Corporate governance in Islamic financial institutions: A resource dependency approach to the study of the performance impact of the Shariah supervisory board

Abstract

Research Question/Issue: This study seeks to better understand the concept of Shariah governance and the role of the Shariah supervisory board (SSB) within Islamic financial institutions (IFIs). In light of the direction of the extant academic literature, we utilize a resource dependence conceptualisation of the SSB and examine its impact on IFI performance.

Research Findings/Insights: Utilising a hand-collected dataset from the published financial statements of 140 of the largest IFIs over the period of 2011-2015 and across 16 different nations, we discover that the tenure of SSBs is a positive, linear predictor of IFI performance. Additionally, this positive impact diminishes for Islamic banks against other IFIs but there is no consistent difference for Shariah-based or Shariah-compliant IFIs. Our results also confirm the existing academic knowledge that SSB interlocks have a negative relationship to IFI performance. To isolate the impact of SSBs on IFI performance we controlled for, *a priori*, firm-specific and sovereign characteristics and our results are robust to alternative regressands, reduced regressions and GMM estimators.

Theoretical/Academic Implications: The results from this study provide empirical support for a resource dependence conceptualization of the SSB and its impact on IFI performance. It provides a more detailed decomposition of the characteristics of the SSB and the channels of transmission of these characterizations on IFI performance and in doing so highlights further avenues of study incorporating additional theoretical frameworks of corporate governance that may further improve explanatory power.

Practitioner/Policy Implications: Our findings also highlight to leaders of IFIs that SSBs should be afforded time to build and develop firm-specific knowledge. Moreover, our results also illustrate that the economic and finance environment of Islamic banks is more changeable than that of other IFIs.

Keywords: Shariah supervisory boards, Shariah governance, corporate governance, multi-layered governance, firm performance, resource dependence theory

1. Introduction

The substantial growth experienced by the Islamic financial system over the past decade has created heightened interest within the academic community in examining this performance (Abedifar, Ebrahim, Molyneux, & Tarazi, 2015; Abedifar, Hasan, & Tarazi, 2016; Beck, Demirguc-Kunt, & Merrouche, 2013; Ho, Abd Rahman, Yusuf, & Zamzamin, 2014; Merdad, Hassan, & Alhenawi, 2010). Additionally, the empirical evidence from these studies have shown Islamic financial institutions (IFIs) to be relatively resilient during the financial crisis (Hasan & Dridi, 2011; Olson & Zoubi, 2017) and has, in turn, increased interest into the many facets of this alternative financial system (see Hassan and Aliyu (2018), Alzahrani (2019) and Narayan and Phan (2019) for comprehensive surveys focusing on Islamic banks). One rich strain of current academic discourse is the attribution of this performance to the underlying religious framework that governs the Islamic financial system and its gatekeepers – the Shariah supervisory board (SSB). The amalgam of religious and financial principles creates a unique situation within IFIs who then operate within a multi-layered governance structure. Given that the, *a priori*, theoretical lens for any examination of Shariah corporate governance is relatively unclear, early studies into IFIs and their respective SSBs borrowed heavily from original studies into conventional financial institutions and utilized an agency lens.

Indeed, studies such as Mollah and Zaman (2015) and Johnes, Izzeldin, and Pappas (2014), that focused on Shariah governance and board structures as the source of this better performance by contrasting the performance of Islamic banks with their conventional counterparts, have adopted such a theoretical approach. Although this aspect of the literature has managed to reach some form of agreement in that the SSBs have some positive impact on some measures IFI performance, these papers do not explicitly explain the channels of transmission of how and why IFIs should have an impact on firm performance. Furthermore,

there have been questions about the validity of adopting an agency lens in conceptualizing the role of the SSBs. Whilst the SSBs exist within the corporate governance framework in IFIs, there is little evidence that they (the SSB) engage in monitoring as per the agency framework.

More recent work into Shariah governance have conceptualized the SSB from a resource dependence perspective where it posited that the SSBs provide intellectual resources to the board, which in turn have an impact on some measure of IFI performance. This intellectual resource arises via the religious certification of financial services and instruments and can be seen in the same vein as lawyers providing legal advice. Along these lines, the SSB is seen to provide guidance on the religious interpretation and the Shariah-compliance of financial structures as opposed to the monitoring of managers in terms of religious adherence (Halim, How, Verhoeven, & Hassan, 2019). These studies predominately adopt singular resource dependence measures of SSB characteristics, for example Gözübüyük, Kock, and Ünal (2018) examine the interlocking nature of SSB scholars as a measure of information leakage from multiple directorates, and do not attempt to decompose the impact of the SSBs on IFI performance. Furthering the development of the literature along the resource dependence theory (RDT) framework, Safiullah and Shamsuddin (2018) and (2019) provide a multivariate breakdown of SSB characteristics on their comparative analysis of banking efficiency between Islamic and conventional banks utilizing, the size, qualifications and reputation of SSB members. Although they show that SSB size and qualifications have a positive impact on IFI efficiency, their, *a priori,* hypotheses based on the resource dependence theory need further refinement as the three measures were subsumed into a single bidirectional hypothesis. As such, there is still room for further disentanglement of the role and the characteristics of the SSB in relation to IFI performance.

Given the current academic developments into Shariah governance our study differs from the extant literature in the following manner. Firstly, we depart from the comparative studies such as Mollah, Hassan, Al Farooque, and Mobarek (2017) and Safiullah and Shamsuddin (2019) and instead focus entirely on IFIs. This alleviates the issue of heterogeneity across the Islamic and conventional financial systems by focusing on a single common frontier and also avoids cross-group comparisons which may lead to spurious regressions. Additionally, this focus purely on IFIs allows for the better capture of further specific nominal characteristics in the Islamic financial system such as the differing banking paradigms within the global Islamic financial system as well as allowing for the stratification of type of IFIs such as Islamic banks, investment houses and *takaful* (insurance) providers. Secondly, we seek to disentangle the role and characteristics of the SSB and its impact on IFI performance. We achieve this through a more detailed decomposition of SSB characteristics via a resource dependence lens and extend the measures used in within the extant academic literature with the inclusion of SSB size, tenure, qualifications and interlocks. We extend the measure of qualification beyond that of Safiullah and Shamsuddin (2019) to also include religious qualifications and degrees below the doctoral level. We also expand on the measure of reputation through the use of interlocking behavior which is more in keeping with the RDT literature in that interlocks facilitate informational transfer and legitimization of the IFIs. Moreover, the interlocking measure further captures the spatial phenomena of reputation. To the best of our knowledge, the use of tenure to characterize the SSB has not been undertaken within the extant literature, although it is established with regards to the board of directors. For instance, Ben-Amar, Francoeur, Hafsi, and Labelle (2011), state that a long tenure is a positive characteristic of members of the board, that could lead to better performance, although this conclusion should be tempered by the possibility that very long tenure may degenerate into groupthink and the tendency to suppress conflicts.

To address our research questions, we utilize a hand collected dataset of measure of Shariah governance that includes 140 of the largest IFIs over the period of 2011 – 2015 across 16 different nations. We adopt a fixed effects panel regression estimation method controlling for both firm and macroeconomic variations across our sample and our results are robust to alternative measures of IFI performance, reduced regressions and GMM estimators. Our findings contribute to the existing literature through the following means. Firstly, we add to the extant academic literature through our more detailed decomposition of the impact of SSB characteristics and firm performance. Our results indicate that SSB tenure is a significant and robust, positive linear predictor of IFI performance once controlling for SSB size, qualifications and interlocking behavior. Moreover, the positive impact from SSB tenure are lower for Islamic banks (IBs) than other types of IFIs potentially indicating that there are institutional differences between IBs and other IFIs. Secondly, whilst not significant in our sample, we also confirm the results of Gözübüyük et al. (2018) in finding a negative relationship between SSB interlocks and IFI performance thus providing further support for a multi-theoretic agency-resource dependence conceptualization of SSB interlocking behavior. Our findings also offer managerial implications in highlighting to the leaders of IFIs that SSBs impart some positive influence on firm performance but that this is a temporal phenomenon in that SSBs require time to acquire and build firm-specific knowledge. Additionally, our findings highlight to the leaders of IFIs the differing institutional effects of SSB tenure potentially suggesting that IBs experience a more challenging and quicker changing financial environment when compared to other IFIs due to increased financial innovation (Abedifar, 2019; Abedifar et al., 2015; Alamad, 2017) and regulatory harmonization (Apaydin, 2018; Azmat, Skully, & Brown, 2014). Fourthly, our paper should have a wider impact on the broad literature on corporate governance and corporate governance of banks in particular. Following the recommendations by Aguilera, Florackis, and Kim (2016) and Kumar and Zattoni (2018, 2019)

who advocate moving further from using agency theory, for instance by using resource dependence theory; looking into the black box of board of directors by better understanding some of dynamics taking place within boards and among boards of different firms and focusing on multi-country and longitudinal studies.

