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## **Corporate Governance in Islamic Banks: New Insights for Dual Board Structure and Agency Relationships**

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### **Abstract**

We investigate the influence of the dual board structure on the financial performance of Islamic banks. The paper also investigates the unique agency relationships using a sample of 90 Islamic banks across 13 countries over the period 2006-2014. We find that the larger the Shari'ah Supervisory Board (SSB) the better the financial performance and this result reinforces the fundamental role of the SSB to certify permissible financial instruments and products. We also find evidence of the scope of operation hypothesis with respect to both the board of directors and the SSB as Islamic banks are characterised by a higher degree of complex operations. Interestingly, we find that a larger SSB size may result in lower agency costs and that the greater the size of the unrestricted contracts, the higher the agency costs. This implies that unrestricted profit-sharing contracts are one of the main sources of the unique agency relationships in Islamic banks. The paper has a number of policy implications for regulators including the design of governance mechanisms in Islamic banks and the dynamics of unrestricted contracts.

*Key words: Islamic Banks, Shari'ah Supervisory Board, financial performance, corporate governance.*

*JEL Classifications: G15, G21, G39*

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# Corporate Governance in Islamic Banks: New Insights for Dual Board Structure and Agency Relationships

## 1. Introduction

Islamic banking has grown phenomenally since the 1970s when the Dubai Islamic Bank was first founded, followed by Kuwait Finance House, the Faisal Islamic Bank in Egypt, and the Al-Baraka Bank (El-Gamal, 2007 and Farag, 2016). Since then there is a remarkable growth in the size of Islamic Finance industry, for instance, the total assets of Islamic banking industry increased from USD 1.4 trillion in 2014 to USD 1.5 trillion in 2015 with outstanding balance of Sukuk (Islamic bonds) of USD 318.5 billion (IFSB- Stability Report, 2015).

The economic and financial principles underlying Islamic law (Shari'ah) have a direct impact upon Islamic banking industry e.g. the absolute prohibition of the payment or receipt of interest, the banning of speculative trading activities and the concept of profit- and loss- sharing (Lewis, 2005). The prohibition of interest and gambling protected Islamic banks from being affected by the recent financial crisis caused mainly by inappropriate sub-prime mortgages and speculative transactions in derivatives (Chazi and Syed, 2010; Smolo and Mirakhor, 2010; and Ahmed, 2010). The investments contracts offered by Islamic banks should also be compliant with Shari'ah law. These contracts are mainly designed based on the concepts of equity participation, profit-sharing (Mudaraba), and profit- and loss-sharing (Musharaka) (Farag, 2016). Investment

account holders (IAHs), therefore, are the main providers of funds to Islamic banks (Safieddine, 2009).

While depositors usually do not share risk in conventional banks, IAHs share profit and loss with Islamic financial institutions (IFIs) (Musharaka contracts) (Archer et al., 1998 and Farag, 2016). The riskiest type of Islamic contracts is known as Mudaraba contracts which come in two different forms, namely restricted and unrestricted contracts (Archer et al., 1998 and Karim, 2001). Unrestricted contracts allow bank management to make investment decisions at their discretion and are usually recorded in the Islamic banks' liabilities<sup>1</sup> (Farag, 2016). However, restricted contracts usually allow IAHs to have a say in how banks use the capital provided by them and are usually recorded as off balance sheet accounts (Archer et al., 1998 and Karim, 2001). In both contracts, IAHs have no right to interfere in fund management and more importantly, IAHs are liable to financial losses (Safieddine, 2009 and Farag, 2016).

The governance mechanism of Islamic banks is different from that of conventional banks due to the nature and characteristics of Islamic banking industry. As the result, we argue that Islamic banks have unique agency relationships. The conventional agency problems arising from the likelihood of management diverting from their duty to maximise shareholders' wealth are compounded by a separation between depositors' and investors' control rights (Safieddine, 2009). As Islamic banks' returns are based on profit sharing (Mudaraba) or profit-loss sharing (Musharaka) contracts, IAHs' returns depend on how well a bank performs financially which is largely dictated by management actions and behaviour (Safieddine, 2009 and Farag, 2016).

Consequently this complex multiple principal – agent problem arises where an IAH as a principal, entrusts their investment to an agent, the Islamic bank's management who are appointed by another principal, the shareholder (Grais and Pellegrini, 2006a and Farag, 2016). Safieddine (2009) points out that the agency relationships in Islamic banks are more complex than those faced by conventional banks.

The Shari'ah governance system in Islamic banks is defined as '*the structures and processes adopted by stakeholders in an institution offering Islamic Financial Services to ensure compliance with Shari'ah rules and principles*' (IFSB No.10, 2009).<sup>2</sup> Moreover, a fundamental feature of Shari'ah governance in Islamic banks is the presence of the Shari'ah Supervisory Board (SSB) which plays a principal role in reassuring stakeholders about the bank's compliance with the Islamic law (Grais and Pellegrini, 2006b). Therefore, we argue that Islamic banks have a unique dual board structure.

The main objectives of this study are threefold; firstly, we investigate the influence of board structure on Islamic banks' financial performance using a hand collected data set of 90 Islamic banks from 13 countries over the period 2006-2014. Secondly, we investigate the main determinants of board structure and the interrelationships between the board of directors and the SSB. Finally, we empirically investigate the agency relationships in Islamic banks.

We find that the greater the SSB size the better the financial performance of Islamic banks. This result reinforces the fundamental role of the SSB in certifying new financial products with

respect to Shari'ah compliance e.g. Islamic micro-finance and Islamic financial derivatives. Therefore, larger SSBs may enable Islamic banks to efficiently satisfy the growing demands for Islamic banking industry worldwide. Moreover, we find evidence of the scope of operation hypothesis with respect to the board of directors and the SSB as we find that the greater the banks' size and the older they are, the larger the boards of directors and SSBs' size. This suggests the degree of complexity in Islamic banks' operations. Furthermore, we find evidence to support the monitoring hypothesis in Islamic banks as the benefits of the increased monitoring exceed the monitoring cost, and thus Islamic banks tend to have larger boards of directors.

Interestingly, we find a positive and significant relationship between the proportion of INEDs and the SSB size. We also find that a larger SSB size may result in lower agency costs in Islamic banks. More importantly, we find that the greater the size of the unrestricted contracts the higher the Islamic banks' agency costs. This implies that Mudaraba contracts are one of the main sources of agency conflicts in Islamic banks.

Despite numerous studies on corporate governance, our study is the first - to the best of our knowledge - to investigate both the unique agency relationships and the unique dual board structure in Islamic banks vis-à-vis their financial performance using unique hand collected cross-country data. We believe that the area of Islamic finance is a virgin territory in the sense that there is a paucity of theoretical and empirical studies explaining the rationale for the board demography-financial performance nexus and the impact of this relationship on the distinctive

agency relationships. Therefore, our paper contributes to the existing literature on corporate governance in IFIs.

Our study is expected to offer a number of policy implications; our findings suggest that the regulator may reconsider the design of corporate governance mechanisms for Islamic banks and ensure full independence of the SSB as currently its members are appointed by the board of directors. Moreover, our results suggest that the regulator may also reconsider the design of the unrestricted contracts to mitigate agency conflicts between IAHs, shareholders and Islamic banks' management. The rest of the paper is organised as follows. Section 2 presents a brief description of the roles of the SSB and the characteristics of the dual board structure in Islamic banks. Section 3 introduces the main theoretical perspectives. Section 4 reviews the literature on board structure and formulates the relevant hypotheses. Sections 5 and 6 describe the dataset and the econometric modelling respectively; whilst section 7 discusses the empirical results. Section 8 discusses the implications of the results and concludes the paper.

## **2. Dual Board Structure in Islamic Banks:the Shari'ah Supervisory Board (SSB)**

There have been extensive studies on the interrelationships between governance mechanisms and board structure. John and Senbet (1998) conduct a comprehensive literature survey on the linkage between corporate governance and board effectiveness. Highlighting the unique features of the relationship between boards of directors and management and the power of management



in directors' selection and retention, the model designed by Warther (1998) has clear implications for the overall board effectiveness.

Moreover, there has been an ongoing debate in the corporate governance literature about the advantages and disadvantages of single-tier (unitary) boards versus the dual board structure. Jungmann (2006) highlights that the decision making process is much faster in single-tier boards as the frequency of meetings is higher compared with the dual board structure. Moreover, all directors (executives and NEDs) are involved in the decision making process and have the same access to information and this enhances the flow of information. On the other hand, the main disadvantage of the unitary board structure is the non-separation between managerial and supervisory roles (Jungmann, 2006). However, this is the main advantage of the dual board structure.

IFIs have a unique dual board structure; therefore, it is necessary to understand how IFIs, in particular Islamic banks, are typically governed. For a start, Islamic banks operate differently from conventional banks. As Islamic banks cannot charge interest (riba), Shari'ah principles call for the design of savings accounts where the IAHs' return is discretionary (based on the bank's overall profitability) (Safieddine, 2009). These saving accounts are thus structured based on the concept of equity participation, profit-sharing (Mudaraba), profit and loss sharing (Musharaka) and sales contracts (Murabaha)<sup>3</sup> (Aggarwal and Yousef, 2000). As Shari'ah compliance is essential to the credibility of IFIs, it is one of the key responsibilities of the board of directors to establish a mechanism that enables Shari'ah scholars to apply and monitor the

compliance with Shari'ah (IFSB No.3, 2006); this mechanism is identified as the SSB. The main roles of the SSB are ex-ante and ex-post Shari'ah monitoring. The former is concerned with the certification of financial instruments while the latter is concerned with transactions' compliance with Shari'ah principles. Moreover, the SSB should advise on the calculation and payments of Zakat<sup>4</sup> in addition to the disposal of non- Shari'ah compliant income (Grais and Pellegrini, 2006).

The Islamic Financial Services Board (IFSB) states that, subject to shareholders' approval in the annual general meeting, boards of directors should appoint the members of the SSB. Boards of directors may delegate this power to the nomination committee or to the CEO. The SSB members are specialised jurists in Islamic jurisprudence and scholars in the field of Islamic finance. The IFSB states that the SSB should comprise of at least three independent non-executive members. The IFSB also emphasises the independence and competency of the SSB members. Moreover it stresses the consistent application of rules and maintaining confidentiality. The SSB should meet regularly to carry out a periodic review of Shari'ah compliance. Members of senior management in Islamic banks may attend the SSB meetings to represent the viewpoint of the board of directors, however they have no voting rights. Furthermore, the SSB may hold two joint meetings per year with the board of directors to discuss issues of common interest.

