEL classification: JEL: G21, JEL: C33

1. Introduction:

Risk sharing is a unique characteristic in the Islamic Financial system that provides the financial stability, enriched financial inclusion leading to sustainable development. However, the implementation of the risk sharing concept depends on a few pre-requisites such as transparency and accountability, good governance, contacts enforcement, effective monitoring, well-structured

economic institutions, and efficient financial markets etc. unfortunately, The current state of affairs shows that a majority of the Organization of Islamic cooperation (OIC) countries do not meet these pre-requisites. (Askari et al., 2014). It is now being increasingly realized that the Islamic banks may be an alternative to conventional banks particularly during the crisis periods as reflected in the rapid growth of Islamic banking since the recent financial crises. The amount of risk faced by banks is usually of great concern to the policymakers.

Unlike the conventional banks, Islamic banks promote risk sharing principles by using many investment tools such as Mudarabah and Musharakah. Due to the dynamism of different contracts, it is generally perceived that the risk is comparatively higher in Islamic banks compared to their conventional counterparts. It is usually argued that Islamic Banks have higher degree of credit risks than interest-based banks mainly because of their nature of trade based investment. Up until now, the risk-return relationship examined by previous researchers was found to be positive, negative, or curvilinear (Nwude, E. C. 2012). The robust growth in financing and investment activities across most jurisdictions in various real sectors has helped Islamic banks record generous asset growth rates in their balance sheets. However, the returns became subdued during the financial crisis of years of 2008-2009, reaching lows of ROA 0.74% and ROE 6.16% in 2009 (IFSB, 2014). Since Islamic banks are participatory based, it could be said that this subdued Islamic banking performance is not only caused by the financial downturn but also by socio-economic instability such as Arab Spring.

In any economy, socio-economic freedom is a major dimension which will affect bank performance. The role of socio-economic freedom has assumed a developmental character in capital markets following the liberalization of stock markets. In a setting which reflects socio-economic freedom fluctuating widely across countries, investors worldwide in equity markets perceive it as fascinating to spot attractive investment opportunities. Socio-economic freedom particularly easing the regulatory framework helps international investors penetrate into domestic markets. It is broadly assessed that economic freedom is a crucial factor in determining the well-being at mass level. Countries with more economic freedom tend to be wealthy and their financial markets tend to be more stable, compared to the countries having a lower degree of economic freedom. Stock markets of the countries with higher economic freedom perform better and are more stable (Chen and Huang, 2009). Meanwhile, Smimou and Karabegovic (2010) have

the view that financial development is not determined by capitalism (proxy of economic freedom remarkably, free market system); rather it is a precondition for banking performance and development. More specifically, this growth literature points out that stable and predictable rule of law, good enforcement of contracts, protection of individual and investment freedom, labor movement and property rights, sound money and so on, are the keys to economic progress.

Despite the significant development of all Islamic banks worldwide, there were relatively few empirical works on Islamic bank's performance which is quiet in its infancy. To date, empirical studies on the performance of the banking sector in both the developed and developing countries are mostly focused on the conventional interest based banking system and there has been almost no conclusive research done on the performance of the Islamic banking sector from the point of view of bank-specific determinants and socio-economic freedom determinants. This paper seeks to fill in the gaps by addressing the following objectives:

- i) To find the impact of bank specific variables and socio-economic freedom on Islamic banks' profitability.
- ii) To find whether risk-return relationship across different percentiles is similar or not in terms of bank specific and socio-economic freedom variables.

2. Literature Review:

Traditionally studies on Islamic bank performance have focused on theoretical issues while empirical works have relied mainly on the analysis of the descriptive studies rather than rigorous statistical estimations (El-Gamal and Inanoglu, 2005). Similar to conventional banks, researchers have focused on the determinants of bank performance in terms of profitability and efficiency. The majority of studies clusters the determinants (factors) of banks financial performance into two types (Haron, 2004): firstly, the external or macroeconomic factors that are considered to be away from the control of bank administration such as gross domestic product, conventional banks interest rates, competition, regulation, concentration, market share, ownership and inflation etc. In the literature, empirical studies on profitability of Islamic banks have paid attention on specific and some concentrated on the panel of countries. The studies used in the literature aimed at explaining the profitability of Islamic banks includes Malaysia (Asma et al.,

2011; Ahmad and Ahmad, 2004), Indonesia (Izhar and Asutay, 2007), Bahrain, Egypt, Sudan, and Saudi Arabia (Al-Jarrah and Molyneux, 2003). These studies inspect the profitability determinants of Islamic banks.