The remainder of this paper is organized as follows. The second section provides a review of the related literature on the board characteristics and financial performance nexus with a consideration for IFIs and contains within it, the development of our hypotheses. The third section provides a description of the data and the variables used within this study along with a succinct explanation for the methodology of this study. Section four reports the empirical findings of the association between SSB board characteristics and IFI performance. Section 5 provides the outputs from the robustness checks of the regression results. Finally, the last section summarizes the findings and results and establishes some concluding discussions.

2. Related literature on Shariah governance and hypotheses development

Islamic banking and finance has experienced unprecedented growth since the advent of the 21st century and in light of the global financial crisis the sector has seen average growth levels of 8.3% in the last two decades (Islamic Financial Services Board, 2019). Whilst this growth is concentrated within the traditional Islamic financial hubs of the Middle-East and East-Asian nations, there has also been concerted effort in promoting this alternative financial system within more conventional financial systems. The core differentiator between Islamic and conventional banking and finance is the former's embrace of Islamic religious doctrine and the need to embed the teachings of Islam within strategic and operational engagements of the sector. The fundamental tenets of Sharia are given as follows:

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- prohibited from engaging in interest-based (*riba*) activities

- not allowed to speculate or gamble

- all transactions have to exist within the real economy

- transactions should be based on a profit-and-loss sharing or risk-sharing models

- all transactions have to be *halal* (permissible)

The literature into IFI financial performance is relatively developed within the realm of comparative studies with that of conventional finance. There have been numerous works comparing the performance of Islamic and conventional equity indices that adopt a market perspective of Islamic financial performance (see for instance Abu-Alkheil, Khan, Parikh, and Mohanty (2017)). However, any examination of Islamic finance from an institutional context has been relatively scarce until recent years (Cihak & Hesse, 2010; Hasan & Dridi, 2011).

The central feature of any IFIs is the existence of a SSB, whose core responsibility is to ensure adherence to Shariah principles. The existing academic literature on SSB tasks (Islamic Financial Services Board, 2009; Mohammed & Muhammed, 2017; Safieddine, 2009) is relatively clear and these include advising the conventional board on matters which enable Sharia-compliance, setting rules and regulation to ensure compliance to Sharia and issuing verdicts (fatwa) on the Sharia-compliance of financial services and products. However, as the Islamic financial sector has grown within traditional Islamic financial hubs and beyond them into conventional financial systems, there have been substantial academic critiques of the development of the role of SSBs from an operational perspective – composition of SSBs (Azmat, Skully, & Brown, 2015; El-Gamal, 2011) and religious decision-making (Farook & Farooq, 2013; Hamza, 2013; Mejia, Aljabrin, Awad, Norat, & Son, 2014). Fundamentally, the existence of the SSBs within IFIs can be seen as one of the core differentiators between

conventional and Shariah governance and presence of SSBs gives rise to, potentially, multi-layered governance of IFIs (Farag, Mallin, & Ow-Yong, 2018; Mollah & Zaman, 2015). Given that much of the academic literature into Shariah governance and the role of the SSB is still in its infancy, the, *a priori,* theoretical frameworks for any examination of this multi-layered governance draws heavily from traditional studies of corporate governance of conventional financial institutions. Much of the mainstream conventional corporate governance research into the relationship between the performance and the corporate governance of financial institutions has been grounded within an agency framework providing the academic and professional community with a robust and empirically tested lens for observing the interaction between managers, shareholders and firm performance (Adams, Hermalin, & Weisbach, 2010; Daily, Dalton, & Cannella, 2003; Dalton, Daily, Ellstrand, & Johnson, 1998; Dalton, Daily, Johnson, & Ellstrand, 1999; de Haan & Vlahu, 2016; Hayat & Hassan, 2017; John, De Masi, & Paci, 2016; John & Senbet, 1998; Yermack, 1996). Early conceptualizations of Shariah governance and models of this multi-layered governance have suggested SSBs are a supra entity established under the traditional agency framework. Fundamentally, under an agency dialectic, the role of the SSB is to monitor the managers of an IFI in order to ensure adherence to Shariah.

For example, Mollah and Zaman (2015) utilize an institutional comparisons by examining the impact of Shariah supervision boards on financial performance by simply adding a dummy variable . They describe the governance setting of IBs as ''multi-layered'' governance with the presence of the Shariah-Supervisory Board (SSB) as an additional layer of monitoring and oversight - that is the presence of SSBs might restrain boards of directors (BOD) and management from engaging in aggressive lending and major risk-taking activities. Using a similar dataset to Beck et al. (2013), Mollah and Zaman (2015) find that the performance of Islamic banks is significant and negative if the SSB acts in an advisory capacity, but significant

and positive when SSB acts in a supervisory capacity. However, there is little definition as to what constitutes supervisory or advisory (see IFSB 10 for a definition of Shariah governance) and Mollah and Zaman (2015) themselves have manually gleaned the information from annual accounts of Islamic banks, with 80% of IBs classifying the role of their SSBs as supervisory and little is said about the actual mechanisms.

Given the characteristics of Shariah scholars, Nawaz and Virk (2019) provide evidence of a significant impact of the entrenchment of Shariah scholars upon agency costs of IFIs. The entrenchment was measured as the proportion of top-20 scholars in a board, while the agency cost was captured by executive compensation. Beck et al. (2013) provides further insight into this agency dialectic in IFIs and suggests that Islamic finance principles do affect the balance of the agency problems, but in a direction that is not entirely clear. Equity-like deposits may induce a higher degree of monitoring by depositors, while perhaps reducing the incentive of banks to monitor the behavior of borrowers as bank runs are less. In the same direction, on the asset side, the entrepreneurial partnerships may lead to lower monitoring by banks as well. However, the increased uncertainty on the asset side, may lead to withdrawals that are more frequent by depositors (Beck et al., 2013). Along similar lines but utilizing a simpler agency framework for conceptualizing the SSB, Farag et al. (2018) also provide evidence on the impact of characteristics of the SSBs on financial performance and on the role of specific types of contracts (unrestricted v restricted) over the agency costs. Utilizing, once again, the size of the SSB, Farag et al. (2018) discover a negative relationship between SSB size and IB agency costs. More recently, studies such as Safiullah and Shamsuddin (2018, 2019) and Nomran, Haron, and Hassan (2018) have expanded on the SSB characteristics within their model and their impact of risk taking and Islamic bank performance respectively and have found positive relationships between SSB characteristics and mitigation of risk and firm performance.

Whilst the agency framework enables researchers to make fundamental predictions of the economic mindset of market participants, there are academic arguments that suggest that the religious characteristics of Islamic finance are difficult to conceptualize under agency theory alone. Conceptual studies such as Hernandez (2012) and Obid and Naysary (2014) argue the limitations of utilizing agency theory as a singular lens for examining corporate and Shariah governance. This argument stems from the 'under-socialized' nature of agency theory and the lack of consideration for socio-cultural interactions which permeate financial institutions (Aguilera & Jackson, 2003; Bruce, Buck, & Main, 2005). These socio-cultural implications manifest themselves in the form of Shariah to which IFIs have to abide that may not be adequately captured under traditional economic assumptions of behavior. IFIs have to contend with not only conventional governance objectives but also religious governance requirements in maximizing shareholder utility.