### 3. Theoretical Perspectives

#### 3.1 Agency Theory

The agency conflict in the banking sector requires unique analysis. This analysis is a consequence of a bank board's duty to safeguard the funds of all capital providers, including depositors. The role played by the regulator, the lack of transparency and the inherent risk of systemic failure further complicates the agency structures in banking industry. Although a subset of the banking sector, Islamic banks exhibit somewhat different operational and strategic dynamics. In particular, Islamic banks are required to operate in a Shari'ah compliant manner besides maximising their shareholders' wealth (Archer, Ahmed and Al-Deehani, 1998). In contrast to conventional banks, IAHs share profits and losses with IFIs in Musharaka contracts.

However, in Mudaraba contracts, Islamic banks share the profits but not the risks or losses with IAHs<sup>5</sup> who are not allowed to intervene in the fund management (unrestricted Mudaraba contracts) (Safieddine, 2009). Therein lies the risk of opportunism from managers of Islamic banks to extract personal benefits at the expense of IAHs' interests (Abdel Karim and Archer, 2006). Therefore, in Mudaraba contracts- like shareholders- there is a separation between Islamic banks' management and the cash flow rights of IAHs. However, IAHs have no power to appoint the board directors unlike shareholders. Equally, IAHs have no say on the appointment of the SSB members (Farag, 2016). Moreover, IAHs do not have monitoring and/or control rights (Archer et al., 1998; Karim, 2001 and Safieddine, 2009). We agree with Safieddine (2009) and Archer et al (1998) that Islamic banks, on the one hand, are subject to multiple agency conflicts between management and shareholders and on the other hand, there is a potential conflict

between Islamic banks' management and IAHs. This unique agency relationships may result in a conflict between shareholders and IAHs (Archer et al., 1998). In this scenario, Islamic banks' management is considered as a double agent (shareholders and IAHs) (Safieddine, 2009 and Grais and Pellegrini, 2006 and Farag, 2016). Therefore, agency conflicts may exacerbate an Islamic bank's ability to attract investors.

### ***3.2 Resource Dependence Theory***

The resource dependence theory is based on the notion that board members -through advising and counselling roles - (Zahra and Pearce, 1989), provide experience and expertise, facilitate better access to resources outside the company and influence strategic decisions (Pfeffer and Salancik, 1978; Forbes and Milliken, 1999; Hillman and Dalziel, 2003). An Islamic bank's board size, the qualifications of its members and the presence of independent non-executive directors (INEDs) provide the resources that may influence the ability of a bank to comply with the basic requirements of governance to perform its fiduciary duties effectively. Safieddine (2009) finds that independent boards are well equipped to contribute to decision making processes that mitigate agency conflicts. Moreover, an independent SSB that ensures the consistency of Shari'ah rulings forms the basis of an efficient Shari'ah governance system (Hamza, 2013). Therefore, Islamic banks with independent directors and those with qualified and experienced SSB members are expected to provide sound and independent advice and guidance in relation to Shari'ah compliant products.

### ***3.3 Legitimacy Theory***

Legitimacy theory suggests that companies attempt to align their social values with the norms and bounds established within the society that they operate in (Deegan & Bloomquist, 2006). Legitimacy can be described as a resource which a business requires to operate; in this context, for Islamic banks to survive, they have to demonstrate and provide evidence on the compliance of their products with Shari'ah law. The perception of Islamic banks is enormously important to the Islamic community. Where Islamic banks operate in unacceptable manner, the Islamic community effectively revokes the banks' 'licence' to continue their operations. The SSB's role is therefore to ensure compliance with the Shari'ah principles otherwise funds may be withdrawn and investment contracts cancelled, resulting in a fall in profits and performance of Islamic banks.

## **4. Literature Review and Hypotheses Developments**

### ***4.1 Islamic Bank Board Size and Performance***

Resource dependence theory provides the rationale that larger boards are associated with higher levels of financial performance (Goodstein et al, 1994; Pfeffer, 1972). On the other hand, the literature on non-financial companies generally finds that board size is negatively correlated with financial performance (Yermack, 1996; Eisenberg et al, 1998). Thus, there is no consensus on the view that larger boards are associated with better performance and there might be advantages associated with smaller boards. For instance, Jensen (1993) suggests that beyond seven or eight directors, boards are less likely to function effectively. A large number of directors may significantly inhibit a board's ability to take strategic actions (Goodstein et al, 1994). Judge and

Zeithaml (1992) find that larger boards are less likely to get involved in strategic decision making. Goodstein et al (1994) argue that larger boards develop coalitions and factions that may lead to group conflict. In sum, companies tend to determine their board size as a trade-off between the advisory benefits and the cost of communications. However, companies, deemed to be complex, perform better when their board size increases (Coles et al, 2008).

The empirical findings on the influence of board size on financial performance in financial institutions is also mixed. Large banks are deemed organisationally complex in the sense that they have many subsidiaries, all of which have their own boards. Adams and Mehran (2012) find a positive relationship between banks' board size and the financial performance of US bank holding companies (BHCs). They argue that large boards may add value when the complexity of BHCs increases. Andres and Vallelado (2008) use the system GMM estimator and find a positive but non-linear (inverted U-shaped) relationship between board size and financial performance in a sample of 69 conventional banks in six countries (UK, US, Canada, France, Italy and Spain). This suggests that appointing an additional director beyond a particular board size results in lower financial performance. They conclude that board size is a trade-off between the advisory benefits and the cost of communications, and that a 'one-size fits all' board is not appropriate given the complexity of the banking industry. However, using a larger sample of 212 U.S. BHCs over a 17 year span, Pathan and Faff (2013) find a negative relationship between board size and the financial performance. The above discussion reveals that the literature provides no clear consensus on the relationship between board size and financial performance (Daily & Schwenk,

1996; Johnson et al, 1996; Zahra & Pearce, 1989). Thus, we formulate our first hypothesis as follows:

*H<sub>1</sub>: There is an association between board size and Islamic banks' financial performance.*

#### **4.2 Shari'ah Supervisory Board (SSB) and Bank Performance**

Agency theory dominates corporate governance where good governance is often interpreted as solely oriented towards value maximisation (Daily et al, 2003). A focus on value maximisation means orientating to agency theory's first layer which is depicted often by a profit and self-interest desire (Jensen, 2002). Focusing on describing what good governance looks like has helped obscure agency theory's second layer; shareholders as agents of society. The second layer acknowledges that companies enter into contracts with a society to create positive, mutually beneficial relationships that if violated, can lead to harmful societal actions against the companies (Walsh & Seward, 1990).

The SSB might be a solution to the challenge of the second layer agency theory as it engages in actions such as providing advice to the board on activities that best suit the objective of societal benefits. The SSB, through its role as guardian of Shari'ah compliance, may overrule business transactions which are deemed to be non-Shari'ah compliant even though such transactions are in the best interest of shareholders. This implies a potential conflict of interest where the board of directors is expected to act in the interest of shareholders, whereas the SSB's function is to act in the interest of all stakeholders. To enhance the credibility of IFIs, the effectiveness of the

Shari'ah governance is essential, otherwise failing IFIs may potentially lead to market disruption and cause serious damage to the growing Islamic finance industry<sup>6</sup>.

The literature on Shari'ah governance documents differences among IFIs on the hierarchical position and the structure of the SSB within the organisation (Garas and Pierce, 2010). The limited empirical studies on Shari'ah governance e.g. Chapra and Ahmed (2002); Maali et al, (2003); Grais and Pellegrini (2006b) and Hasan (2011), broadly confirm the discrepancy in Shari'ah governance mechanisms across countries. A qualitative cost-benefit analysis on the existence of the SSB is discussed in Garas and Pierce (2010) who argue that the presence of a SSB imposes additional costs in remunerating its members in addition to the extra legal costs incurred to certify the compliance with Shari'ah principles. However, they point out that the SSB, in approving Islamic banks' contracts, ensures profit legitimacy and provides confidence to the wider stakeholders.

To the best of our knowledge, there is no published empirical study on the relationship between SSB size and Islamic banks' performance. However, it could be argued that an increase in SSB size would be beneficial to an Islamic bank's performance as its members have the authority to approve new products which bring in additional business e.g. Islamic micro-finance and financial derivatives. Therefore, we expect Islamic banks with a larger SSB size may have better financial performance. Thus, we formulate our second hypothesis as follows:

*H<sub>2</sub>: There is a positive relationship between SSB size and Islamic banks' financial performance.*



### ***4.3 Islamic Bank Board Independence and Financial Performance***

The monitoring role is a central element of agency theory. Independent directors are perceived to be more effective monitors (Adams et al, 2010) and independent boards are widely believed to result in improved financial performance (Dalton et al, 1998). However, the literature offers mixed evidence on the impact of independent directors on financial performance (Yermack, 1996; Bhagat and Black, 2002; Hermalin and Weisbach, 1991; Duchin et al, 2010).

Depending on their background, INEDs- though they may lack company-specific information- may bring to the board different perspectives and enhance its advisory role (Coles et al, 2008). Likewise for banks where high information asymmetry exists, having more INEDs with company-specific know-how would benefit those banks, especially when they operate in risky and uncertain environments that have a greater need for specialised information. It is less clear to what extent the degree of board independence is related to bank performance. On the one hand, there might be an implicit cost when INEDs lack bank-specific knowledge. On the other hand, a larger number of INEDs may raise the monitoring level of the board and hence increase bank performance.

Moreover, the difficulty in measuring board independence in banks has made it even less clear to determine the empirical relationship between board independence and financial performance<sup>7</sup>. Adams and Mehran (2012) find no relationship between the presence of independent directors and bank performance. However, Pathan and Skully (2010) argue that larger banks seem to have more independent directors when the cost of monitoring is low. Andres and Vallelado (2008)

find a non-linear (inverted U-shaped) relationship between the proportion of NEDs and bank financial performance and thus appointing additional NEDs reduces financial performance. The discussion so far has indicated no specific relationship that might be expected between board independence and bank performance. Therefore, we formulate our hypothesis as follows:

*H<sub>3</sub>: Islamic banks' performance is associated with the proportion of independent non-executive directors.*

#### **4.4 Determinants of board size**

The extant literature largely interprets the determinants of board size in the light of the scope of operation and monitoring hypotheses (Boone et al., 2007). The scope of operation hypothesis states that larger and more complex companies tend to have larger boards of directors and larger proportion of INEDs to mitigate agency problems (Agrawal and Knoeber, 2001 and Boone et al., 2007). Thus the scope of operation hypothesis expects a positive and significant relationship between company size and board size. However due to free-riding problems, large boards might be less effective in the monitoring role (Boone et al., 2007).