Secondly, there are internal factors or the Bank-specific variable such as the liquidity, credit risk, operational efficiency, capital adequacy of the banks are also considered in number of studies perspective. In Islamic banking industry, it is usually argued that banks have higher degree of credit risks than interest-based banks mainly because of their nature of trade based investment. The ratio of loan provisions to total loans (LLP/TL) is incorporated as an independent variable in the regression analysis as a proxy of credit risk. The coefficient of LLP/TL is expected to be negative because bad loans to reduce bank profitability. In these directions, Miller and Noulas (1997) suggest that the greater the financial institutions exposure towards high risk loans, the higher would be the accumulation of unpaid loans resulting in a lower profitability. Moreover, the co-efficient of LLP/TL is expected to be negative because bad loans are likely to decrease profitability.

In addition to this, the total cost of a bank can be divided into operating cost and other expenses (including taxes, depreciations etc.). The cost to income ratio is used to provide information on the variation on the bank operating costs. This variable includes operating costs such as salary, wages, branch operating expenses etc. The relationship between the costs to income is expected to be reverse, because banks that are more productive and efficient should keep their operating cost low. Ben Naucer and Goaid (2001) and Hasasn and Bashir (2003) have found a positive impact on the performance of the Islamic banks whereas Kyriaki Kosmidou, Saleish Tanna and Pasiaras (2005) Guru et al., (2005) have found a negative relation to the performance of the Islamic banks.

Moreover, a study conducted by Ahmad and Ahmad (2004) that affect Malaysian Islamic banks credit risk. The study concludes that assets size, risky assets ratio and Islamic banks management efficiency effect found statistically significant on Islamic banks credit risk. In the Middle East, a study conducted by Bashir (2003) examined the internal variables and economic environment impact on the performance of Islamic banks. The statistically significant and positive relationship

finds between capital adequacy and profitability of Islamic banks. The researcher also concluded from the study, foreigners owned Islamic banks have ability to attain higher profit ratio than the banks locally owned. The positive impact and statistically significant relationship of inflation found on the profitability of Middle East Islamic banks.

From the Socio-economic perspectives, there has been a number of studies explore that socioeconomic freedom influences economic growth (Heckelman & Knack 2009), (Altman 2008); (Powell 2002); (Adkins et al. 2002); (De Haan & Sturm 2000); (Reedom & Rowth 2000). The findings from the most of the studies reveal that there exists a positive impact of various measures of economic freedom on economic growth. Remarkably absent in the literature is an examination of the links between economic freedom and bank performance. The limited research in this area is somewhat surprising given the importance of bank specific factors in promoting economic development (Chinn & Ito 2007); (Levine & Zervos 1998), and the impact of socioeconomic freedom is also likely to have effect on the banking sector. Additionally, on the economic freedom indexes, extensive empirical studies have been produced (Chortareas et al. 2012). While (Sala-I-Martin et al. 2007), consider the effects of economic freedom on inequality, and consider income convergence aggregate productive efficiency. Indexes of economic freedom have also been used as explanatory variables in financial economics (Roy choudhury & Lawson 2010); (Jones & Stroup 2010) characterizing the effects of the recent global recession (Giannone et al. 2010).

There has been an extensive number of research considers the effects of the economic freedom indexes on various aspects of the economy and found the evidence that economies enjoying a high degree of economic freedom can, on balance, achieve better economic outcomes. In the financial economics and banking literature, the indexes of economic freedom have been used as control variables in various contexts (Roychoudhury & Lawson 2010); (Jones & Stroup 2010). A number of studies have already included indicators that examine the degree of financial liberalization (La Porta et al. 2000) does not directly account for banking sector's efficiency but include traditional indicators of common law, creditor rights, rule of law and find that countries with more robust investor protection (where agency costs are restricted by the law) have larger capital markets. The "rule of law" has been also used to capture the effects of severe

enforcement practices for any given level of creditors or shareholders’ protection. In contrast, (Fries & Taci 2005) consider the role of banking sector reform and liberalization in the transition countries to capture the effect on bank cost efficiency.

While most of the research has highlighted the growth of the Islamic financial industry and the determinants of such growth, robust further study is essential for the future potential and growth of the industry. To that effect, there is a strong demand to put the future prospects for the industry’s development within the overall context of financial and institutional development especially in the member states of the OIC countries. The expected finding of the study will add new dimension in the Islamic banking industry.