Moreover, corporate governance, as being the processes and mechanisms involved with aligning the interests between a firm's owners and the managers resulting from the separation of ownership and control, is not unique to economics and finance but rather traverses a spectrum of disciplines including management studies, law, sociology and psychology (Adams et al., 2010). We observe within the development of the literature, the amalgamation of interests within corporate governance studies across the economics and finance, management and socio-psychological disciplines. There are many elements within the socio-psychological and management disciplines such as expertise, diversity and networks that are beginning to be of interest to economics and finance when it comes to examining the concept of corporate governance. As such whilst agency theory still dominates the theoretical approach adopted by much of the economic and finance literature (Madison, Holt, Kellermanns, & Ranft, 2016), this cross discipline interest has seen the resurgence and incorporation of socio-psychological and

systems-based approaches such as stewardship theory and resource dependence theory (RDT) in more recent years (see Hillman, Withers, and Collins (2009)) for a succinct review of empirical research in RDT). RDT proposes that firms gain access to resources via board members, which would not be available otherwise and that this has a direct impact on firm performance (Pfeffer & Salancik, 2003). Hillman and Dalziel (2003) highlight four sources of benefits provided by boards i) advice and counsel ii) legitimacy iii) channels for communicating information between external organizations and the firm and iv) preferential access to commitments or support from important elements outside the firm.

Considering RDT in light Shariah governance, whilst there is some consensus amongst the academic community about the tasks undertaken by SSBs, the actual role of the SSBs is less clear. Given the definitions of SSB tasks within Safieddine (2009), there is a belief that SSBs undertake both supervisory and advisory role, potentially residing as quasi regulatory and consulting entity within an IFI. This view is furthered within more recent studies such as Halim et al. (2019) and Gözübüyük et al. (2018), who highlight that the core role of the SSB is one of certification of financial services and instruments as opposed to having a direct say on the strategic direction of IFIs. From Halim et al. (2019),

> "…the pronouncements provided by Shariah advisors is akin to the attestation by auditors that a firm's financial statements meet the legal reporting requirements…Since endorsement of Shariah compliance of the bond depends on advisors' competence (Hidayah, 2014), firms seek out those scholars who they believe are competent enough to certify their offerings." (pg. 2)

In this light, the impact of the SSBs within IFIs is better conceptualized as a provision of expertise, in the form of knowledge about Shariah, which the conventional board would not otherwise possess and indeed the literature is utilizing this RDT conceptualization. Given the nuanced nature of Shariah finance and the relatively narrow, but expanding, human capital base, the inclusion of RDT within this context allows for the capture of SSB expertise on firm performance. Conceptually, there exists growing academic literature discussing the composition and the expertise of SSBs (Abdel-Baki & Sciabolazza, 2014; Azmat et al., 2015; Grassa, 2013; Mejia et al., 2014). Najeeb and Ibrahim (2014) provide a succinct discussion of how the expertise of Shariah scholars are able to generate benefits for both firms and the economy as a whole. Fundamentally, these conceptual studies on Shariah expertise within the Islamic financial system highlight that the development of a wider base of human capital would alleviate the stresses on a small pool of Shariah-scholars. RDT hence provides a framework to capture the impact of the expertise of this small, but growing, base of Shariah-scholars on IFIs. From an RDT perspective, the literature on board expertise, using board interlocks as a measure, is still relatively inconclusive. Whilst certain studies (Horton, Millo, & Serafeim, 2012) find a positive relationship, others (Devos, Prevost, & Puthenpurackal, 2009) indicate the opposite (see Hillman et al. (2009) for a review in to board expertise).

More recently, studies such as Zona, Gomez-Mejia, and Withers (2018), in using a hybrid agency-RDT approach on 145 Italian firms from 2001 to 2006, highlights support for the positive impacts of interlocks and expertise on firm performance. Moreover, the adoption of the hybrid model was seen to provide "… higher-order framework of organizational behaviors and performance…" (Zona et al., 2018, p. 610). Fundamentally, the inter-organizational relationships of board members is seen as a vital source of expertise and a vital positive resource contribution to firm performance (Zona et al., 2018). Gözübüyük et al. (2018) further

this RDT-interlock focus utilizing an elite-network lens to highlight the economic rent from interlocking behavior with a specific focus on Shariah scholars. The interlocking effect could be either negative (information leaking, busy boards) or positive (knowledge, experience, credibility and reputation). Indeed the effect could be linear or may be affected by a threshold effect. Gözübüyük et al. (2018) find that increasing degrees of network centrality have negative and significant impacts on performance. Their empirical results run contrary to the traditional RDT assumptions on the impact of interlocks on firm performance. Utilizing a sample of 103 IFIs over 13 countries, they discover a negative relationship between interlocking behavior and firm performance suggesting that IFIs appropriate a cost to acquiring prominent Shariah scholars. It is suggested that any economic rent is accrued to the individual scholars and that IFIs bear the costs of the busy SSB. In light of the empirical literature we put forward our first hypothesis:

H[1]: *SSB interlocks have a positive impact on IFI performance*

In relation to both SSB size and tenure the RDT literature is relatively clear in its conceptualization. Firstly, size has a positive impact on firm performance as members bring in further expertise and secondly, tenure has a positive impact as members build knowledge over time thus enhancing firm specific knowledge and skills leading to better firm performance (Hillman et al., 2009; Huang & Hilary, 2018). A positive impact of tenure is also within the remit of resource dependence theory as implicitly acknowledged by Barroso, Villegas, and Perez-Calero (2011); Huang and Hilary (2018); Kim, Mauldin, and Patro (2014); Vafeas (2003). Vafeas (2003) postulates two theories of tenure: expertise hypothesis, leading to a positive impact on performance and management friendliness that leads to a negative impact due to the inability of being critical of the actions of the CEO. However, Kim et al. (2014) do

not find evidence of the latter. The first is clearly linked to resource dependence, while the second is more in line with agency theory.

By capturing both the size and tenure of SSBs we also incorporate into our study, some control for the 'busy-board' characterization, addressing one of the weaknesses of the Gözübüyük et al. (2018) model. This gives us our second and third hypotheses:

H²: *Larger SSBs bring more resources and have a positive impact on IFI performance*

H³: *SSBs with longer tenure have enhanced firm-specific knowledge and have a positive impact on IFI performance*

The notion of board qualification receives minimal attention and emphasis within the corporate governance literature (see Fedaseyeu, Linck, and Wagner (2018) and Safiullah and Shamsuddin (2019) for recent studies), but we are presented with the suggestion that any formal evaluation of board qualification is predicted to improve its working and hence overall firm performance from an agency theory perspective (Van den Berghe & Levrau, 2004). Given the relatively niche nature of Islamic banking and finance and the nuanced characteristics of Islamic financial interpretation (Azmat et al., 2015; Jobst, Kunzel, Mills, & Sy, 2008), there is potentially a need to address contradictions within religious governance of which education and qualification can be a solution (Farook & Farooq, 2013). Mehran, Morrison, and Shapiro (2011) has also shown that IFIs tend to be bigger, more complex and more opaque than non-financial institutions and thus the specific expertise of SSB members could have a role in firm performance. We proxy this by suggesting that there is a positive relationship between the

formal academic qualifications of SSB members and firm performance. Empirical studies such as Fernandes and Fich (2009); Vincente and Garicano (2010) and Dalziel, Gentry, and Bowerman (2011) support this positive relationship between board expertise and firm performance. More recent work by (Falato, Li, & Milbourn, 2015) also provides additional support for this positive relationship between qualification and firm performance. This gives us our fourth hypothesis:

H[4]: *SSB academic qualifications have a positive effect on IFI performance*

Whilst our introduction of the theoretical orthodoxy within the literature review, above, puts forth numerous empirical and conceptual studies of firms and their board of directors, we strive in our hypothecation, to conceptualize SSBs and Shariah governance within its own light as opposed to drawing parallels with the board of directors literature. The traditional agency lens used in much of the empirical literature does not adequately conceptualize the amalgam of multi-layered religious governance and it is along these lines where the academic knowledge examining this facet of SSBs has substantial room for development. Given the inherent gap in the literature on Shariah governance in the following section we detail the mathematical formulation of our model and highlight our numerical proxies for the specific SSB characteristics hypothesized above.