The monitoring hypothesis states that board size is determined as a trade-off between the incremental company-specific benefits of monitoring by appointing an additional director and the cost of such monitoring (Boone et al., 2007). This suggests that when the benefits of increased monitoring exceed its cost, companies tend to have larger boards and the opposite is correct (Boone et al., 2007). In other words, the monitoring hypothesis expects that the net

incremental benefits of monitoring are positively related to the directors' opportunities to consume private benefits; however, it is negatively related to the monitoring costs (Boone et al., 2007). Therefore, we expect that there should be a positive relationship between board size and directors' private benefits proxied by the ratio of free cash flow to total assets. However, board size is expected to be negatively correlated with monitoring costs proxied by company risk and directors ownership (Boone et al., 2007). Rosenstein and Wyatt (1997) on the other hand, conclude that where shareholders' interests are aligned with those of executive directors, the benefits of appointing executive directors outweigh board entrenchment costs.

In Islamic banks the role of the SSB is to verify - according to the Islamic law- the permitted financial instruments (ex-ante Shari'ah supervision) and to ensure transactions' compliance with Shari'ah principles (ex-post Shari'ah monitoring). Islamic banks' operations require the board of directors to be able to monitor management efficiently and to work with the SSB to ensure that all transactions are deemed Shari'ah compliant. Therefore due to this large scale of operations, we expect that board size will be larger since a larger board brings in more members with varied expertise to monitor and advise managers. However, a larger board increases remuneration costs as well as creating problems of communication and co-ordination in decision making (Yermack, 1996; Andres and Vallelado, 2008). The size of an Islamic bank's board is therefore a trade-off between the benefits of increased monitoring and costs of such monitoring (communication, co-ordination and control). Likewise a larger SSB facilitates better monitoring role. However, the cost of Shari'ah supervision increases in line with the co-ordination and control problems

associated with larger boards. Based on the above discussion, we formulate the following 2 hypotheses:

*H4: The greater the degree of Islamic banks' complexity the larger the board of directors' and SSB size.*

*H5: The size of an Islamic bank's board is a trade-off between bank-specific benefits of increased monitoring and monitoring costs.*

## **5. Data and Variables Description**

To investigate the influence of board structure on financial performance and the main determinants of board structure in Islamic banks, we hand collect data for a sample of 90 Islamic banks from 13 countries namely Bahrain, Bangladesh, Indonesia<sup>8</sup>, Jordan, Kuwait, Malaysia, Pakistan, Qatar, Saudi Arabia, Syria, Sudan, United Arab Emirates (UAE), and the UK. Our dataset is unbalanced panel data over the period 2006-2014 (723 bank- year observations). Data was collected from Bankscope, the Banker magazine, Perfect Information Navigator, and Companies House-UK, in addition to the annual reports and websites of the respective banks. Islamic banks were identified from several resources including Bankscope and the Bankers magazine. The latter publishes an annual survey of the top Islamic financial institutions by country. Following Mallin et al (2014), we restrict our sample to only Shari'ah compliant banks. Moreover, we exclude Islamic banks in both Iran and Turkey as they have different governance mechanisms. Finally, we exclude subsidiaries and Islamic banks which provide only financial statements.

We control for board size, SSB size and the proportion of INEDs to capture Islamic banks' board structure. We also use the quadratic term of both board size and SSB size to capture the non-linear board structure–performance relationship. We use a CEO/chair duality dummy as a proxy for CEO power and leadership structure. Fosberg and Nelson (1999) find a positive relationship between the change in leadership style from the unitary leadership structure to a dual leadership structure (CEO/chair duality) and financial performance.

Moreover, we use the frequency of board meetings to capture the intensity of board activities<sup>9</sup>. Vafeas(1999) finds that the annual number of board meetings is inversely related to firm value. Furthermore, we control for the proportion of directors' share ownership. Rosenstein and Wyatt (1997) find that executive directors' ownership is a main determinant of stock market reaction to the appointment of executive directors. They find a negative and significant relationship when executives share ownership is less than 5%. Moreover they find a positive and significant relationship when executives share ownership is between 5% and 25%.

We use four alternative financial performance measures namely return on operating assets (ROOA) defined as operating profit divided by average total assets; return on assets (ROA) defined as net profit divided by average total assets; return on operating equity (ROOE) defined as operating profit divided by average total equity; return on equity (ROE) defined as net profit divided by average total equity<sup>10</sup>. We also control for banks' Z scores (ROA plus capital to asset ratio divided by standard deviation of ROA) as a proxy for the distance to default risk.

We use a set of control variables to capture the differences in Islamic banking financing activities and efficiency, namely finances/total assets and equity/total assets. Moreover, we use the ratio of cash flow to total assets and overhead ratio as proxies for agency costs. Daher et al (2015) find that shareholders are more safeguarded in private Islamic banks compared to their state-owned counterparts. Therefore, as a robustness test, we use a dummy variable, *Private*, that is equal to 1 for private banks and 0 otherwise.

We also control for banks' total assets in US\$ and the natural logarithm of GDP in US\$ as proxies for size and macroeconomic indicators respectively; in addition we control for country heterogeneity by using country dummies. To control for the differences in regulatory, legal and cultural<sup>11</sup> environments in Islamic banks, we use The Bank Regulation and Supervision Survey, carried out by the World Bank and formulated in 2003, 2007, and 2012 following the study of Farag and Mallin (2017). The survey includes data on banking regulations and supervision from 143 jurisdictions around the world<sup>12</sup>. Therefore, we control for disclosure and enforcement indices for our sample countries as the sum of 32 and 20 Yes/No questions (dummies) on disclosure and enforcement respectively.<sup>13</sup>

## 6. Econometric Modelling

To empirically investigate our research questions, we use a panel data model to control for unobservable effects, which cannot be detected through both pure time series and cross-section analyses. Therefore, it mitigates endogeneity that may bias the results and lead to spurious correlations due to the omitted unobservable company characteristics (Adams and Ferreira

2009). Dalton et al, (1999) indicate that longitudinal studies may establish the direction of causality for board size-financial performance links. Therefore, we use a fixed effects model to control for country heterogeneity and any other unobservable company characteristics that may influence the results.

As a robustness check and to overcome the other sources of endogeneity e.g. reverse causality, we estimate the Blundell and Bond (1998) system GMM (Generalized Method of Moments) estimator which combines in a system the equation in first-differences with the same equation expressed in levels. The choice of instrumental variables is essential for a consistent estimation. Brown et al (2011) state that “*instrumental values are likely to be ambiguous, unless there is better theory, the effectiveness of the IVs approach is likely to remain contentious*’. One of the advantages of using the system GMM that it allows the use of internal instruments.

Therefore, we use, following Andres and Vallelado, (2008) and Boone et al.(2007), lagged board size, lagged SSB size and lagged percentage of INEDs with different lag-lengths (3-5) as instruments to control for the endogeneity problem. Lagged levels are used as instruments for the regression in differences, and lags of the first-differenced variables are used as instruments in the equation in levels. We use the adjustment for small samples introduced by Windmeijer (2000) to improve the robustness of our results and to avoid any potential bias in the estimated asymptotic standard error. To test for the over-identifying restrictions, we report the Hansen test. Moreover we calculate the Arellano and Bond test for first- and second-order autocorrelation with a null hypothesis of no autocorrelation.

We agree with Daily and Schwenk (1996); Johnson et al (1996); Zahra and Pearce (1989) that how board demography influences financial performance may not be direct and simple. Dalton et al, (1999) argue that finer-grained examinations may provide more guidance on the dynamics of the relationship. Therefore, as a robustness check, we estimate the 2SLS following the study of Cumming et al (2015) to further investigate whether board structure and financial performance are endogenously determined. In the first stage we estimate the main determinants of board size, SSB size and the proportion of INEDs –as suspect endogenous variables- using their lagged variables as instruments. Given the stickiness of the governance variables we used 3 and 4 lags as instruments. In the second stage we estimate the relationship between board size, SSB size and the proportion of INEDs and financial performance controlling for the fitted variables of the suspect endogenous variables. For more details, please see Cumming et al (2015).

## 7. Empirical Results

The descriptive statistics for the pooled sample are presented in Table 1. The sample size is 90 Islamic banks and 723 bank-year observations over the period 2006-2014. The average return on operating assets (ROOA) and return on assets (ROA) are 0.848% and 0.64% respectively. The average return on operating equity (ROOE) and return on equity (ROE) are 10.39% and 7.96% respectively. The board of directors' size ranges from 3 to 23 directors with an average of 8.87 directors whereas the average SSB size ranges from 2 to 14 members with an average of 4.23 members. Table 1 also shows that the average proportion of INEDs is 36.3% while the chair and CEO roles are split in 65% of the sample period. Not surprisingly, the average proportion of female directors on the board of directors is 1.5%.



The results also show that the average ratios of finances to total assets and equity to total assets are 50.89% and 24.86% respectively. Moreover, the average ratios of cash to total assets and overhead to total assets as proxies for agency costs are 10.65% and 3.18% respectively. Finally, the average bank age is 13.38 years old. Table 2 presents the descriptive statistics for the pooled sample by country.

**Insert Tables 1 and 2 about here**

Table 3 presents the correlation matrix for the main variables used in the empirical analysis. It is clear from Table 3 that there is no evidence of a multicollinearity problem. We do not control for both Log restricted & unrestricted Mudaraba contracts in the same regression (See Table 9). Moreover, we calculate the variance inflation factor (VIF) for all regression models and find that the VIF is significantly less than 10.

**Insert Table 3 about here**

Table 4 presents the estimation results for the influence of board structure on financial performance in Islamic banks. The results show that there is a positive and significant relationship between board size and financial performance. However, in Models 3 and 4 this relationship is highly significant at the 1% level. The results presented in Models 3 and 4 imply that – holding other variables constant- a 1 % change in board size may lead to a change of 0.27% and 0.23% in financial performance measured by ROOE and ROE respectively. Moreover, we find a positive but insignificant relationship between the proportion of INEDs and financial performance in Models 1-4

**Insert Table 4 about here**

Similarly but more interestingly, we find a positive and significant relationship between SSB size and financial performance in the four Models. This suggests that the greater the SSB size the better the financial performance of Islamic banks and that— holding other variables constant- a 1% change in the SSB size may lead to a change of 0.024% and 0.025% in financial performance measured by ROOA and ROA respectively. Moreover, the results also show that a 1 % change in SSB size may lead to a change of 0.133% and 0.145% in financial performance measured by ROOE and ROE respectively. This result may shed the light on the fundamental role played by the SSB to approve Islamic banks' operations and to legitimise new products which bring in additional profit e.g. Islamic micro-finance and Islamic financial derivatives. The above results might be driven by the endogeneity and reverse causality between board structure and financial performance. In the following sections we mitigate endogeneity concerns using both system GMM and 2SLS.