3. Data & Methodology:

3.1 Data Collection:

To conduct this research work, data of 55 Islamic banks has been collected from 24 countries through Bankscope, World Bank and IMF research database over the period 2005 to 2013. The financial statements of Islamic banks operating in these countries are collected from Bankscope database of Bureau Van Dijk Company. The Socio-economic data such as Rule of law, property rights, corruption, investment freedom, political stability has collected from World Bank and IMF financial statistics (IFS) database.

Table 1: variable description

Variable	Definition	Description
PR	Profitability of banks	Return on Assets (ROA).
CPI	Corruption Perception index	Ranges from 1 (most corrupt) to 10 (least corrupt).
SZ	Bank Size	Natural log of Total asset
LLRGL	Credit Risk	Loan Loss Provision/Total Loan for each year averaged.
POLS	Political Stability	Ranges from -2.5 (weak) to 2.5(strong).
IF	Investment Freedom	The Investment freedom index (0-100)
PR	Property Rights	The property rights index (0-100)
CIR	Cost to Income Ratio	It refers the operational efficiency of a firm.

3.2 Methodologies:

The methodologies applied in this study are both static model, which have been used in numerous studies, and the dynamic one based on Berger et al.(2000) and more recently Goddard et al.(2004a and 2004b) and Athanasoglou et al.(2008). As Mamatzakis and Remoundos(2003) argue dynamic model uses more information and consequently the determinant factors will be estimated more efficiently. In this study both static and dynamic models are applied.

3.2.1 Static Models (Fixed and Random Effects):

The panel data is used in analyzing the bank’s portability determinants. In the panel data, the used model consists n cross-sectional units, denoted n=1, ...,N, observed at each of T time periods, t=1, ...,T. In data set, the total observation is n × T.

The basic framework for the panel data is defined as per the following regression model (Brooks, 2008):

$$Y_{nt} = \alpha + \beta X_{nt} + \varepsilon_{nt} \dots\dots\dots(i)$$

Where the dependent variable (Profitability) denoted by y_{nt} . Interecept term used and dentoted by α , on the explanatory variables, β is a $k \times 1$ vector of parameter to be estimated, and vecor of observations is X_{nt} which is $1 \times k$, $t=1, \dots, T$; $n=1, \dots, N$.

Econometric specifications:

$$ROA = \alpha + \beta_1 CIR + \beta_2 LTA + \beta_3 LLRGL + \beta_4 COR + \beta_5 IFL + \beta_6 PR + \varepsilon \dots\dots\dots(ii)$$

Here, Y represents the dependent variable Return on assets (ROA)

Independent variables:

- CIR = Cost to income ratio,
- LTA = Natural log of Total asset
- LLRGL = Loan loss reserve/ Gross loan
- COR = Corruption
- POLS = Political stability
- IF = Investment freedom
- PR = property rights
- ε = Error term

3.2.2 Dynamic GMM models:

In banking literature, fixed and random effects models are usually employed for panel data. However, it is argued that persistence of bank profitability over time could affect next year's profit (Athanasoglou et al.2008). As a result a difficulty arises with these models when a lagged dependent variable or (possible other regressor) is concerned, particularly in the context of very few time periods and many observations (Nickell, 1981). To address this issue, Arellano and Bond (1991) develop the difference GMM model by differencing all regressors and employing GMM (Hansen, 1982).

Arellano and Bover (1995) and Blundell and Bond (1998) augment the difference GMM model by developing the system GMM estimator which includes lagged levels as well as lagged differences. The system GMM estimator assumes that first differences of instrumental variables are uncorrelated with the fixed effects. It allows the introduction of more instruments, and can substantially improve efficiency. Roodman (2006), among others, argues that both difference and system GMM estimators are suitable for situations with 'small T, large N' panels; independent variables that are not strictly exogenous; fixed individual effects; heteroskedasticity and autocorrelation among, in this study, individual banks. However, the difference GMM estimators can be subject to serious finite sample biases if the instruments used have near unit root properties. Use of the system GMM results in notably smaller finite sample bias and much greater precision when estimating autoregressive parameters using persistent series (Bond, 2002). In addition, The GMM system controls for unobserved heterogeneity and for persistence of the dependent variable. The following formula for GMM proposed by Athanasoglou (2008) is used to conduct the empirical analysis:

$$II_t = C + \delta II_{i,t-1} + \sum_{j=1}^j \beta_j X^j_{it} + \sum_{m=1}^m \beta_j X^m_{it} + \varepsilon_{it} \dots \dots \dots (iii)$$

Where, II_t is the probability of bank i at time t where $i=1 \dots N$, $t=1$, C is the Constant Term.