3. Data and Methodology

This study uses the largest 350 IFIs as ranked by the Financial Times Banker database. The sample comprises of a reduced list of 153 IFIs based on data availability over the 5 years – 2011 to 2015. Adopting the outlier identification process popularized by (Hoaglin & Iglewicz, 1987) this further reduces the sample set to 140 IFIs across 16 nations. We break down the

dataset into type of IFI (Panel A) and the mode of operation of IFI (Panel B). The sample breakdown is given in Table 1 below:

(INSERT TABLE 1 HERE)

Breaking down the dataset by geographical distribution, Malaysia has the largest number of IFIs with Indonesia and Bahrain rounding out the top three nations for IFI concentration respectively. The UK is the only Western economy represented within the sample. In terms of institutional type, we see a common pattern with the majority of IFIs within their respective nations being commercial banks. IFIs falling within the non-banking category of institutional type comprise of credit and finance providers, investment funds, insurance firms, developmental finance providers and non-bank financial providers. We also observe a slightly skew in favor of a Shariah-based mode of operation over Shariah-compliant with the majority of Shariah-compliant adoption found in Indonesia and Malaysia.

3.1. Estimation Procedure

To keep the model parsimonious, we use two measures of IFI performance - the return on assets (ROA) and the return on equity (ROE). Both ROA and ROE are widely used measures of performance within the academic literature on the governance-firm performance nexus. Moreover, given the nature of Islamic finance and the need for transactions to exist within the real economy, it is felt that ROA and ROE s an adequate proxy for IFI firm performance. We elect to run fixed-effects panel regressions across all models in order to control for latent differences amongst the IFIs and across the business cycle. For completeness, we further control for the following and their, *a priori*, impact on firm performance. Firstly, we control for the impact of the board of directors and conventional corporate governance on firm

performance. The empirical literature is relatively developed within this realm (see Hermalin and Weisbach (2003) and Adams et al. (2010) for succinct reviews). We control for firm size utilizing both the value of total assets and the proportional involvement in Islamic finance using the ratio Shariah-compliant to total assets. To control for the institutional regulatory environment, we utilize an index of six regulatory and governance measures as defined within the World Bank WGI. Additionally, we acknowledge the variances in the banking regimes adopted across the sample. In this regard, we elect to stratify the sample along two nominal dimensions – i) banking and non-banking institutions and ii) Shariah-compliant and Shariah-based. Our model thus comprises of four independent variables and ten control variables.

In order to test hypotheses $H^1 - H^5$ we establish the following model:

$$performance_{i,t} = \alpha_{i,t} + \beta_1 SSBSIZE_{i,t} + \beta_2 SSBAGE_{i,t} + \beta_3 SSBINTER_{i,t} +$$

$$\beta_4 SSBAVGQL_{i,t} + \overrightarrow{\beta_5 BOD_{i,t}} + \overrightarrow{\beta_6 FIRM_{i,t}} + \overrightarrow{\beta_7 ECON_{i,t}} + \varepsilon_{i,t}$$

Eq. (1)

Where,

performance$_{i,t}$ = dependent measure of performance of Islamic financial institution i at time t

SSBSIZE$_{i,t}$ = number of members on the SSB for firm i at time t

SSBTENU$_{i,t}$ = average tenure in years of SSB for firm i at time t

SSBINTER$_{i,t}$ = average number of interlocks of SSB for firm i at time t

SSBAVGQL$_{i,t}$ = average value of SSB qualification for firm i at time t

$\overrightarrow{BOD_{i,t}}$ = a 1xN matrix of conventional board specific control variables for firm i at time t

$\overrightarrow{FIRM_{i,t}}$ = a 1xN matrix of firm specific control variables for firm i at time t

$\overrightarrow{ECON_{i,t}}$ = a 1xN matrix of country specific control variables for firm i at time t

Outside of the country-specific variables, the remaining variables are collected and calculated from the audited financial statements of the individual firms over the sample period. A full description of the dependent and independent/explanatory variables are given in Table 2 below:

(INSERT TABLE 2 HERE)

3.2.   Descriptive statistics

The descriptive statistics are reported in Table 3 and are separated into 5 groups – performance measures, SSB, board of director, firm specific and macroeconomic variables. It should be noted that the latter three groups are control variables. In terms of our accounting measures of firm performance, the ROA for the sample stands at -0.41% with a standard deviation of 1.43% and the average ROE is 0.11% with a standard deviation of 0.16%. SSB statistics indicate on average SSB size of 4 scholars with the largest SSB containing 15 members and the smallest being 1 member. These numbers are relatively consistent with much of the extant academic studies on SSBs (Mollah et al., 2017; Mollah & Zaman, 2015; Safiullah & Shamsuddin, 2018, 2019). It must be noted that the size of the SSB is about half the size of the conventional board at 8 members. For instance, de Haan and Vlahu (2016) compute the average size executive board as four members and the average size of the supervisory board had 14 members, using data for 91 banks from 19 European countries. The average number of annual board meetings is about 8 with a standard deviation of 6 meetings a year.

The average age (tenure) of SSBs is approximately 3.1 years with a standard deviation of 2 years across the sample, which is relatively similar to that of conventional boards. It is interesting to notice that the average tenure is similar for both the boards and the SSB. de Haan and Vlahu (2016) compute the tenure on both executive and supervisory boards at around 6

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years. However, at around 3 years, it also seems to be significantly shorter than the average tenure computed by Kim et al. (2014) at 8.25 years, Cavaco, Crifo, Rebérioux, and Roudaut (2017) at 6.91 years for a sample of 114 French companies belonging to the SBF120, Reguera-Alvarado and Bravo (2017) at 8.7 years for a sample of around 200 firms listed on the New York Stock Exchange.

Average SSB interlocks for the sample stands at 2.4 memberships, which is approximately a quarter the size of the conventional boards but with a lower deviation of 2 membership, but significantly higher than the average outside directorships computed by Reguera-Alvarado and Bravo (2017) at 0.92 for a sample of around 200 firms listed on the New York Stock Exchange and Kim et al. (2014) at 0.58. SSB qualification is, on average, relatively higher than conventional board qualifications at 3.09 and 2.03 respectively.

Reviewing firm specific variables, we observe the average period change of Shariah assets to total assets ratio to be 63% with a standard deviation of -0.4% and the value of total assets for the IFIs is on average $9.3 million. Controlling for macroeconomic variations across the sample the average level of GDP growth is 4.86% and inflation as measured by CPI is 4.15%. We also observe that the average value of the regulatory index is -0.15, which is middle-ground when measured against the scale of -2.5 to +2.5. The majority of the variables within the sample are not normally distributed as per the Jarque-Bera test for normality. Table 4 presents the generated correlation matrix for the variables. From the table any pair-wise correlation above/below ±0.12 is significant at a 5% level and the majority of the pair-wise correlations are within acceptable bounds. However, some pair-wise correlations are still worth noting. For instance, board size is highly (and positively) correlated to the number of inter-locks, but also highly and negatively related to the average (formal) qualifications. These relatively high-pair

wise correlations could, potentially, invalidate the assumptions of our regression analysis and we address this issue within the GMM regressions as part of the robustness tests.

(INSERT TABLE 3 HERE)

(INSERT TABLE 4 HERE)

4. Empirical Findings

(INSERT TABLE 5 HERE)

Our regression results are presented in Table 5 above. Panel A presents the results where ROA is our dependent measure of performance, whilst Panel B uses ROE. Both models are statistically significant at 1% level of significance with adjusted R-squared values of 53.49% and 42.02% respectively indicating that the models are appropriate and the chosen variables are adequate predictors of IFI performance. All models are run as fixed-effect panel regressions (cross-section and period) and with White's heteroskedasticity corrected standard errors. Our results indicate that variable SSBTENU is individually significant at least at a 5% level for models ROA and ROE. Given the coefficients, an additional year of SSB member tenure increases ROA and ROE by 0.09 and 0.01 respectively. We have to draw upon the empirical conventional board research for an explanation for the significant and positive relationship between SSB tenure and firm performance as, to the best of our knowledge, there is no extent academic literature with a specific focus on SSBs. This positive relationship between SSB tenure and IFI performance is consistent with on-the-job learning assertions within the conventional board literature (Huang & Hilary, 2018). As SSBs exist within a firm over time, they then acquire better firm-specific knowledge.

In addition to this, we also observe some conventional board and firm specific interactions with conventional board size and number of meetings having an impact on ROA. The negative relationship between conventional board size and firm performance could be indicative of a curvilinear relationship in light of the corporate governance literature. We elect not to test this as this would be beyond the scope of our study. We also observe traditional agency centric arguments with the positive relationship between the number of conventional board meetings and firm performance in that the greater the number of meetings, the greater the ability to monitor the actions of the agents. In terms of firm specific variables, the ratio of Shariah to total assets is significant and negatively related to both ROA and ROE. This is potentially indicative of the 'Shariah-compliance premium' associated within IFIs (Berg, El-Komi, & Kim, 2016).