The results also show that the coefficients on the Z scores are positive; however they are significant at the level of 5% in Models 3 and 4. This suggests that the higher the distance to default the higher the financial performance measured by ROOE and ROE. However, the coefficients on the ratio of overheads to total assets as a proxy for agency costs are negative and highly significant ( $p < 1\%$ ). This suggests that the higher the agency costs the lower the financial performance of Islamic banks. We also find – as expected- a positive and significant relationship at the 1% level between both finances/total assets and equity/total assets and financial

performance as proxies for Islamic banks' financing activities and efficiency. The models presented in Table 4 are well-specified as F-statistics are highly significant.

The results presented in Table 4 imply that there is a positive and significant relationship between both board size and the SSB size and financial performance. We argue that this relationship might be non-linear and that appointing an additional director /member to the board of directors and/or the SSB size may influence financial performance. To this end, Table 5 presents the regression results of the influence of the non-linear relationship between board structure and financial performance in Islamic banks.

**Insert Table 5 about here**

In Table 5, we control for the squared coefficients on board size and SSB size as in Models 1-4. We find that the coefficient on the squared board size is statistically insignificant suggesting that there is no influence of appointing an extra director on the financial performance of Islamic banks. However interestingly, we find that the relationship between the SSB size and financial performance is non-linear and has an inverted U shape. This suggests that the greater the size of the SSB the better the financial performance up to a point (7-8 SSB members) after which appointing an additional SSB member results in lower financial performance.

Table 1 reports that the average size of the board of directors is rather higher (8.8) than the average size of the SSB (4.2) within our sample. This implies that there might be a need to increase the SSB size in order to deal more efficiently with the increasing demands in Islamic

banking operations. Islamic banks in some emerging markets e.g. Saudi Arabia, UAE, and Indonesia are due to adopt new financial instruments and products such as Islamic micro-finance and Islamic financial derivatives as the result of market expansion. Such banks might therefore need more SSB members to review the compliance of these financial instruments with Shari'ah principles.

Daily and Schwenk, 1996; Johnson et al., 1996; and Zahra and Pearce, 1989 argue that the board structure-financial performance nexus might not be direct and simple but driven by other variables and that finer-grained examinations may provide more guidance on the dynamics of this relationship to establish the direction of causality between board size and financial performance. To this end, we address the endogeneity concerns between board structure and financial performance; Table 6 reports the results of the system GMM estimator for the influence of board structure on the financial performance of Islamic banks. It is clear that the results of the dynamic model reject the null hypothesis that the lagged financial performance coefficients are zero.

**Insert Table 6 about here**

The results presented in Table 6 are by and large consistent with those presented in Table 4. We find a positive and significant relationship between board of directors' size and financial performance. This result is consistent with Andres and Vallelado (2008) as they argue that banks with bigger boards may have a better allocation of resources to advise and monitor senior management. Most importantly, it allows more time for strategic decisions. The above result

cannot reject our first hypothesis. Importantly, we find a positive and significant relationship between SSB size and financial performance. We argue that the greater the SSB size the greater the efficiency in time and resources allocation within the complexity of banking regulations across different countries (La Porta et al., 2002) and this suggests the essential role played by the SSB. The above result cannot reject our second hypothesis.

Again, consistent with the results presented in Table 4, we find no significant relationship between the proportion of INEDs and financial performance; this result does not support our third hypothesis. The literature on corporate governance reports contradictory findings on the relationship between INEDs and the overall performance (see for example, Bhagat and Black, (2002), Hermalin and Weisbach, (1991) and John and Senbet (1998). Islamic banks are complex organisations where high information asymmetry exists in unstable and uncertain environments that have a greater need for specialised information. Therefore, INEDs who lack bank-specific information can hardly contribute to banks' financial performance (Coles et al, 2008).

Table 6 also reports consistent results with those presented in Table 4 with respect to the relationship between overheads ratio, finance/total assets, equity/total assets and financial performance. The system GMM models are well specified as the tests regarding serial correlation do not reject the absence of second order serial correlation, and the Hansen test results do not reject the over-identifying restrictions.

To further investigate whether board structure and financial performance are endogenously determined, Table 7 presents the estimation results of the instrumental variables regressions using the 2SLS.

**Insert Table 7 about here**

As expected, the instrument (3 lags of SSB size) is highly significant in the first stage regression. In the second stage, we find a positive and highly significant ( $p < 1\%$ ) relationship between the fitted value of SSB size and financial performance measured by both ROOA and ROA. This result is consistent with those presented in Tables 4, 5 and 6 and suggests that the larger the SSB size, the better the financial performance of Islamic banks. We also estimate the 2SLS regression – not reported- to address the endogeneity concerns between both board size and independence and financial performance separately. Again in the first stage, the instruments used (3 lags of board size or INEDs) are highly significant. However, the predicted values of the instruments are statistically insignificant in the second stage. This suggests that board size/independence and financial performance relationship might be endogenously determined. The Hausman test result fails to reject the null that the variables are exogenous. Moreover, our instruments passed the Stock and Yogo (2005) test for weak instruments.

Table 8 presents the main determinants of board of directors' size and SSB size as in Panels A and B respectively.

**Insert Table 8 about here**

In Panels A and B, we control for bank size and age - as proxies for the scope of operation hypothesis. Boone et al (2003) argue that controlling for more than one proxy in the same regression model may bias the coefficients due to the interrelationships between the proxies of the scope of operation hypothesis (i.e. bank age and size). Therefore, we present the results of the scope of operation hypothesis using bank size, bank age and both bank size and age in Models 1, 2 and 3 respectively for board size and in Models 4, 5 and 6 respectively for the SSB size. We also include the lagged proportion of INEDs as an instrumental variable to control for endogeneity as in Models 1-6 following Boone et al (2007).

Panel A shows consistent results with the scope of operation hypothesis as we find a positive and highly significant ( $p < 1\%$ ) relationship between both banks size and age and board of directors' size as presented in Models 1 and 2 respectively. Moreover, we find similar results when we control for the two proxies in Model 3. This suggests that the greater the bank size and age the bigger the board of directors' size in Islamic banks due to their higher degree of complex operations.

Interestingly in Panel B, we find evidence of the scope of operation hypothesis with respect to the SSB as we find a positive and highly significant ( $p < 1\%$ ) relationship between Islamic banks' size and age and SSB size as presented in Models 4, 5 and 6 respectively. This suggests that the larger the Islamic banks' size and the older they are, the larger the SSB size. The above results cannot reject our fourth hypothesis for both board of directors and SSB.

Table 8 also reports a positive and highly significant ( $p < 1\%$ ) relationship between cash flow ratio as a proxy for directors' private benefits and board of directors' size as in Panel A. This result supports the monitoring hypothesis in Islamic banks suggesting that the greater the directors' private benefits the larger the board size. However, we find no significant relationship between monitoring costs (proxied by Z score and directors' ownership) and board size. Looking at the coefficients on the cash flow ratio, Z score and directors' ownership, the results presented in Panel A suggest that directors' private benefits exceed monitoring costs in Islamic banks and thus Islamic banks tend to have larger boards. Therefore, the above results cannot reject the fifth hypothesis with respect to the board of directors. We also find consistent results with Mak and Li (2001) as we find a negative and significant relationship between the proportion of independent directors and board size.

On the other hand in Panel B, we find a negative and significant relationship at the 5% level between cash flow ratio and SSB size as in Models 4-6. This suggests that the greater the directors' private benefits the smaller the SSB size. We argue that directors may exercise their power to reduce the SSB size. With respect to the monitoring costs, we find - as expected- a negative and significant relationship between directors' ownership as a proxy for monitoring costs and the SSB size as in Models 4-6. This suggests that the greater the monitoring costs the smaller the SSB size. Again, the coefficients on directors' private benefits exceed those of monitoring costs and thus Islamic banks tend to have larger SSB.



Interestingly in Panel B, we find that the greater the board of directors' independence the greater the SSB size. This result is consistent with our argument on the influence of the executive directors on the size of the SSB. Finally, the models are well specified as the F. statistics is highly significant ( $p < 1\%$ ) for all models. As a robustness check, we also estimate the determinants of board size and SSB size using the system GMM estimator and find consistent results with those presented in Table 8.

In this section, we investigate the unique agency relationships in Islamic banks. Table 9 presents the fixed effects and system GMM estimation results as in Panels A and B respectively.

**Insert Table 9 about here**

We find a negative relationship between the SSB size and agency costs proxied by the ratio of cash flow to total assets in Panels A and B. However, this relationship is significant at the 5% level in Panel A. This suggests that the larger the SSB size, the lower the agency cost in Islamic banks. Moreover, we find – as expected – a negative relationship between directors' remuneration and agency cost. However, this relationship is highly significant ( $p < 1\%$ ) in Panel A. This highlights the importance of compensation schemes in mitigating agency conflicts in Islamic banks. Interestingly, we find a positive and significant relationship between both unrestricted Mudaraba contracts and total restricted and unrestricted Mudaraba contracts and agency cost as in Panels A and B<sup>14</sup>. This suggests that the greater the size of Mudaraba contracts the higher the Islamic banks' agency cost. This also implies that Mudaraba contracts, as the riskiest type of

contracts, are one of the main sources of agency conflicts in Islamic banks. Due to the design of such contracts, Islamic banks are allowed to make investment decisions that best suits the financial goals of both IAHs and the bank at their discretion. These contracts are neither obligations nor equity instruments; however, they are profit-sharing financial instruments (Archer et al., 1998 and Karim, 2001). As a result, Mudaraba contracts may create a unique type of agency conflict between IAHs and Islamic banks' management.

## **8. Summary, Conclusion and Discussion**

Islamic banking is growing in prominence within the global banking industry. However, Islamic banks are different from conventional ones as Islamic law prohibits the payment or receipt of interest and does not allow investment in some industries e.g tobacco, alcohol and other types of financial instruments e.g. derivatives and conventional bonds. These constraints may decouple Islamic banks from its conventional counterparts and may lead to lower portfolio performance (Basov and Bhatti, 2014). On the other hand, Ajmi et al (2014) reject the claim of decoupling the Islamic finance market from its conventional counterparts. They argue that the integration between Islamic finance and conventional international financial markets may lead to greater benefits of diversification.