$II_{i,t-1}$ is the lag value of dependent variable, X_{it} are the explanatory variables and ε_{it} the disturbance term, with v_{it} the unobserved bank-specific effect and u_{it} the idiosyncratic error. This is a one-way component regression model, where $v_{it} \sim IIN(0, \sigma_v^2)$ and independent of $u_{it} \sim (0, \sigma_u^2)$. The X_{it} are grouped into bank-specific X^j_{it} and macroeconomic variable X^m_{it} .

3.2.3 Quantile Regression (QR) model:

This study employs a QR model in which the parameter of explanatory variables can be expressed as a monotone function of a single, scalar random variable. The model captures systematic influences of conditioning variables on location, scale and shape of the conditional distribution of the response. The model is thus significantly extended with a constant coefficient in which the effects of conditioning are confined to a location shift. Furthermore, this study reveals that traditional optimization techniques, including OLS and LAD, disregard different behaviors in the tail regions of bank profitability distributions and the risk –return relationships in banks change in the tail regions. Following this line of thought, a QR technique developed by Koenker and Bassett (1978) is used in this study to examine the dynamic relationship between the risk and bank profitability performance.

Assuming that the θ th quantile of the conditional distribution of the explained variable is linear in x where $\text{Quant}_\theta(X_i)$, the conditional QR model can be expressed as follows:

$$Y_i = x'_i \cdot \beta_\theta + u_{\theta i}$$

$$\text{Quant}_\theta(y_i | x_i) = \inf \{ y : F_i(y|x)\theta \} = x'_i \cdot \beta_\theta \dots \dots \dots (iv)$$

$$\text{Quant}_\theta(u_{\theta i} | x_i) = 0$$

where $\text{Quant}_\theta(y_i | x_i)$ represents the θ the conditional quantile of y_i on the regressor vector x_i ; β_θ is the unknown vector of parameters to be estimated for different values of θ in $(0,1)$; $u_{\theta i}$ is the

error term assumed to be continuously differentiable c.d.f. (cumulative density function) of $F_i(y|x)\theta$ and a density function $F_i(y|x)\theta$. The value $F_i(y|x)\theta$ denotes the conditional distribution of y conditional on x . Varying the value of u from 0 to 1 reveals the entire distribution of y conditional on x . The estimator for $b u$ is obtained from

$$\min \sum_{i:u\theta >=0} \theta \times |u\theta| + \sum_{i:u\theta <=0} (1 - \theta) \times |u\theta|$$

$$= \sum_{i:yi-x'i.\beta\theta >=0} \theta \times |yi-x'i . \beta\theta| + \sum_{i:yi-x'i.\beta\theta <=0} (1 - \theta) \times |yi-x'i . \beta\theta| \dots(v)$$

4. Results and Discussion:

4.1 Descriptive Study:

To analyze the result of the study, first it is useful to comment on some preliminary features of our data. Table 3 shows descriptive statistics for the profitability (ROA) and the bank-specific and macroeconomic variables used in our model. In average, the return on average asset of 55 Islamic banks used in this study is 1.07. The mean of all other independent variables are also positive except Political stability.

Table 2: Descriptive statistics

	ROA	CIR	LTA	LLRGL	COR	POLS	IF	PR
Mean	1.0786	65.9502	14.6055	8.57324	0.03972	-0.4854	45.500	45.863
Median	1.1750	50.8800	14.8930	3.55500	0.06000	-0.3700	45.000	50.000
Max.	17.7800	668.750	18.1281	100.000	1.72000	1.36000	90.000	90.000
Min.	-23.6600	10.5000	10.7166	0.00000	-1.5700	-2.6900	0.0000	10.000
Std. Dev.	3.39320	77.4477	1.55505	15.6374	0.89593	1.14195	19.409	16.601
Skewness	-1.89712	5.23403	-0.2426	3.81701	0.01808	-0.3918	0.226	0.3597
Kurtosis	18.6766	33.4312	2.31794	18.7652	2.1168	2.0812	3.2703	3.8795
Obs.	220 330	220 330	220 330	220 330	220 330	220 330	220 330	220 330

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Notes: The dependent variable is ROA is calculated as net profit divided by total assets. CIR-the cost to income ratio is used as a proxy for operating efficiency. LLP/TL is a measure of credit risk calculated as the ratio of total loan loss provisions by total assets. . LOG TA is a proxy measure of size, calculated as a natural logarithm of total bank assets. POL measures the political stability. IF indicates the Investment freedom and PR refers the Property rights.