Further to the core models in the Table 5, we stratify the sample along two nominal characteristics– i) banking and non-banking and ii) Shariah-compliant and Shariah-based. We introduce these stratifications in the form of interaction dummies – MODEDUM, where 0 is Shariah-based and 1 is Shariah-compliant and INSTDUM, where 0 is non-banking and 1 is banking institutions. Stratification along these nominal dimensions allows for the capture of between group heterogeneity and, in the case of mode of operation, accounts for the banking regimes of IFIs. We multiply these against the significant SSBTENU and rerun the regressions presented in Table 6 below where all four models are significant at a 5% level. Models (1) and (2) utilize ROA as the dependent measure of firm performance. We observe no significance for SSBTENU in Model (1) suggesting that there is no difference in the impact of SSBTENU between the Shariah-compliant and Shariah-based IFIs. For Model (2), the interaction term, INSTDUM * SSBTENU, is significant and negative suggesting that Islamic banks experience

a lower impact on firm performance, as measure by ROA, from every additional year of SSB member tenure when compared to non-banking IFIs. The interaction terms are significant and negative for Models (3) and (4) that utilize ROE as the dependent measure of firm performance. The coefficients for MODEDUM * SSBTENU and INSTDUM * SSBTENU indicate that both Shariah-compliant IFIs and Islamic banks appropriate lower economic benefits from an additional year of SSB member tenure when utilizing ROE as a measure of firm performance.

In addition to the individually significant explanatory variables, the direction of the coefficients for SSBINTER is also of note. Whilst not significant in any of the core or auxiliary models, the direction of the SSBINTER coefficient is consistently negative across the models providing some confirmation of the busy SSB assertion within Gözübüyük et al. (2018), where centrality rents are appropriated by the individual SSB member as opposed to the hiring IFI.

(INSERT TABLE 6 HERE)

5. Robustness Checks

5.1.1. Two-step GMM Regression

The robustness and the consistency of the OLS outputs above and their ceteris paribus interpretations depend upon the exogeneity of the regressors within the performance equations. In order to ensure robustness we compare the results of the OLS models against that of a two-step GMM regression (see Arellano and Bover (1995); Blundell and Bond (1998) for detailed technical discussions into the two-step GMM regression). Briefly, by utilizing a GMM regression we are able to treat all explanatory variables as endogenous by utilizing their one-period lagged transformations as instruments. This eliminates unobserved heterogeneity and addresses omitted variable bias. We include two additional external instruments – i) population density and ii) geographical concentration of IFIs – as proxies for board size and board

interlocks. IFIs in countries with high population densities will have access to a greater resource in terms of board size whilst geographical concentration fosters interlocking behavior (Martin, Gozubuyuk, & Becerra, 2015).

(INSERT TABLE 7 HERE)

The results of our two-step GMM regression are provided in Table 7 above. Similar and consistent to the OLS regressions in Table 5, the GMM outputs indicate a significant and positive relationship between SSBTENU for model ROA and ROE. Additionally, there is minimal variance in the coefficient values of both the OLS and GMM regressions for both models suggesting robustness and stability of the OLS regression models. Hansen J-statistics are also non-significant indicating that the instruments used within the GMM regressions are adequate for the models.

5.1.2. Alternative Measures of Performance

In addition to the GMM regression, we adopt a secondary test of robustness by running regressions using alternative measures of performances by both ROA and ROE with return on average assets (ROAA) and return on average equity (ROAE) (see table 8 below). Once again, both models are statistically significant with the alternative measures of IFI performance. In terms of individual variable significance, we observe similar outcomes for both ROAA and ROAE with a significant and positive SSBTENU.

(INSERT TABLE 8 HERE)

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5.1.3. Reduced Regressions

As a further robustness test we run reduced regressions with fewer explanatory variables. We remove all non-significant explanatory variables and run the reduced regression models. The results of the reduced regressions are given in Table 9 below. Once again variable SSBTENU is significant and positively related to firm performance as measured by both ROA and ROE.

(INSERT TABLE 9 HERE)

6. Discussion and Conclusions

Our study set out to investigate the impact of SSBs on Islamic financial performance using a resource dependency framework. A substantial body of literature (Farag et al., 2018; Mollah et al., 2017; Mollah & Zaman, 2015) suggests IFIs have a different governance structure than conventional financial institutions due to the role of SSBs and we argue that a study of the impact of corporate governance in IFIs requires an approach beyond the traditional agency theoretic framework used in many of the studies in conventional finance and in the prior studies in IFIs (see (de Haan & Vlahu, 2016)). Specifically, the key role of the SSBs in IFIs is more related to the provision of resources (advice, knowledge, networks) that in corporate governance theory is conceptualized within resource dependency. The results of our regression analysis provide some support for our resource dependence approach. In particular, we find that SSB tenure is significantly positively related to firm performance as measured by both ROA and ROE. Longer tenured boards have enhanced firm-specific knowledge and greater experience of working together which can enhance communication, trust and cognitive conflict that have been found in board process studies as important group processes to enhance board and firm performance (Minichilli, Zattoni, & Zona, 2009). In this regard, our findings are

similar to (Kim et al., 2014) who found that the expertise of boards with longer director tenure supports directors' advisory performance.

In addition to the specific results supporting our hypothesis that longer tenured boards enhance financial performance, we also have several other interesting findings. First, when we stratify by institutional type our results indicate that Islamic Banks derive a lower positive impact from SSB tenure than other IFIs. Whilst we have no specific reasons why this is the case, we can suggest that there are sufficient differences between Islamic Banks and IFIs that the usual benefits of longer tenure in the form of better quality resource provision in the form of advice and knowledge apply less in banks than other IFIs. We have two suggestions to make as to why this maybe the case. One, evidence from (Abedifar et al., 2015; Abedifar, Giudici, & Hashem, 2017; Alamad, 2017) suggests that Islamic Banks have higher levels of innovation in new products than other IFIs could suggest that wider banking knowledge is at least as important and maybe more important than firm specific knowledge. This would then suggest an upper limit to tenure or at least better knowledge of new banking products. Two, differing frameworks of regulation in Islamic banking, such as Shariah screening criteria, compared to IFIs also requires new knowledge that is not firm specific and thereby potentially limits the benefits from longer tenure (Apaydin, 2018). As Islamic banking and finance moves towards consolidating its regional regulatory and theological differences into an underlying set of governance standards, the unification of differing Shariah screening criteria would also require knowledge that extends beyond the firm thus limiting the benefits of longer tenure. Second, whilst not significant the coefficients for the interlocking behavior across the regression equations are consistently negative. This confirms the findings in a more recent study Gözübüyük et al. (2018) that the number of interlocks has a negative impact on firm performance. This result is in line with the "busyness hypothesis" that suggests firms with busy

directors are associated with weaker corporate governance (Fich & Shivdasani, 2006; Zona et al., 2018).

To summarize, our primary contributions to the literature on corporate governance in IFIs is three-fold. First, through the use of a resource dependency lens we provide a more detailed decomposition of SSB characteristics to investigate the relationship between SSBs and IFI performance. Second, our findings add to the extant academic literature by indicating that SSB tenure is a significant and positive linear predictor of IFI performance and that IBs derive lower benefit from SSBs with longer average terms. Third, we confirm the results of a negative relationship between SSB interlocking behavior and firm performance. Our findings also have managerial implications by highlighting to the leaders of IFIs that SSBs have to be given time to acquire and development their firm specific knowledge. Moreover, there is also a need for the managers of IFIs that the environment for IBs is slightly more changeable when compared to other IFIs.

Whilst these results are important, as with most studies ours faces several limitations. First, we limited ourselves to a resource dependency framework, but others such as stewardship theory and stakeholder theory were not considered nor did we consider broader theories of diversity that may have further explanatory powers. Second, in using a multi-country sample for this study, we attempt to account for the differing legal and regulatory differences using the WGI measures and stratifying the sample into IB paradigms, but there could be further consideration for legal differences. Third, we did not consider differences in ownership.