The continued growth in the Islamic finance industry reflects the importance of the governance of Islamic banks and the roles played by both the board of directors and the SSB. The board of directors plays a central oversight role in governance and the literature has been seeking to better understand how board structure influences performance. The objectives of this paper are

threefold; firstly, we investigate the relationship between Islamic banks' board structure and financial performance. Secondly, we investigate the main determinants of the dual board structure and the interrelationship between the board of directors and the SSB. Finally, we investigate the unique agency relationships and the role of restricted and unrestricted contracts. Using a cross-country sample of 90 Islamic banks over the period 2006-2014, we find that the greater the SSB size the better the financial performance of Islamic banks. This result reinforces the fundamental role of the SSB in certifying new financial products with respect to Shari'ah compliance e.g. Islamic micro-finance and Islamic financial derivatives. Therefore, Islamic banks and the regulators may reconsider the size of the SSB such that it meets the growing demands on the Islamic banking industry.

Moreover, we find evidence of the scope of operation hypothesis for the board of directors and the SSB as we find a positive and significant relationship between banks' size and age and both board of directors' size and the SSB size. Islamic banks are characterised by a higher degree of complex operations suggesting that the greater the bank size and the older they are, the larger the board of directors and the SSB size. Furthermore, we find evidence to support the monitoring hypothesis in Islamic banks as directors' private benefits are found to exceed monitoring costs and thus Islamic banks tend to have larger boards of directors. On the other hand, we find a negative and significant relationship between directors' private benefits and the SSB size. Interestingly, we find that the greater the board of directors' independence the greater the SSB size. We argue that SSB size might be influenced by the power of the directors on the board of directors.

We claim that Islamic banks have unique agency relationships due to the nature of some financial instruments e.g. unrestricted Mudaraba contracts. We find that larger SSB size may result in lower agency costs. Interestingly, we find that the greater the size of Mudaraba contracts the higher the Islamic banks' agency costs. This implies that Mudaraba contracts, as the riskiest type of contracts, are one of the main sources of agency conflicts in Islamic banks. Unrestricted Mudaraba contracts enable Islamic banks' management to make discretionary investment decisions in any type of business or project that best suits the financial goals of IAHs and the banks. These contracts are neither obligations nor equity instruments; however, they are profit-sharing financial instruments (Archer et al., 1998 and Karim, 2001). Therefore, Mudaraba contracts may create another type of unique agency conflict between IAHs and Islamic banks' management.

Our study has a number of policy implications; firstly, our message to the regulators is to increase the size of the SSB by appointing qualified scholars to mitigate agency relationships. A larger SSB on the other hand, brings in the relevant resources to review the Shari'ah compliance of new Islamic financial instruments e.g. Islamic micro-finance due to the expansion of the Islamic finance business model worldwide. Therefore Islamic banking regulators may encourage and support the establishment of professional institutions dedicated to training scholars to identify, understand and verify the authenticity of Shari'ah compliant financial products, especially innovative instruments, and thereby to help ensure confidence in Islamic banks and their corporate governance.

We also argue that regulators may reconsider the design of corporate governance mechanisms for Islamic banks to ensure full independence for the SSB as currently they are appointed by the board of directors. Moreover, regulators could ensure that SSBs might have a mandatory rather than a consultative mandate in some countries. Finally, while Mudaraba contracts represent a claim on the Islamic banks' earnings or assets due to the concept of profit sharing, there is however a separation between IAHs and bank management. IAHs on the other hand, are not granted monitoring and/or control rights (Archer et al., 1998; Karim, 2001 and Safieddine, 2009). Therefore, regulators are also encouraged to reconsider the design of the unrestricted contracts to mitigate agency conflicts between IAHs and both management and shareholders. Regulators may also consider an appropriate representation of IAHs in the governance mechanism of Islamic banks.

## Endnotes

<sup>1</sup> In unrestricted Mudaraba contracts, Islamic banks' management have more opportunities to act in their best interest (Safieddine, 2009).

<sup>2</sup> The Islamic Financial Services Board (IFSB), founded in 2002, provides guidance on the key regulatory issues pertaining to Islamic financial institutions. Its pronouncements complement those of the Basel Committee on Banking Supervision.

<sup>3</sup> A Murabaha is a sale on a cost-plus basis where payment of the price (including the mark-up) is deferred to a later date. A Musharaka contract means profits and losses are shared in a mutually agreed upon proportion between the investors and the bank.

<sup>4</sup> *Zakat* is a religious tax deducted from the wealthy to be paid to the needy.

<sup>5</sup> Unless it is the result of a proven misconduct or negligence by IFIs (Safieddine, 2009).

<sup>6</sup> The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) issued three *Shari'ah* related Governance Standards to strengthen the role of the SSB and streamline its functions. Equally, the IFSB issued two governance related Guidelines to assist IFIs in adopting *Shari'ah* assurance processes. Both the AAOIFI and the IFSB emphasise the need for a good and effective *Shari'ah* governance system as an integral part of the corporate governance in IFIs.

<sup>7</sup> For example, in the U.S., directors may act for some of the bank's best customers (as reported in Adams and Mehran, 2008 citing Federal Reserve Bank of Atlanta, 2002). Customer directors may not be truly independent because they are likely to have different objectives than do other non-executive directors. In some countries such as Malaysia, governments may appoint representatives to sit on large commercial bank boards. These government linked directors may also not be considered truly independent.

<sup>8</sup> In addition to the SSB, Indonesia has a dual board structure that comprises of a board of commissioners and a board of directors.

<sup>9</sup> Due to the unique qualifications of the SSB members, they are expected to sit on multiple boards (Haniffa and Cooke, 2002; Hambrick and Mason, 1984). Therefore as a robustness test, we control for the percentage of SSB members with multiple directorships. We also use the percentage of board of directors cross membership; however, we obtained insignificant results.

<sup>10</sup> Our sample consists of both listed and private banks; therefore, we are unable to use Tobin's *Q* ratio as a measure of performance.

<sup>11</sup> We also use the Hofstede index to control for cultural differences across countries, however, the dimension scores are equal for six Arab countries from our sample. Moreover, data on Syria, Sudan and Qatar is not found in the survey. Therefore, using the Hofstede index in this case may not reflect the variation across cultural dimensions of our sample countries. Nevertheless, we estimate the regression of the influence of board structure on financial performance controlling for individual cultural dimensions of Hofstede separately and in particular Long/Short-term Orientation and obtained similar results.

<sup>12</sup> The survey does not include data on Saudi Arabia and Sudan

<sup>13</sup> For more details please see

[http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20345037~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html#Original\\_Database\\_by\\_country\\_\\_40kb\\_each\\_](http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20345037~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html#Original_Database_by_country__40kb_each_)

<sup>14</sup> We also find similar results when using restricted Mudaraba contracts.

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**Table 1: Descriptive Statistics for the Pooled Sample**

	Mean	Median	SD	Min	Max	Obs
ROOA (%)	0.848	1.295	6.388	-59.45	33.13	722
ROA (%)	0.642	1.03	6.366	-45.12	31.13	722
ROOE (%)	10.391	10.06	18.252	-93.37	81.27	720
ROE (%)	7.962	8.97	15.844	-93.37	63.15	720
Female	0.015	0.000	0.047	0.000	0.286	723
INEDs	0.363	0.400	0.242	0.000	0.943	723
Bsize	8.877	9.000	2.913	3.000	23.000	723
SSBsize	4.227	4.000	1.827	2.000	14.000	723
CEO/chair	0.649	1.000	0.478	0.000	1.000	723
Dirown (%)	1.845	0.000	7.166	0.000	52.76	723
# meetings	8.109	6.000	5.897	3.000	24.000	723
Bankage	13.380	9.000	11.535	1.000	61.00	723
TA(mil \$)	5441.563	1469.425	10939.82	0.636	83082.13	723
Cash/TA (%)	10.653	7.014	10.806	0.001	80.468	717
Overhead ratio (%)	3.178	2.128	3.761	0.153	60.811	721
Finances/TA (%)	50.892	56.946	22.396	0.401	98.919	659
Equity/TA (%)	24.857	13.25	28.448	-97.27	99.82	723
LogZscores	3.029	3.182	1.157	-1.123	5.671	722
Unrestricted investment(mil \$)	2970.92	2970.91	9042.54	0.002	193373.5	638
Restricted investment (mil \$)	214.36	214.36	378.08	0.021	3132.41	145
LogGDP	21.698	24.245	6.637	10.178	28.726	710
Disclosure Index	23.834	25.000	2.113	18.000	25.000	723
Enforcement Index	15.616	17.000	2.680	7.000	18.000	723

ROOA: return on operating assets defined as operating profit divided by average total assets; ROA: return on assets defined as net profit divided by average total assets; ROOE: return on operating equity defined as operating profit divided by average total equity; ROE: return on equity defined as net profit divided by average total equity; Female: proportion of female directors on board of directors; INEDs: proportion of independent non-executive directors on board of directors; Bsize: total number of directors on the board of directors; SSBsize: total number of directors on the Shari'ah Supervisory board; CEO/Chair: dummy variable takes the value of 1 where the roles of the CEO and Chairman is split and 0 otherwise; Dirown: percentage of shares owned by directors on the board of directors; # meetings: number of board of directors' meetings; Bankage: Bank age since its establishment year; TA: Total assets; Cash/TA: ratio of cash divided by total assets; Overhead ratio: ratio of overheads to total assets; Finances/TA: ratio of total finances/total assets; Equity/TA: ratio of total equity to total assets; LogZscores: logarithm of Z scores calculated as ROA + capital to asset ratio divided by standard deviation of ROA; Unrestricted investment: dollar value of restricted Mudaraba contract; Restricted investment: dollar value of unrestricted Mudaraba contracts; LogGDP: logarithm of Gross Domestic Product; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise.