The mean of cost to income ratio is the largest (65.95) and varies greatly across banks (max = 668.75 and min = 10.5). The standard deviation is highest in the 77.44 in the cost to income ratio. The CIR and size (Log TA) of the sampled bank in GCC region is 8.57% and 14.60 respectively. The variable LLRGL which is the proxy for credit risk is 8.57. From the risk perspective i.e standard deviation, The highest value lies in the CIR variable followed by LLRG and ROA by 15.63% and 3.39% respectively. From the socioeconomic perspective, over the the average mean of the POLS is negative meaning that the political stability of the sampled countries are less than the standard level.

4.2 Correlation Matrix:

According to Table 3, the loan loss provision to gross revenues seems to be negatively correlated with the profitability measure, indicating that, when the loan loss provisions increase, profitability moves to the opposite direction by -0.0218. As expected cost to income ratio (overhead expenses) is negatively correlated with profitability with a correlation of -0.3246. Continuing to the correlations of between total assets and ROA is positively correlated with by 0.1936. On the other hand, Socio-economic variables such as Corruption, political stability, investment freedom and property rights are negatively related to ROAA with -0.3246, -0.2519, -0.4327 and -0.3700 respectively. Finally, since there is no value more than .85, we can say that there should not be any multicollinearity.

Table 3: Correlation matrix

	ROAA	CIR	LTA	LLRGL	COR	POLS	IF	PR
ROAA	1.0000							
CIR	-0.6155	1.0000						
LTA	0.1936	-0.3550	1.0000					
LLRGL	-0.0218	0.2274	-0.3722	1.0000				
COR	-0.3246	0.2309	0.3664	-0.1318	1.0000			
POLS	-0.2519	0.0841	0.4364	-0.1295	0.8773	1.0000		
IF	-0.4327	0.4006	-0.1299	0.0211	0.3993	0.1686	1.0000	
PR	-0.3700	0.3699	0.0573	-0.0211	0.7426	0.5519	0.7450	1.0000

Notes: The dependent variable is ROA is calculated as net profit divided by total assets. CIR-the cost to income ratio is used as a proxy for operating efficiency. LLP/TL is a measure of credit risk calculated as the ratio of total loan loss provisions by total assets. . LOG TA is a proxy measure of size, calculated as a natural logarithm of total bank assets. POL measures the political stability. IF indicates the Investment freedom and PR refers the Property rights.

4.3 Model Estimations:

Before estimating the static and dynamic model in panel techniques, this study examines the panel unit root test and panel co integration test. It has been found that data are Non-stationary at the level form and it becomes stationary after using first leg. It is also found that relationships among variables are not spurious (Appendix 1 & 2).

Table 4: Model estimations

Variables	Fixed Effects	Random Effects	1 st step Differenced GMM	2 nd Step Differenced GMM
Intercept	8.34816*	1.191505	13.9455**	-.4549206
ROAA -lag of dependent variable	-----	-----	.447642***	.3786474***
LTA	-.2097977	.1466733	-1.03321**	.0655512
LLRG	.0417903**	.0342144**	.0659433**	.0911456***
CIR	-.0275974***	-.0254957***	-.0456179***	-.0489965***
COR	-.2139569	.264559	-.6410636	-.5020083
POLS	-.5398424	-.8140311**	.2260412	1.241093**
PR	-.0238131	.0188998	.0379675	.0412399
IF	-.041866**	-.0470203**	.0534214**	.0300596*
R-squared	0.4041	0.4735	-----	-----
Sagran test	-----	-----	chi2 =2.184174, Prob>chi2=0.9882	chi2 =26.95848, Prob > chi2= 0.126
F-stat/ Wald- χ^2	F stat=22.68***	182.05***	57.41***	135.12***
AR(1) test	-----	-----	Z=.16196, p=0.8713	Z= .61511, p=0.5385
AR(2) test	-----	-----	Z=.64493, p= 0.5190	Z= 1.1538,p= 0.2486
No. observations	220	220	220	220

Notes: The dependent variable is ROA is calculated as net profit divided by total assets. CIR-the cost to income ratio is used as a proxy for operating efficiency. LLP/TL is a measure of credit risk calculated as the ratio of total loan loss provisions by total assets. . LOG TA is a proxy measure of size, calculated as a natural logarithm of total bank assets. POL measures the political stability. IF indicates the Investment freedom and PR refers the Property rights.

Notes 2: Values in parenthesis are t statistics, (***) (**), (*) indicates significance at 1, 5, and 10% level respectively.