To conclude, we set out to study the effects of SSBs on IFI financial performance using a hitherto little used framework in studies of SSBs, resource dependency theory. Whilst other

studies have suggested that the primary role of the SSBs is the provision of resources, prior studies have adopted an agency framework. Our results provide support for utilizing alternative theoretical frameworks such as resource dependency theory. We would go further and contend that future research on the relationship between SSBs, the main board in IFIs and financial performance would usefully employ other theoretical frameworks, such as stewardship theory and stakeholder theory. An alternative line of research would also be to more closely examine the behaviors of SSBs and follow more closely in the tradition of process/behavioral based studies of boards.

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Table 1: Distribution of Sample

Country	Count	Panel A: Institutional Type		Panel B: Mode of Operation	
		Banking	Non-banking	Shariah-based	Shariah-compliant
Bahrain	18	6	12	16	2
Bangladesh	11	9	2	4	7
Brunei	1	1	0	1	0
Indonesia	31	26	5	8	23
Kuwait	5	3	2	3	2
Malaysia	34	21	13	20	14
Maldives	1	1	0	1	0
Nigeria	1	1	0	1	0
Oman	4	4	0	2	2
Pakistan	13	11	2	4	9
Palestine	1	1	0	1	0
Qatar	2	2	0	2	0
Saudi Arabia	10	8	2	6	4
Sri Lanka	2	1	1	2	0
UAE	3	2	1	2	1
UK	3	0	3	3	0
Total	**140**	**97**	**43**	**76**	**64**

This table presents the distribution of the banks used in this paper by country. Panel A classifies banks by country and institutional type (Banking and non-Banking), while Panel B classifies banks by country and mode of operation (Sharia-based and Sharia compliant)

Table 2: Description of model variables

Name	Identifier	Description
Panel A: Performance Measures/ Dependent Variables		
Return on assets	ROA	return on assets (source: institutional annual reports)
Return on equity	ROE	return on equity (source: institutional annual reports)
Panel B: Shariah Supervisory Board Variables / Independent Variables		
SSB size	SSBSIZE	number of members on the SSB (source: institutional annual reports)
SSB tenure	SSBTENU	average tenure of SSB members in years (source: institutional annual reports)
SSB interlocks	SSBINTER	average number of interlocks of SSB members (source: institutional annual reports)
SSB qualifications	SSBAVGQL	SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports.
Panel C: Board of Director Control Variables		
BOD size	BODSIZE	number of members on the BOD (source: institutional annual reports)
BOD meet	BODMEET	number of BOD meetings per year (source: institutional annual reports)
BOD tenure	BODTENU	average age of BOD members in years (source: institutional annual reports)
BOD interlocks	BODINTER	average number of interlocks of BOD members (source: institutional annual reports)
BOD qualifications	BODAVGQL	BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports.
Panel D: Firm Specific Control Variables		
Shariah assets to total assets on an annual basis	SHASTOAS	ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: $SHASTOAS_i = \frac{SHAS_i}{TOAS_i}$. Actual values for Shariah and total assets obtained from FT banker database.
Value of total assets	TOAS	value of total assets in \$M. Annual exchange rates for conversion taken from Bloomberg (source: institutional annual reports)
Panel E: Macroeconomic/ Country Specific Control Variables		
GDP growth rate	GDP	annualized GPD growth rate per capita (source: Bloomberg)
Consumer price index	CPI	annualized consumer price index as a measure of price change (source: Bloomberg)
Regulation	REG	creation of an index measuring the regulatory differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption (source: World Bank).

This table describes the variables used in the paper, their source and provides an identifier for each of them.

Table 3: Descriptive statistics

Name	Identifier	Unit	Obs.	Mean	Std. Dev.	Min.	Max.	Skew.	Kurt.	Norm.
Performance Measures/ Dependent Variables										
Return on assets	ROA	%	679	-0.41	1.43	-14.40	3.76	-2.94	26.02	No
Return on equity	ROE	%	576	0.11	0.16	-1.49	0.69	-3.24	29.31	No
Shariah Supervisory Board Variables										
SSB size	SSBSIZE	No. of Members	633	3.99	2.02	1	15	1.23	5.55	No
SSB tenure	SSBTENU	Years	622	3.10	2.05	0	11.33	1.24	4.91	No
SSB interlocks	SSBINTER	No. of Interlocks	332	2.39	2.23	0	13.67	1.90	7.16	No
Avg SSB qualifications	SSBAVGQL	Ratio	613	3.09	1.07	0	4	-1.46	4.48	No
Board of Director Control Variables										
BOD size	BODSIZE	No. of Members	636	8.03	3.59	2	23	1.07	5.05	No
BOD meetings	BODMEET	No. of Meetings	574	8.03	5.91	0	51	3.23	18.10	No
BOD tenure	BODTENU	Years	625	3.38	2.43	0	14.67	1.37	5.47	No
BOD interlocks	BODINTER	No. of Interlocks	524	2.67	2.19	0	11.13	0.90	3.48	No
Avg BOD qualifications	BODAVGQL	Ratio	600	2.03	0.79	0	3.67	-0.51	2.84	No
Firm Specific Control Variables										
Ratio of Shariah assets to total assets	SHASTOAS	%	628	0.63	0.44	0	1	-0.47	1.30	No
Value of total assets	TOAS	$ Mil	649	9353.59	20780.97	2.2318	183204	4.70	30.73	No
Macroeconomic/Country Control Variables										
GDP growth rate	GDP	%	700	4.86	1.84	2.35	13.38	-0.06	6.16	No
Consumer price index	CPI	%	700	4.16	2.64	-0.42	12.85	0.81	3.46	No
Regulation	REG	%	700	-0.15	0.54	-1.19	1.52	0.16	3.29	No

This table provides descriptive statistics for each variable used in the paper. The statistics are number of observations, mean, standard deviation, minimum and maximums; skewedness, kurtosis and normality. ROA: return on assets; ROE: return on equity; SSBSIZE: number of members on the SSB; SSBTENU: average tenure of SSB members in years; SSBINTER: average number of interlocks of SSB members; SSBAVGQL: SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports. BODSIZE: number of members on the BOD; BODMEET: number of BOD meetings per year; BODTENU: average age of BOD members in years; BODINTER: average number of interlocks of BOD members; BODAVGQL: BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports. SHASTOAS: ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: SHASTOAS$_i$=SHAS$_i$/TOAS$_i$. Actual values for Shariah and total assets obtained from FT banker database. TOAS: value of total assets in $M. Annual exchange rates for conversion taken from Bloomberg; GDP: annualized GPD growth rate per capita; CPI annualized consumer price index as a measure of price change; REG creation of an index measuring the regulatory differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption

Table 4: Pair-wise correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ROA	1															
ROE	0.47***	1														
SSBSIZE	-0.09	-0.06	1													
SSBTENU	0.18***	0.25***	-0.19***	1												
SSBINTER	-0.08	-0.01	0.09	-0.06	1											
SSBAVGQL	-0.06	0.01	0.04	-0.01	-0.07	1										
BODSIZE	-0.17***	-0.16**	0.45***	-0.30***	0.13**	-0.03	1									
BODMEET	0.21***	0.24***	-0.04	0.07	-0.28***	0.02	-0.26***	1								
BODTENU	0.21***	0.12*	-0.05	0.10*	-0.14**	0.13**	0.16***	-0.03	1							
BODINTER	0.01	-0.15**	0.45***	-0.29***	0.20***	0.10	0.58***	-0.21***	0.16**	1						
BODAVGQL	-0.06	0.05	-0.14**	0.20***	-0.20***	0.15**	-0.44***	0.19***	-0.07	-0.28***	1					
SHASTOAS	-0.38***	-0.38***	0.25***	-0.18***	0.17***	-0.02	0.20***	-0.22***	-0.18***	0.12**	-0.27***	1				
TOAS	0.06	0.10	0.31***	-0.13**	0.04	0.13**	0.33***	0.10	0.16***	0.28***	-0.08	-0.23***	1			
GDP	0.08	0.30***	0.01	0.17***	-0.12**	-0.11*	0.23***	0.23***	0.05	-0.11*	0.16***	-0.27***	-0.02	1		
CPI	0.28***	0.37***	-0.48***	0.26***	0.01	-0.14**	-0.38***	0.21***	-0.08	-0.41***	0.21***	-0.37***	-0.18***	0.26***	1	
REG	-0.09	-0.1	-0.23***	0.01	-0.07	0.19***	0.11*	-0.02	0.14**	0.37***	0.06	0.13**	0.19***	0	-0.24	1