**Table 2: Descriptive Statistics for the Pooled Sample by Country**

	UAE	Malaysia	Pakistan	Saudi Arabia	Bahrain	Qatar	UK	Syria	Kuwait	Jordan	Bangladesh	Indonesia	Sudan
ROOA (%)	1.158	0.678	-0.141	3.421	0.208	3.447	-5.335	0.573	0.879	1.328	1.510	1.129	2.913
ROA (%)	1.011	0.476	-0.032	3.453	0.177	3.296	-5.643	0.365	0.733	0.962	0.393	0.790	2.642
ROOE (%)	10.459	14.351	3.859	12.173	1.345	14.981	-14.236	5.254	4.324	15.541	35.038	15.06	21.899
ROE (%)	8.677	10.978	2.933	12.406	1.253	14.442	-14.677	3.833	3.474	10.975	20.837	10.476	19.842
Female	0.003	0.034	0.000	0.000	0.003	0.000	0.000	0.000	0.005	0.000	0.039	0.089	0.012
INEDs	0.214	0.489	0.389	0.473	0.456	0.219	0.374	0.505	0.264	0.473	0.081	0.612	0.011
Bsize	7.545	7.671	9.100	9.512	9.146	8.784	7.706	7.000	8.600	8.762	15.408	4.800	9.870
SSBsize	4.109	4.385	3.000	4.756	3.677	3.378	3.382	3.000	4.575	3.190	8.714	2.867	4.389
CEO/chair	0.273	0.741	0.850	0.878	0.787	0.351	0.559	0.533	0.350	0.762	1.000	1.000	0.001
Dirown (%)	0.002	0.076	2.516	0.105	0.313	1.157	0.103	2.737	0.000	0.109	21.020	0.387	0.652
# meetings	5.109	10.042	5.050	5.098	6.030	8.622	8.588	6.000	6.875	6.333	14.918	23.000	4.000
Bankage	12.418	13.601	7.550	16.220	13.177	14.486	5.559	5.267	12.425	19.000	16.918	10.60	19.833
TA (mil\$)	11026.06	8530.272	761.185	17648.56	2016.724	8831.105	512.850	199.307	12270.65	2156.788	1723.908	1067	433.872
Cash/TA (%)	7.457	19.832	8.182	8.516	4.383	4.290	5.094	25.836	6.665	19.193	8.581	3.962	20.719
Overhead ratio (%)	2.051	1.615	3.972	2.433	4.765	1.345	8.008	1.668	2.314	1.864	2.053	3.979	4.031
Finances/TA (%)	63.078	56.463	42.578	60.693	37.862	55.323	28.228	26.877	48.877	54.897	72.327	73.861	36.649
Equity/TA (%)	14.073	9.943	17.159	34.616	53.491	24.897	45.126	18.791	20.647	13.523	1.131	7.851	16.109
# Banks	7	17	5	5	20	5	4	2	5	3	6	4	7
# Bank year obs.	55	143	40	41	164	37	34	15	40	21	49	30	54

ROOA: return on operating assets defined as operating profit divided by average total assets; ROA: return on assets defined as net profit divided by average total assets; ROOE: return on operating equity defined as operating profit divided by average total equity; ROE: return on equity defined as net profit divided by average total equity; Female: proportion of female directors on board of directors; INEDs: proportion of independent non-executive directors on board of directors; Bsize: total number of directors on the board of directors; SSBsize: total number of directors on the Shari'ah Supervisory board; CEO/Chair: dummy variable takes the value of 1 where the roles of the CEO and Chairman is split and 0 otherwise; Dirown: percentage of shares owned by directors on the board of directors; # meetings: number of board of directors' meetings; Bankage: Bank age since its establishment year; TA: Total assets; Cash/TA: ratio of cash divided by total assets; Overhead ratio: ratio of overheads to total assets; Finances/TA: ratio of total finances/total assets; Equity/TA: ratio of total equity to total assets.

Table 3: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10
1 ROOA (%)	1.000									
2 ROA (%)	<b>0.989</b>	1.000								
3 ROOE (%)	<b>0.640</b>	<b>0.599</b>	1.000							
4 ROE (%)	<b>0.725</b>	<b>0.711</b>	<b>0.957</b>	1.000						
5 Female	0.036	0.024	<b>0.141</b>	<b>0.116</b>	1.000					
6 INEDs	-0.069	-0.054	<b>-0.171</b>	<b>-0.147</b>	<b>0.080</b>	1.000				
7 LogGDP	<b>-0.082</b>	-0.056	<b>-0.310</b>	<b>-0.230</b>	<b>-0.140</b>	<b>0.344</b>	1.000			
8 LogBsize	<b>0.132</b>	<b>0.109</b>	<b>0.278</b>	<b>0.233</b>	-0.051	<b>-0.292</b>	<b>-0.176</b>	1.000		
9 LogSSBsize	<b>0.092</b>	0.066	<b>0.350</b>	<b>0.272</b>	<b>0.113</b>	<b>-0.184</b>	<b>-0.230</b>	<b>0.480</b>	1.000	
10 Logage	0.066	0.068	<b>0.255</b>	<b>0.265</b>	0.067	<b>-0.147</b>	<b>-0.144</b>	<b>0.180</b>	<b>0.238</b>	1.000
11 LogTA	<b>0.141</b>	<b>0.127</b>	<b>0.415</b>	<b>0.365</b>	<b>0.270</b>	<b>0.079</b>	<b>-0.084</b>	0.007	<b>0.209</b>	<b>0.166</b>
12 Cash/TA (%)	0.042	0.043	<b>0.142</b>	<b>0.151</b>	0.003	-0.036	-0.073	0.025	0.048	0.030
13 Overhead ratio (%)	<b>-0.335</b>	<b>-0.319</b>	<b>-0.424</b>	<b>-0.425</b>	-0.056	-0.025	0.035	-0.042	<b>-0.094</b>	<b>-0.139</b>
14 Finances/TA (%)	<b>0.223</b>	<b>0.202</b>	<b>0.327</b>	<b>0.273</b>	<b>0.187</b>	-0.003	<b>-0.095</b>	-0.071	<b>0.209</b>	<b>0.133</b>
15 Equity/TA (%)	-0.020	-0.015	<b>-0.321</b>	<b>-0.275</b>	<b>-0.187</b>	0.073	<b>0.234</b>	0.010	<b>-0.310</b>	<b>-0.282</b>
16 Dirown (%)	-0.041	-0.059	<b>0.234</b>	<b>0.159</b>	<b>0.150</b>	<b>-0.251</b>	<b>-0.314</b>	<b>0.166</b>	<b>0.247</b>	0.062
17 # meetings	-0.003	-0.026	<b>0.156</b>	0.067	<b>0.322</b>	<b>0.086</b>	<b>-0.213</b>	-0.052	<b>0.164</b>	<b>0.109</b>
18 Logzscores	<b>0.181</b>	<b>0.149</b>	<b>0.354</b>	<b>0.334</b>	<b>0.211</b>	-0.036	-0.059	<b>-0.099</b>	0.007	0.023
19 Logunrestricted	<b>0.129</b>	<b>0.106</b>	<b>0.379</b>	<b>0.319</b>	<b>0.224</b>	-0.033	<b>-0.108</b>	0.041	<b>0.225</b>	<b>0.189</b>
20 Logtotalrestandunrestricted	<b>0.170</b>	<b>0.148</b>	<b>0.397</b>	<b>0.338</b>	<b>0.235</b>	-0.031	<b>-0.104</b>	0.031	<b>0.212</b>	<b>0.199</b>
21 Logdirrem	<b>0.143</b>	<b>0.160</b>	-0.048	0.063	<b>-0.093</b>	<b>0.166</b>	<b>0.418</b>	-0.010	-0.038	<b>0.172</b>

  

	11	12	13	14	15	16	17	18	19	20	21
11 LogTA	1.000										
12 Cash/TA (%)	0.066	1.000									
13 Overhead ratio (%)	<b>-0.355</b>	<b>-0.126</b>	1.000								
14 Finances /TA (%)	<b>0.462</b>	<b>-0.148</b>	<b>-0.357</b>	1.000							
15 Equity/TA (%)	<b>-0.516</b>	<b>-0.313</b>	<b>0.358</b>	<b>0.364</b>	1.000						
16 Dirown (%)	<b>0.166</b>	-0.043	-0.036	<b>0.154</b>	<b>-0.290</b>	1.000					
17 #meetings	<b>0.333</b>	-0.055	-0.045	<b>0.270</b>	<b>-0.197</b>	<b>0.141</b>	1.000				
18 LogZscores	<b>0.401</b>	<b>0.322</b>	<b>-0.452</b>	<b>0.265</b>	<b>-0.375</b>	0.005	<b>0.168</b>	1.000			
19 Logunrestricted	<b>0.411</b>	0.063	<b>-0.385</b>	<b>0.465</b>	<b>-0.471</b>	<b>0.195</b>	<b>0.293</b>	<b>0.405</b>	1.000		
20 Logtotalrestandunrestricted	<b>0.502</b>	0.023	<b>-0.323</b>	<b>0.338</b>	<b>-0.488</b>	<b>0.199</b>	<b>0.299</b>	<b>0.372</b>	<b>0.960</b>	1.000	
21 Logdirrem	<b>0.109</b>	<b>-0.221</b>	0.009	0.012	<b>0.086</b>	<b>-0.383</b>	0.011	<b>-0.117</b>	0.063	0.059	1.000

ROOA: return on operating assets defined as operating profit divided by average total assets; ROA: return on assets defined as net profit divided by average total assets; ROOE: return on operating equity defined as operating profit divided by average total equity; ROE: return on equity defined as net profit divided by average total equity; Female: proportion of female directors on board of directors; INEDs: proportion of independent non-executive directors on board of directors; LogBsize: logarithm of total number of directors on the board of directors; LogSSBsize: logarithm of total number of directors on the Shari'ah Supervisory board; Dirown: percentage of shares owned by directors on the board of directors; # meetings: number of board of directors' meetings; Logdirrem: logarithm of directors compensation; Logage: logarithm of company age since its establishment year; LogTA: logarithm of total assets; Cash/TA: ratio of cash divided by total assets; Overhead ratio: ratio of overheads to total assets; Finances/TA: ratio of total finances/total assets; Equity/TA: ratio of total equity to total assets; Logzscores: logarithm of Z scores calculated as ROA + capital to asset ratio divided by standard deviation of ROA; Logunrestricted: logarithm of size (dollar value) of unrestricted Mudaraba contracts; Logrestricted&unrestricted: logarithm of size (dollar value) of restricted & unrestricted Mudaraba contracts; LogGDP: logarithm of Gross Domestic Product; Bold figures indicate significance at the 5% level or below.