Since the Hausman test has proven that in our case random effect is more suitable than fixed effect (Appendix 1), this paper will give more focus on random effect. Here, Table-4 provides the estimation results of the random effect model. We can see that although variables like corruption and property rights are insignificant, now exhibit more intuitively plausible positive direction of influence. Even though the overall Protecting Investors Index retains positive sign, three of its seven components now have negative effect. The next credit risk procedures exhibit positive sign, confirming the theoretical predictions. Finally, political stability and investment freedom of socio-economic freedom indicators reveal negative effects on banking performance.

On the other hand, cost income to ratio is highly negatively significant which is confirmed by the theoretical prediction. It is found negative and significant impact on the profitability of Islamic banks even at 1 % significant level in all the above models. A 1% increases in the cost of the Islamic bank it may reduce 0.025% ROA of Islamic banks. Referring to the impact of credit risk, it is found positive and significant impact on the profitability of Islamic banks even at 5 % significant level in all the above models. This result implies that increase (decrease) in this credit risk increase (decrease) the profits of Islamic banks operating in the Islamic banking sector.

As already discussed, the estimators of this model still suffer from bias due to the lack of dynamic relationship between lagged dependent variable. Since GMM can solve only the ‘fixed effect’ problem but fixing the problem of ‘correlation between the lagged dependent variable and the error term’ and ‘the endogeneity of some explanatory variables’ problems, this study applied the 1step and 2-step differenced GMM. The next two columns of the table show findings of GMM estimations. Column four describes results of Difference GMM estimation. All of the indicators have significant explanatory power; moreover the signs of the estimates mostly conform to its theoretical predictions almost in every case.

These results confirm the thesis of positive influence of institutional variables on the financial sector. Therefore, we can infer that institutional quality, including specific bank determinants and broader socio-economic freedom Indicators are significant determinants of bank performance level. It should also be mentioned that the estimators hardly remain in the boundary between Random Effects and Fixed Effects. Therefore, as the next step 2nd step difference GMM estimations are used for more accurate results and inference.

Overall, using both 1st Difference and 2nd difference GMM methods this paper finds that the variables exhibit correct direction of influence. The magnitudes of which are not overly sensitive to change in specifications between 1st Difference and 2nd Difference GMM.

4.4 Quantile Regression:

Table 5 lists the estimation results of the QR model for the impact of the Bank specific variables and socio-economic variables on the ROA. For comparison, the OLS estimates are also presented. Here, both OLS and the quantile regression at three different quantile have been studied. Interestingly, the result of OLS varies at different percentile especially loan-loss reserve and total assets etc. The result indicates that as more risks are taken by a bank, more money could be made. However, the OLS estimator, by focusing only on the central tendency of the distributions, does not allow the impact of the LLRGL on bank profitability to differ for more/less profitable banks. By contrast, the quantile-varying estimates of the LLRGL variable derived by the QR model, as shown in Table 3, reveal considerable variation in size, significance and even in sign. In particular, by using the 5% level of significance as a criterion, while the LLRGL variable is associated with an insignificant coefficient at the central quantiles, from 25 percentile, it becomes a significantly positive (negative) coefficient at higher (lower) quantile levels from 0.50 to 0.75 (0.05 – 0.25).