This table provides the pair-wise correlations among the variables ROA: return on assets; ROE: return on equity; SSBSIZE: number of members on the SSB; SSBTENU: average tenure of SSB members in years; SSBINTER: average number of interlocks of SSB members; SSBAVGQL: SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports. BODSIZE: number of members on the BOD; BODMEET: number of BOD meetings per year; BODTENU: average age of BOD members in years; BODINTER: average number of interlocks of BOD members; BODAVGQL: BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports. SHASTOAS: ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: $SHASTOAS_i=SHAS_i/TOAS_i$. Actual values for Shariah and total assets obtained from FT banker database. TOAS: value of total assets in $M. Annual exchange rates for conversion taken from Bloomberg; GDP: annualized GPD growth rate per capita; CPI annualized consumer price index as a measure of price change; REG creation of an index measuring the regulatory differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption

(***, ** and * represent p-values of less than 0.01, 0.05 and 0.1 respectively)

Table 5: Core Regression Results

Variables	Panel A: ROA	Panel B:ROE
C	0.4168	-0.1379
	(0.6159)	(0.2204)
SSBSIZE	-0.0386	-0.0003
	(0.7295)	(0.9877)
SSBTENU	**0.0993***	**0.0147**
	(0.0003)	**(0.0356)**
SSBINTER	-0.0481	-0.0185
	(0.5303)	(0.2671)
SSBAVGQL	-0.0653	0.0035
	(0.4230)	(0.7898)
BODSIZE	**-0.1208**	0.0234
	(0.0338)	(0.1633)
BODMEET	**0.0495***	-0.0018
	(0.0535)	(0.3690)
BODTENU	0.0661	0.0025
	(0.4007)	(0.8875)
BODINTER	0.0969	0.0327
	(0.1884)	(0.2426)
BODAVGQL	-0.1627	0.0103
	(0.3404)	(0.6112)
SHASTOAS	**-0.5669***	**-0.2313***
	(0.0997)	**(0.0055)**
TOAS	0.0001	0.0001
	(0.6922)	(0.2028)
GDPGROWTH	-0.0135	0.0103
	(0.8450)	(0.2812)
CPI	-0.0207	0.0205
	(0.7167)	(0.1068)
REG	-1.2075	0.5392
	(0.4849)	(0.2827)
Model	OLS	OLS
Cross-section fixed effects	Yes	Yes
Period fixed effects	Yes	Yes
Adj. R^2	53.49%	42.02%
Obs.	263	259
F-Stat	**4.2406***	**2.9890***

This table displays the fixed effects (cross-sectional and time) regression results using as dependent variable ROA in Panel A and ROE in Panel B. All regressions have White's robust standard errors. ROA: return on assets; ROE: return on equity; SSBSIZE: number of members on the SSB; SSBTENU: average tenure of SSB members in years; SSBINTER: average number of interlocks of SSB members; SSBAVGQL: SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports. BODSIZE: number of members on the BOD; BODMEET: number of BOD meetings per year; BODTENU: average age of BOD members in years; BODINTER: average number of interlocks of BOD members; BODAVGQL: BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports. SHASTOAS: ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: $SHASTOAS_i = SHAS_i / TOAS_i$. Actual values for Shariah and total assets obtained from FT banker database.

TOAS: value of total assets in $M. Annual exchange rates for conversion taken from Bloomberg; GDP: annualized GPD growth rate per capita; CPI annualized consumer price index as a measure of price change; REG creation of an index measuring the regulatory differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.

(***, ** and * represent p-values of less than 0.01, 0.05 and 0.1 respectively; White's robust standard errors in parentheses)

Table 6: Auxiliary Regressions - Nominal Characteristics

Variables	Panel A: ROA		Panel B: ROE	
	(1)	**(2)**	**(3)**	**(4)**
C	0.6408	0.8869	**-0.2009****	-0.0646
	(0.4910)	(0.3509)	**(0.0467)**	(0.3395)
SSBSIZE	-0.0513	-0.0292	0.0053	0.0036
	(0.6740)	(0.7840)	(0.7890)	(0.8439)
SSBTENU	0.0286	**0.3449****	**0.0443*****	**0.0859****
	(0.7825)	**(0.0389)**	**(0.0000)**	**(0.0243)**
SSBINTER	-0.0379	-0.0466	-0.0185	-0.0207
	(0.6371)	(0.5247)	(0.2986)	(0.3574)
SSBAVGQL	-0.0541	-0.0788	-0.004	0.0007
	(0.4328)	(0.3638)	(0.7544)	(0.9572)
BODSIZE	**-0.1114****	**-0.1342****	0.024	0.0166
	(0.0267)	**(0.0291)**	(0.1474)	(0.2540)
BODMEET	**0.0486****	**0.0481***	-0.0008	**-0.0031***
	(0.0346)	**(0.0897)**	(0.7082)	**(0.0610)**
BODTENU	0.0384	0.0585	0.006	0.0086
	(0.5712)	(0.3277)	(0.7225)	(0.5885)
BODINTER	0.1175	0.0697	0.0239	0.0241
	(0.2491)	(0.4322)	(0.3627)	(0.3251)
BODAVGQL	-0.1442	-0.1924	0.0035	0.0015
	(0.4277)	(0.2892)	(0.8411)	(0.9373)
SHASTOAS	**-0.6407***	-0.4122	**-0.1628****	**-0.2038*****
	(0.0710)	(0.1256)	**(0.0206)**	**(0.0027)**
TOAS	0.0001	0.0001	-0.0001	-0.0001
	(0.7184)	(0.2678)	(0.7748)	(0.3258)
GDPGROWTH	-0.0328	-0.0598	0.0071	0.0058
	(0.5961)	(0.4310)	(0.3524)	(0.2083)
CPI	-0.032	-0.0473	**0.0221****	**0.0172****
	(0.5768)	(0.4310)	**(0.0484)**	**(0.0213)**
REG	-1.3076	-0.7576	0.624	0.6323
	(0.3469)	(0.5565)	(0.2058)	(0.1666)
MODEDUM * SSBTENU	0.0847		**-0.0398*****	
	(0.5067)		**(0.0000)**	
INSTDUM * SSBTENU		**-0.2886***		**-0.0818****
		(0.0899)		**(0.0269)**
Model	OLS	OLS	OLS	OLS
Cross-section fixed effects	Yes	Yes	Yes	Yes
Period fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	54.54%	55.73%	43.37%	47.76%
Obs.	260	260	256	256
F-Stat	**4.3407****	**4.5058****	**3.0779****	**3.4798****

This table displays the fixed effects (cross-sectional and time) regression results using as dependent variable ROA in Panel A and ROE in Panel B. All regressions have White's robust standard errors. ROA: return on assets; ROE: return on equity; SSBSIZE: number of members on the SSB; SSBTENU: average tenure of SSB members in years; SSBINTER: average number of interlocks of SSB members; SSBAVGQL: SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports. BODSIZE: number of members on the BOD; BODMEET: number of BOD meetings per year; BODTENU: average age of BOD members in years; BODINTER: average number of interlocks of BOD members;

BODAVGQL: BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports. SHASTOAS: ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: $SHASTOAS_i = SHAS_i/TOAS_i$. Actual values for Shariah and total assets obtained from FT banker database. TOAS: value of total assets in $M. Annual exchange rates for conversion taken from Bloomberg; GDP: annualized GPD growth rate per capita; CPI annualized consumer price index as a measure of price change; REG creation of an index measuring the regulatory differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.