**Table 4: The Influence of Board Structure on Financial Performance in Islamic Banks**

	ROOA	ROA	ROOE	ROE
LogBsize	5.044 <sup>*</sup> (2.574)	4.523 <sup>*</sup> (2.542)	27.156 <sup>***</sup> (5.628)	23.158 <sup>***</sup> (5.244)
LogSSBsize	2.461 <sup>*</sup> (1.434)	2.541 <sup>*</sup> (1.527)	13.305 <sup>***</sup> (5.111)	14.519 <sup>***</sup> (4.377)
INEDs	0.362 (0.924)	0.356 (0.987)	3.621 (2.754)	0.875 (2.553)
Dirown	0.028 (0.025)	0.035 (0.024)	0.131 (0.169)	0.251 <sup>*</sup> (0.135)
# meetings	-0.035 (0.028)	-0.038 (0.029)	-0.008 (0.105)	-0.005 (0.083)
Female	1.606 (1.433)	1.350 (1.472)	-0.293 (10.892)	-1.986 (8.086)
CEO/chair	-0.909 <sup>*</sup> (0.503)	-0.987 <sup>*</sup> (0.525)	-3.234 <sup>**</sup> (1.340)	-2.507 <sup>**</sup> (1.264)
LogTA	-0.031 (0.387)	-0.074 (0.396)	4.900 <sup>***</sup> (1.100)	4.572 <sup>***</sup> (0.984)
Overhead ratio	-0.656 <sup>***</sup> (0.201)	-0.585 <sup>***</sup> (0.196)	-1.199 <sup>***</sup> (0.278)	-1.048 <sup>***</sup> (0.257)
Finances/TA	0.050 <sup>***</sup> (0.018)	0.049 <sup>***</sup> (0.018)	0.102 <sup>***</sup> (0.034)	0.090 <sup>***</sup> (0.032)
Equity/TA	0.072 <sup>***</sup> (0.023)	0.065 <sup>***</sup> (0.024)	0.103 <sup>***</sup> (0.039)	0.114 <sup>***</sup> (0.037)
LogZscores	0.461 (0.771)	0.444 (0.776)	5.261 <sup>**</sup> (2.165)	5.065 <sup>**</sup> (2.143)
LogGDP	-0.087 (0.131)	-0.057 (0.118)	-0.934 (0.751)	-0.597 (0.576)
Disclosure Index	-0.517 (1.618)	-0.545 (1.616)	10.640 <sup>*</sup> (5.964)	12.180 <sup>**</sup> (5.054)
Enforcement Index	0.770 (4.445)	0.900 (4.339)	24.084 (19.259)	31.300 <sup>**</sup> (15.893)
Intercept	-2.741 (4.249)	-4.526 (3.711)	-6.620 (7.367)	-8.610 (9.449)
Country Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
R-sq	0.325	0.300	0.549	0.497
F-stat ( <i>p.value</i> )	0.000	0.000	0.000	0.000
# obs	634	634	634	634

ROOA: return on operating assets defined as operating profit divided by average total assets; ROA: return on assets defined as net profit divided by average total assets; ROOE: return on operating equity defined as operating profit divided by average total equity; ROE: return on equity defined as net profit divided by average total equity; Female: proportion of female directors on board of directors; INEDs: proportion of independent non-executive directors on board of directors; LogBsize: logarithm of total number of directors on the board of directors; LogSSBsize: logarithm of total number of directors on the Shari'ah Supervisory board; CEO/Chair: dummy variable takes the value of 1 where the roles of the CEO and Chairman is split and 0 otherwise;

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Dirown: percentage of shares owned by directors on the board of directors; # meetings: number of board of directors' meetings; LogTA: logarithm of total assets; Overhead ratio: ratio of overheads to total assets; Finances/TA: ratio of total finances/total assets; Equity/TA: ratio of total equity to total assets; LogZscores: logarithm of Z scores calculated as  $ROA + \text{capital to asset ratio}$  divided by standard deviation of ROA; LogGDP: logarithm of Gross Domestic Product; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise. \*\*\*, \*\*, and \* indicates significance at the 1%, 5% and 10% levels respectively. Robust and clustered standard errors are reported in the parentheses.

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**Table 5: The Non-Linear Relationship between SSB Size and Financial Performance in Islamic Banks**

	ROOA	ROA	ROOE	ROE
Bsize	0.378 (0.320)	0.327 (0.315)	2.065** (0.896)	1.703** (0.759)
Bsizesq	-0.007 (0.011)	-0.006 (0.011)	-0.045 (0.044)	-0.036 (0.034)
SSBsize	0.641* (0.342)	0.637* (0.340)	4.056*** (1.219)	4.537*** (0.977)
SSBsqr	-0.038* (0.020)	-0.037* (0.020)	-0.268*** (0.093)	-0.299*** (0.070)
INEDs	0.250 (0.941)	0.252 (1.003)	2.811 (2.783)	0.029 (2.562)
Dirown	0.020 (0.025)	0.028 (0.025)	0.063 (0.176)	0.178 (0.135)
# meetings	-0.036 (0.028)	-0.039 (0.029)	-0.021 (0.108)	-0.022 (0.085)
Female	1.819 (1.398)	1.542 (1.428)	1.004 (11.215)	-0.892 (8.272)
CEO/chair	-0.904* (0.503)	-0.983* (0.525)	-3.184** (1.344)	-2.475* (1.265)
LogTA	-0.017 (0.391)	-0.065 (0.401)	5.123*** (1.131)	4.810*** (1.009)
Overhead ratio	-0.659*** (0.202)	-0.587*** (0.197)	-1.208*** (0.283)	-1.060*** (0.261)
Finances/TA	0.050*** (0.018)	0.048*** (0.018)	0.101*** (0.034)	0.090*** (0.032)
Equity/TA	0.073*** (0.024)	0.066*** (0.024)	0.110*** (0.039)	0.122*** (0.037)
LogZscores	0.465 (0.775)	0.450 (0.780)	5.284** (2.187)	5.112** (2.169)
LogGDP	-0.085 (0.131)	-0.054 (0.119)	-0.906 (0.735)	-0.570 (0.561)
Disclosure Index	-0.366 (1.625)	-0.421 (1.620)	11.841** (6.007)	13.045** (5.099)
Enforcement Index	1.133 (4.521)	1.194 (4.417)	27.380 (19.186)	33.944** (15.887)
Intercept	-11.304 (11.007)	-11.330 (14.440)	-7.344 (6.928)	-9.884 (9.336)
Optimum SSB size	8.4	8.6	7.5	7.6
Country Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
R-sq	0.325	0.301	0.551	0.503
F-stat. ( <i>p.value</i> )	0.000	0.000	0.000	0.000
# obs	634	634	634	634

ROOA: return on operating assets defined as operating profit divided by average total assets; ROA: return on



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assets defined as net profit divided by average total assets; ROOE: return on operating equity defined as operating profit divided by average total equity; ROE: return on equity defined as net profit divided by average total equity; Female: proportion of female directors on board of directors; INEDs: proportion of independent non-executive directors on board of directors; Bsize: total number of directors on the board of directors; Bsize<sup>2</sup>: quadratic term of the total number of directors on the board of directors; SSBsize: total number of directors on the Shari'ah Supervisory board; SSBsize<sup>2</sup>: quadratic term of the total number of directors on the Shari'ah Supervisory board; CEO/Chair: dummy variable takes the value of 1 where the roles of the CEO and Chairman is split and 0 otherwise; Dirown: percentage of shares owned by directors on the board of directors; # meetings: number of board of directors' meetings; LogTA: logarithm of total assets; Overhead ratio: ratio of overheads to total assets; Finances/TA: ratio of total finances/total assets; Equity/TA: ratio of total equity to total assets; LogZscores: logarithm of Z scores calculated as ROA + capital to asset ratio divided by standard deviation of ROA; LogGDP: logarithm of Gross Domestic Product; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise. \*\*\*, \*\*, and \* indicates significance at the 1%, 5% and 10% levels respectively. Robust and clustered standard errors are reported in the parentheses.

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**Table 6: GMM Estimation for the Influence of Board Structure on Financial Performance in Islamic Banks**

	ROOA	ROA	ROOE	ROE
L.ROOA	0.289*** (0.015)			
L.ROA		0.281*** (0.015)		
L.ROOE			0.392*** (0.034)	
L.ROE				0.257*** (0.040)
LogBsize	5.416*** (1.498)	3.555*** (1.059)	14.638** (6.309)	26.447*** (7.314)
LogSSBsize	2.967** (1.243)	2.944** (1.401)	13.861*** (4.476)	11.886** (5.477)
INEDs	1.129 (1.133)	0.588 (1.027)	2.043 (3.611)	1.463 (3.391)
Dirown	0.163** (0.083)	0.032 (0.090)	-0.226 (0.315)	-0.230 (0.251)
# meetings	-0.044 (0.031)	-0.068*** (0.023)	-0.376** (0.177)	-0.225* (0.116)
Female	1.057 (3.156)	4.513 (3.548)	0.199 (21.909)	-23.248 (16.624)
CEO/chair	-1.284*** (0.342)	-0.019 (0.551)	-0.973 (1.082)	-1.446 (1.304)
LogTA	0.031 (0.294)	0.446 (0.453)	3.493*** (1.197)	3.567*** (1.310)
Overhead ratio	-0.669*** (0.035)	-0.656*** (0.097)	-1.053*** (0.154)	-1.108*** (0.139)
Finances /TA	0.043*** (0.008)	0.035*** (0.007)	0.125*** (0.032)	0.104*** (0.026)
Equity/TA	0.078*** (0.008)	0.060*** (0.013)	0.148** (0.067)	0.155*** (0.056)
LogZscores	0.842 (0.479)	0.217 (0.174)	2.495 (1.915)	5.592*** (2.081)
LogGDP	-0.509 (0.412)	-0.097 (0.424)	-3.541 (3.922)	-7.632* (3.925)
Disclosure Index	1.472 (1.879)	-0.692 (1.653)	1.571 (7.099)	-10.954 (8.035)
Enforcement Index	-1.945 (2.191)	0.880 (1.890)	-4.955 (7.071)	-7.848 (7.816)
# Obs	555	491	554	554
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
F stat. ( <i>p.value</i> )	0.000	0.000	0.000	0.000
Arellano-Bond test for AR(1)	0.048	0.051	0.000	0.000

<i>p.value</i>				
Arellano-Bond test for AR(2)	0.470	0.306	0.586	0.616
<i>p.value</i>				
Hansen test <i>p.value</i>	0.989	0.991	0.998	0.998

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L.ROOA: lagged return on operating assets defined as operating profit divided by average total assets; L.ROA: lagged return on assets defined as net profit divided by average total assets; L.ROOE: lagged return on operating equity defined as operating profit divided by average total equity; L.ROE: lagged return on equity defined as net profit divided by average total equity; Female: proportion of female directors on board of directors; INEDs: proportion of independent non-executive directors on board of directors; LogBsize: logarithm of total number of directors on the board of directors; LogSSBsize: logarithm of total number of directors on the Shari'ah Supervisory board; CEO/Chair: dummy variable takes the value of 1 where the roles of the CEO and Chairman is split and 0 otherwise; Dirown: percentage of shares owned by directors on the board of directors; # meetings: number of board of directors' meetings; LogTA: logarithm of total assets; Overhead ratio: ratio of overheads to total assets Finances/TA: ratio of total finances/total assets; Equity/TA: ratio of total equity to total assets; LogZscores: logarithm of Z scores calculated as ROA + capital to asset ratio divided by standard deviation of ROA; LogGDP: logarithm of Gross Domestic Product; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise;. \*\*\*, \*\*, and \* indicates significance at the 1%, 5% and 10% levels respectively. Robust and clustered standard errors are reported in the parentheses.