Table 5: Quantile regression at different percentiles

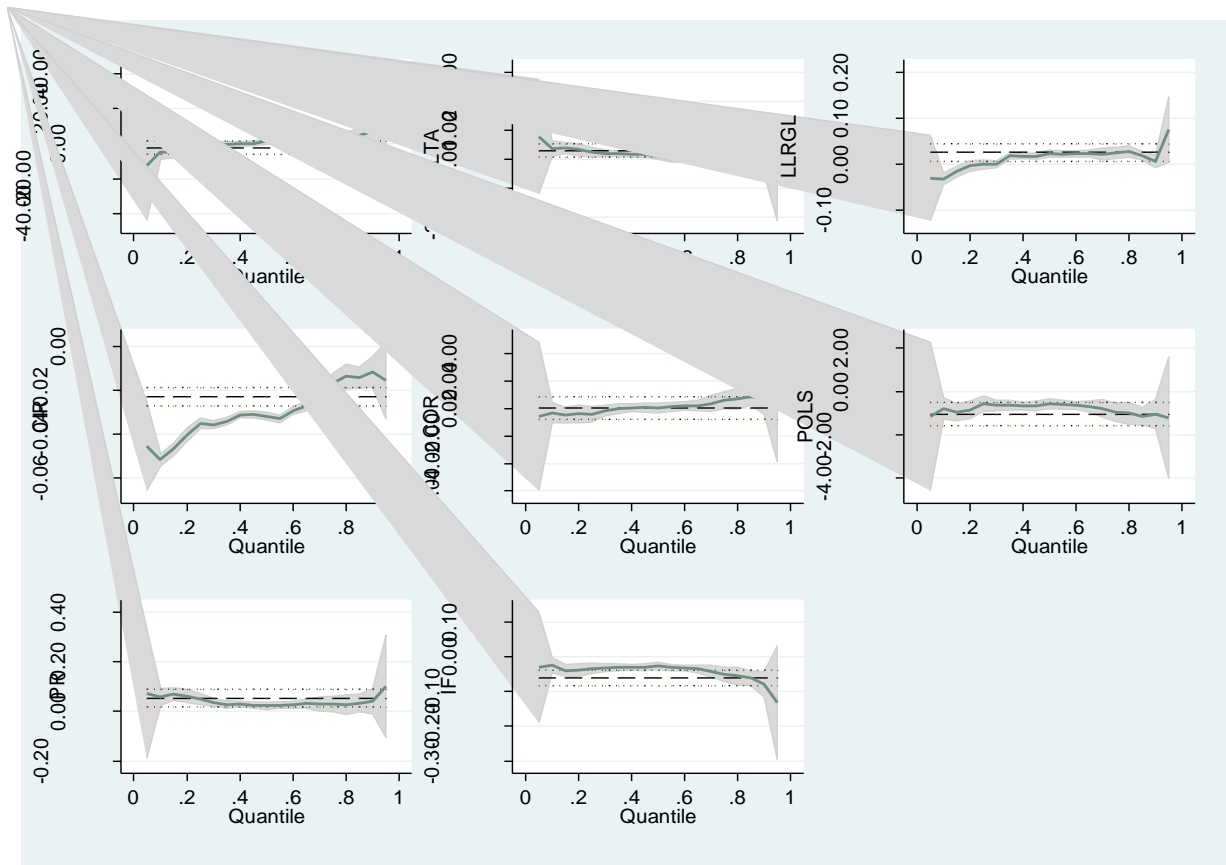
	OLS_res	Q25_res	Q50_res	Q75_res
	b/se	b/se	b/se	b/se
LTA	.305076**	.2484167*	0.090	0.090
LLRGL	.0257229**	0.000	.0231***	.0251023**
CIR	-.0229395***	-.0349813***	.0318***	-.0166553***
COR	0.052	-0.414	0.054	0.613
POLS	-1.042793***	-0.572	-.5685768***	-.9539279***
PR	.0533228**	.0502805**	.023082*	0.030
IF	-.0608303***	-.0338887**	-.0274277***	-.0507418***
_cons	-2.271	-2.073	1.519	2.010
	p<0.01,	***	p<0.001	

Notes: The dependent variable is ROA is calculated as net profit divided by total assets. CIR-the cost to income ratio is used as a proxy for operating efficiency. LLP/TL is a measure of credit risk calculated as the ratio of total loan loss provisions by total assets. . LOG TA is a proxy measure of size, calculated as a natural logarithm of total bank assets. POL measures the political stability. IF indicates the Investment freedom and PR refers the Property rights.

Notes 2: Values in parenthesis are t statistics, (***), (**), (*) indicates significance at 1, 5, and 10% level respectively.

On the other hand, the Bank size (LTA) varies at different percentile as shown in Table 3, reveal considerable variation in size, significance and even in sign. In particular, by using the 5% level of significance as a criterion, while the LTA variable by using 5% level of significance; it has been found that LTA is associated with an insignificant coefficient at the 25 percentile whereas OLS found that Sixe has a positive impact on the performance of the Islamic banks at 5% level of significance.

Fig 1: Regression lines: QR vs OLS for different variables



Subsequently, Figure 1 depicts the QR estimates and the OLS estimates. Apparently, as moving up the bank profitability quantiles levels, the QR estimates varies widely. Moreover, a comparison of the QR estimates with the traditional OLS estimates indicates that the OLS estimates underestimate the positive risk – return relationship at the higher quantile levels and obtain the wrong conclusion at the lower quantiles. In Figure 1 presents the regression lines derived by the QR against the OLS methods. Here, it can be seen that the LLRGL, LTA and CIR varies at different percentile.