MODEDUM is a dummy variable taking the value of one if Sharia-compliant and zero if Sharia-based; INSTDUM is a dummy variable taking the value of one if the institution is a bank and zero otherwise

(***, ** and * represent p-values of less than 0.01, 0.05 and 0.1 respectively; White's robust standard errors in parentheses)

Table 7: GMM Regression Outputs

Variables	Panel A: ROA	Panel B: ROE
C	-0.0646	0.0095
	(0.9359)	(0.9194)
SSBSIZE	-0.0914	0.0111
	(0.3388)	(0.4701)
SSBTENU	**0.0876***	**0.0147**
	(0.0000)	**(0.0450)**
SSBINTER	-0.0451	-0.0204
	(0.6141)	(0.2441)
SSBAVGQL	-0.0841	-0.0022
	(0.2676)	(0.8860)
BODSIZE	-0.0389	0.0084
	(0.3764)	(0.3641)
BODMEET	0.0441	0.0022
	(0.498)	(0.8864)
BODTENU	0.1090	0.0317
	(0.1625)	(0.2061)
BODINTER	**0.0476***	-0.0016
	(0.0622)	(0.4530)
BODAVGQL	-0.1217	0.0145
	(0.4210)	(0.4699)
SHASTOAS	-0.5122	**-0.2496**
	(0.1524)	**(0.0161)**
TOAS	0.0001	-0.0001
	(0.5644)	(0.1649)
GDPGROWTH	0.0090	0.0092
	(0.9116)	(0.3057)
CPI	-0.0136	0.0157
	(0.8561)	(0.1689)
REG	-1.0650	0.7958
	(0.4844)	(0.2100)
Model	GMM 2-Step	GMM 2-Step
Cross-section fixed effects	Yes	Yes
Period fixed effects	Yes	Yes
Obs.	258	254
Hansen J-Stat	0.1409	1.5749

This table displays the GMM-2 Step results using as dependent variable ROA in Panel A and ROE in Panel B. All regressions have White's robust standard errors. ROA: return on assets; ROE: return on equity; SSBSIZE: number of members on the SSB; SSBTENU: average tenure of SSB members in years; SSBINTER: average number of interlocks of SSB members; SSBAVGQL: SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports. BODSIZE: number of members on the BOD; BODMEET: number of BOD meetings per year; BODTENU: average age of BOD members in years; BODINTER: average number of interlocks of BOD members; BODAVGQL: BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports. SHASTOAS: ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: $SHASTOAS_i = SHAS_i / TOAS_i$. Actual values for Shariah and total assets obtained from FT banker database. TOAS: value of total assets in $M. Annual exchange rates for conversion taken from Bloomberg; GDP: annualized GPD growth rate per capita; CPI annualized consumer price index as a measure of price change; REG creation of an index measuring the regulatory

differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.

(***, ** and * represent p-values of less than 0.01, 0.05 and 0.1 respectively; White's robust standard errors in parentheses)

Table 8: Regressions with alternative measures of IFI performance – ROAA and ROAE

Variables	Panel A: ROAA	Panel B: ROAE
C	0.0230	**0.3175***
	(0.2507)	**(0.0002)**
SSBSIZE	0.0012	-0.005
	(0.1236)	(0.4341)
SSBTENU	**0.0015***	**0.0055***
	(0.0005)	**(0.0705)**
SSBINTER	0.0004	**-0.0078***
	(0.7929)	**(0.0901)**
SSBAVGQL	-0.0009	**-0.0228***
	(0.3708)	**(0.1077)**
BODSIZE	-0.0015	-0.0072
	(0.2946)	(0.2402)
BODMEET	**0.0006***	**0.0042***
	(0.0001)	**(0.0002)**
BODTENU	0.0005	-0.0009
	(0.7336)	(0.8539)
BODINTER	0.0006	0.0119
	(0.5628)	(0.2158)
BODAVGQL	-0.001	0.0009
	(0.6565)	(0.9592)
SHASTOAS	**-0.0142**	**-0.1546**
	(0.0250)	**(0.0175)**
TOAS	0.0001	1.00E-04
	(0.5863)	(0.6043)
GDPGROWTH	-0.0008	**-0.0068**
	(0.3317)	**(0.0208)**
CPI	-0.0005	-0.0009
	(0.4967)	(0.6674)
REG	-0.0109	-0.0198
	(0.6639)	(0.9432)
Model	OLS	OLS
Cross-section fixed effects	Yes	Yes
Period fixed effects	Yes	Yes
Adj. R^2	67.11%	64.11%
Obs.	250	250
F-Stat	**6.5236***	**5.7316***

This table displays the fixed effects (cross-sectional and time) regression results using as dependent variable ROA in Panel A and ROE in Panel B. All regressions have White's robust standard errors. ROA: return on average assets; ROE: return on average equity; SSBSIZE: number of members on the SSB; SSBTENU: average tenure of SSB members in years; SSBINTER: average number of interlocks of SSB members; SSBAVGQL: SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports. BODSIZE: number of members on the BOD; BODMEET: number of BOD meetings per year; BODTENU: average age of BOD members in years; BODINTER: average number of interlocks of BOD members; BODAVGQL: BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports. SHASTOAS: ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: SHASTOAS$_i$=SHAS$_i$/TOAS$_i$. Actual values for Shariah and total assets obtained from FT banker database. TOAS: value of total assets in $M. Annual exchange rates for conversion taken from Bloomberg; GDP: annualized

GPD growth rate per capita; CPI annualized consumer price index as a measure of price change; REG creation of an index measuring the regulatory differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.

(***, ** and * represent p-values of less than 0.01, 0.05 and 0.1 respectively; White's robust standard errors in parentheses)

Table 9: Reduced Regression Outputs

Variables	ROA	ROE
C	-0.0839	-0.1242
	(0.9240)	(0.3180)
SSBTENU	**0.0546***	**0.0089***
	(0.0661)	**(0.1009)**
BODSIZE	-0.0502	0.0203
	(0.2749)	(0.1507)
BODMEET	0.0650	-0.0001
	(0.2591)	(0.9902)
BODTENU	0.0442	0.0186
	(0.3195)	(0.2641)
BODINTER	**0.0263****	0.0011
	(0.0153)	(0.5815)
BODAVGQL	-0.2432	-0.001
	(0.1203)	(0.9249)
SHASTOAS	-0.3253	-0.1492
	(0.5931)	(0.0360)
TOAS	0.0001	-0.0001
	(0.8642)	(0.4928)
GDPGROWTH	0.0178	**0.0105*****
	(0.6214)	**(0.0097)**
CPI	-0.0258	0.0119
	(0.7529)	(0.1944)
REG	**-0.9808***	0.1625
	(0.0575)	(0.5108)
Model	OLS	OLS
Control Variables	Yes	Yes
Cross-section fixed effects	Yes	Yes
Period fixed effects	Yes	Yes
Adj. R^2	49.71%	46.26%
Number of obs.	414	403
F-Stat	**4.2663*****	**3.7463*****

This table displays the fixed effects (cross-sectional and time) regression results using as dependent variable ROA in Panel A and ROE in Panel B. All regressions have White's robust standard errors. ROA: return on assets; ROE: return on equity; SSBSIZE: number of members on the SSB; SSBTENU: average tenure of SSB members in years; SSBINTER: average number of interlocks of SSB members; SSBAVGQL: SSB member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. It should be noted that religious qualifications have been considered. The actual qualifications are taken from institutional annual reports. BODSIZE: number of members on the BOD; BODMEET: number of BOD meetings per year; BODTENU: average age of BOD members in years; BODINTER: average number of interlocks of BOD members; BODAVGQL: BOD member qualifications. Quantification of qualifications given as: 4 = doctoral level, 3 = PG level, 2 = UG level, 1 = Other where, 'Other' is any qualification below UG level. A value of 0 is given where there is no qualification. Qualification obtained from institutional annual reports. SHASTOAS: ratio of Shariah-assets to total assets year to year where the ratio of Shariah assets to total assets is calculated as: SHASTOAS$_i$=SHAS$_i$/TOAS$_i$. Actual values for Shariah and total assets obtained from FT banker database. TOAS: value of total assets in $M. Annual exchange rates for conversion taken from Bloomberg; GDP: annualized GPD growth rate per capita; CPI annualized consumer price index as a measure of price change; REG creation of an index measuring the regulatory differences for each nation. Index constructed using the 6 World Bank measures of national regulation and governance contained within the World Governance Index (WGI). Scale is from -2.5 (poor regulation and governance) to +2.5 (good regulation and governance). Index contains measures for the

following: Voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.

(***, ** and * represent p-values of less than 0.01, 0.05 and 0.1 respectively; White's robust standard errors in parentheses)