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**Table 7: Instrumental Variables Regressions using 2SLS**

	First Stage	Second Stage	
	LogSSBsize	ROOA	ROA
L.LogSSBsize	0.675*** (0.041)		
LogBsize	0.133*** (0.040)	2.958* (1.756)	3.129* (1.755)
LogSSBsizeFitted value		6.331*** (2.208)	6.373*** (2.219)
INEDs	0.034 (0.022)	1.450 (0.968)	1.599 (1.004)
Dirown	-0.002** (0.001)	0.046 (0.032)	0.052* (0.031)
# meetings	-0.001 (0.001)	-0.085** (0.034)	-0.085** (0.034)
Female	0.157 (0.101)	-0.880 (1.966)	-1.813 (2.046)
CEO/chair	0.011 (0.012)	-1.644*** (0.550)	-1.678*** (0.566)
LogTA	-0.0004 (0.008)	-0.798** (0.397)	-0.911** (0.405)
Overhead ratio	0.002 (0.002)	-0.818*** (0.148)	-0.802*** (0.151)
Finances/TA	0.0002 (0.0002)	0.078*** (0.022)	0.076*** (0.023)
Equity/TA	-0.005** (0.002)	0.078*** (0.025)	0.075*** (0.025)
LogZscores	0.001 (0.011)	1.425* (0.848)	1.384 (0.848)
LogGDP	0.037* (0.019)	-0.822 (0.541)	-0.655 (0.528)
Disclosure Index	0.144*** (0.052)	-3.484* (2.026)	-3.810* (2.026)
Enforcement Index	0.853** (0.379)	-15.725 (10.738)	-14.278 (10.521)
Intercept	-19.016** (7.954)	27.727 (21.118)	24.350 (22.085)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
R-sq	0.847	0.511	0.488
F-stat ( <i>p.value</i> )	0.000	0.000	0.000
# obs	394	394	394
Hausman Test ( <i>p value</i> )	0.036		

ROOA: return on operating assets defined as operating profit divided by average total assets; ROA: return on assets defined as net profit divided by average total assets; Female: proportion of female directors on board of directors; INEDs: proportion of independent non-executive directors on board of directors; LogBsize:

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logarithm of total number of directors on the board of directors; LogSSBsize: logarithm of total number of directors on the Shari'ah Supervisory board; L.LogSSBsize: 3 lags of the logarithm of total number of directors on the Shari'ah Supervisory board; LogSSBsizeFitted value: fitted values of the logarithm of SSB size; CEO/Chair: dummy variable takes the value of 1 where the roles of the CEO and Chairman is split and 0 otherwise; Dirown: percentage of shares owned by directors on the board of directors; # meetings: number of board of directors' meetings; LogTA: logarithm of total assets; Overhead ratio: ratio of overheads to total assets; Finances/TA: ratio of total finances/total assets; Equity/TA: ratio of total equity to total assets; LogZscores: logarithm of Z scores calculated as ROA + capital to asset ratio divided by standard deviation of ROA; LogGDP: logarithm of Gross Domestic Product; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise. \*\*\*, \*\*, and \* indicates significance at the 1%, 5% and 10% levels respectively. Robust and clustered standard errors are reported in the parentheses.

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**Table 8: The Determinants of Board Size and Shari'ah Supervisory Board Size**

	<i>Panel A</i>			<i>Panel B</i>		
	<b>Bsize</b>	<b>Bsize</b>	<b>Bsize</b>	<b>SSBsize</b>	<b>SSBsize</b>	<b>SSBsize</b>
LogTA	0.042*** (0.008)		0.035*** (0.008)	0.025*** (0.008)		0.019** (0.008)
Logage		0.058*** (0.012)	0.037*** (0.013)		0.042*** (0.015)	0.032** (0.016)
L.ROOA	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
L.INEDs	-0.075*** (0.020)	-0.041** (0.020)	-0.063*** (0.020)	0.039* (0.021)	0.061** (0.024)	0.047** (0.023)
L.LogBsize				0.301*** (0.053)	0.309*** (0.049)	0.282*** (0.052)
Dirown	0.0002 (0.001)	0.0001 (0.001)	0.0001 (0.001)	-0.003*** (0.001)	-0.002** (0.001)	-0.002** (0.001)
Finances/TA	-0.001*** (0.0003)	-0.001*** (0.0003)	-0.001*** (0.0003)	0.0002 (0.0003)	0.0001 (0.0003)	0.0001 (0.0003)
Logzscores	-0.004 (0.005)	-0.003 (0.005)	-0.002 (0.005)	-0.016*** (0.005)	-0.012** (0.005)	-0.014*** (0.005)
Cash/TA	0.002*** (0.0005)	0.002*** (0.0005)	0.002*** (0.0005)	-0.001** (0.0005)	-0.001** (0.0005)	-0.001** (0.0005)
Disclosure Index	0.348*** (0.045)	0.240*** (0.026)	0.329*** (0.043)	0.174*** (0.045)	0.109*** (0.032)	0.164*** (0.042)
Enforcement Index	0.811*** (0.101)	0.549*** (0.061)	0.764*** (0.098)	0.356*** (0.111)	0.197** (0.082)	0.329*** (0.105)
Intercept	-21.757*** (2.866)	-14.502*** (1.660)	-20.488*** (2.772)	-10.120*** (2.984)	-5.742*** (2.168)	-9.387*** (2.842)
R-sq	0.658	0.646	0.664	0.635	0.635	0.639
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
F-stat ( <i>p.value</i> )	0.000	0.000	0.000	0.000	0.000	0.000
# Obs	569	569	569	569	569	569

Bsize: total number of directors on the board of directors; SSBsize: total number of directors on the Shari'ah Supervisory board; L.LogBsize: lagged logarithm of board of directors' size; LogTA: logarithm of total assets; Logage: logarithm of company age since its establishment year; L.ROOA: lagged return on operating assets defined as operating profit divided by average total assets; Dirown: percentage of shares owned by directors on the board of directors; Finances/TA: ratio of total finances/total assets; LogZscores: logarithm of Z scores calculated as ROA + capital to asset ratio divided by standard deviation of ROA; Cash/TA: ratio of cash divided by total assets; L.INEDs: lagged proportion of independent non-executive directors on board of directors; Disclosure and Enforcement Indexes: sum of dummy variables take the value of 1 if the answer to questions on disclosure and enforcement from the Bank Regulation and Supervision Survey, carried out by the World Bank, is yes and 0 otherwise. \*\*\*, \*\*, and \* indicates significance at the 1%, 5% and 10% levels respectively. Robust and clustered standard errors are reported in the parentheses.

Table 9: Agency Relationships in Islamic Banks

	Panel A (FE)		Panel B (GMM)	
	Cash/TA	Cash/TA	Cash/TA	Cash/TA
L.Cash/TA			0.546 <sup>***</sup>	0.602 <sup>***</sup>
			(0.031)	(0.031)
LogBsize	21.448 <sup>***</sup>	22.082 <sup>***</sup>	-0.900	-4.160
	(6.739)	(6.785)	(4.560)	(6.022)
INEDs	-0.009	-0.064	-0.311	-2.143
	(2.686)	(2.678)	(4.021)	(3.608)
LogSSBsize	-8.422 <sup>**</sup>	-8.092 <sup>**</sup>	-4.557	-2.217
	(4.110)	(4.105)	(7.303)	(7.132)
LogTA	0.935	-0.986	-3.474 <sup>*</sup>	-1.396
	(1.971)	(2.054)	(1.863)	(1.681)
Logage	0.626	0.726	0.672	-5.133
	(1.862)	(1.845)	(2.321)	(2.244)
Finances/TA	-0.255 <sup>***</sup>	-0.245 <sup>***</sup>	-0.137 <sup>***</sup>	-0.126 <sup>***</sup>
	(0.056)	(0.054)	(0.033)	(0.045)
Logzscores	0.815	0.790	1.118 <sup>**</sup>	0.989 <sup>*</sup>
	(0.767)	(0.759)	(0.570)	(0.599)
Dirown	-0.108 <sup>*</sup>	-0.109 <sup>*</sup>	0.012	-0.180
	(0.063)	(0.063)	(0.193)	(0.276)
ROOA	-0.334 <sup>**</sup>	-0.341 <sup>**</sup>	0.081	0.074
	(0.143)	(0.137)	(0.172)	(0.182)
Logunrestricted	1.612 <sup>**</sup>		2.452 <sup>***</sup>	
	(0.712)		(0.614)	
Logrestricted&unrestricted		1.686 <sup>**</sup>		2.387 <sup>***</sup>
		(0.812)		(0.811)
Logdirrem	-5.488 <sup>***</sup>	-5.726 <sup>***</sup>	-4.252 <sup>*</sup>	-4.270 <sup>*</sup>
	(1.897)	(1.918)	(2.183)	(2.262)
Intercept	5.086	3.864	22.367 <sup>*</sup>	13.291
	(8.111)	(8.088)	(11.648)	(8.706)
R-sq	0.498	0.496		
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
F-stat ( <i>p.value</i> )	0.000	0.000	0.000	0.000
# Obs	424	424	384	384
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Arellano-Bond test for AR(1)				
<i>p.value</i>			0.028	0.032
Arellano-Bond test for AR(2)				
<i>p.value</i>			0.324	0.231
Hansen test <i>p.value</i>			0.997	0.983

Cash/TA: ratio of cash divided by total assets; L.Cash/TA: lagged ratio of cash divided by total assets; LogBsize: logarithm of total number of directors on the board of directors; INEDs: proportion of independent non-executive directors on board of directors; LogSSBsize: logarithm of total number of directors on the

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Shari'ah Supervisory board; LogTA: logarithm of total assets; Logage: logarithm of company age since its establishment year; Finances/TA: ratio of total finances/total assets; LogZscores: logarithm of Z scores calculated as ROA + capital to asset ratio divided by standard deviation of ROA; Dirown: percentage of shares owned by directors on the board of directors; ROOA: return on operating assets defined as operating profit divided by average total assets; Logunrestricted: logarithm of size (dollar value) of unrestricted Mudaraba contracts; Logrestricted&unrestricted: logarithm of size (dollar value) of restricted & unrestricted Mudaraba contracts; Logdirrem: logarithm of directors compensation. \*\*\*, \*\*, and \* indicates significance at the 1%, 5% and 10% levels respectively. Robust and clustered standard errors are reported in the parentheses.

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## **Corporate Governance in Islamic Banks: New Insights for Dual Board Structure and Agency Relationships**

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### **Highlights**

- We investigate the unique agency relationships and dual board structure.
- We use cross country sample over the period 2006-2014.
- We find evidence of the scope of operation hypothesis.
- The greater the size of unrestricted contracts the higher the agency costs.
- The paper has a number of policy implications about the design of governance mechanisms and the dynamics of unrestricted contracts.