This finding requires some explanations. In theory, a bank taking a relatively high risk is supposed to earn high profits, but is also exposed to certain costs; therefore, its profitability might be reduced. In particular, bankruptcy costs may be relatively high for a bank maintaining higher risk exposure. A subsequent increase in risk taking should lead to a decrease in

profitability by heightening insurance expenses on uninsured debt. Our empirical findings show that highly profitable banks can increase their profitability by taking more risks; by contrast, the superior policy in less-profitable banks is to decrease rather than increase their risk exposures. For Bank size, it can explain that according to dis-economic of scale, the size of a bank could be negative related to the performance due to the marginal cost. Therefore, the size and the performance of Islamic banks are not linear at different percentile. From the socio-economic perspectives, the results are consistent in most of the variables except political stability and property rights. The reasons for this variation at different scale could be due to its size and customer involvement since when the size of the bank at a small scale, the effect of the profitability might be less than a large scale bank.

5. Conclusion:

Islamic finance is in a unique position to offer an alternative to the present interest-rate based debt-financing regime that has brought individual and global economies to a series of crisis and lopsided prosperity. The core principle of Islamic finance is risk-sharing. Risk sharing is trust intensive. Trust is enhanced by effective institutions. Effective institutions are also key to sustained and just economic development and growth. Unfortunately, today's Muslim countries are institutionally deficient. However, the core principles of Islam provide better roadmap for reforms and institution building.

In this study, it has been examined that the level of economic freedom could matter strongly for banking performance and credit risk. To invest in potential market, the index of economic freedom can be applied to size up an economy. This study used 24 countries over 2005-2013 to see how banks could perform along with the index as well as a breakdown of its individual components. On the contrary, there were some sketchy evidence that showed that economic freedom exerts huge impact on bank performance. In addition, bank specific determinants also exhibit measureable effects on bank performance. In sharp contrast, there is crystal clear evidence that showed that less government intervention promotes bank performance stability in a muslim country. This inference is supported by the results based on aggregate measurement of socio-economic freedom and bank specific variables. This study found that greater economic

freedom delivers investors with better mean-variance investment efficiency. From the bank specific variables, it has been found that the relationship between risk and return is heterogeneous or dissimilar across different quantiles meaning that if bank could take more risks then highly profitable banks can increase their profitability. In contrast, a better policy in less-profitable banks is to decrease rather than increase their risk exposure. Finally, this paper suggests that policy maker such as Bank management; regulators and investors should follow the holistic approach such as considering both the socioeconomic factors and the bank-specific factors together.

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Appendix:

1. Panel Unit root test:

Group unit root test: Summary

Series: ROAA LLRGL IF LTA CIR COR PR POLS

Date: 03/26/15 Time: 16:16

Sample: 1 261

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 4

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-27.0953	0.0000	12	3111
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-33.6345	0.0000	12	3111
ADF - Fisher Chi-square	808.781	0.0000	12	3111
PP - Fisher Chi-square	1032.81	0.0000	12	3120

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

2. Panel Co-integration test:

Kao Residual Cointegration Test

Series: ROAA LLRGL IF LTA CIR COR PR POLS

Date: 04/11/15 Time: 23:35

Sample: 2008 2013

Included observations: 330

Null Hypothesis: No cointegration

Trend assumption: No deterministic trend

Automatic lag length selection based on SIC with a max lag of 0

Newey-West automatic bandwidth selection and Bartlett kernel

	t-Statistic	Prob.
ADF	-6.024497	0.0000
Residual variance	5.010460	
HAC variance	3.768972	

3. Sargan Test: (one step differenced)

Sargan test of over identifying restrictions

H0: over identifying restrictions are valid

$$\text{chi2}(9) = 15.87833$$

$$\text{Prob} > \text{chi2} = 0.0695$$

4. Sargan test of over identifying restrictions (2nd step differenced)

H0: over identifying restrictions are valid

$$\text{chi2}(13) = 26.95848$$

$$\text{Prob} > \text{chi2} = 0.126$$

5. Hausman Test:

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
LTA	1.31703	1.809788	-.4927588	1.113571
LLRGL	.1358475	.0626793	.0731683	.0393643
CIR	-.0705705	-.0754937	.0049232	.0040113
COR	.8882876	-.303545	1.191833	1.946878
POLS	-3.852608	-4.109133	.2565252	1.207561
PR	.0023912	.084703	-.0823118	.0646205
IF	-.2448058	-.204921	-.0398848	.0402491

b = consistent under Ho and Ha; obtained from
B = inconsistent under Ha, efficient under Ho; obtained from

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(7) &= (b-B)' [(V_b-V_B)^{-1}] (b-B) \\ &= 10.46 \\ \text{Prob}>\text{chi2} &= 0.1641 \end{aligned}$$