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Exploring the Nexus Between Human Capital, Corporate Governance and Performance: Evidence from Islamic Banks

Nawaz, T

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Abstract

This paper offers novel insight into the Islamic banking business model by considering the effect of investments in human capital and corporate governance features on the market performance of Islamic banks. Based on a sample of 47 banks (30 full-fledged Islamic banks and 17 Islamic Shariah-windows) operating in different regions during the 2005-2010 period, and controlling for firm-specific characteristics, this paper finds investments in human capital to have a significant positive impact on the market value in the pre- and post-financial crisis period. Based on a market measure, this paper finds board size and CEO power to have a significant positive impact, while the size of Shariah Supervisory Board (SSB) has the opposite effect on market performance. The results further reveal that the Islamic banking sector is not a homogeneous group, with full-fledged Islamic banks having lax corporate governance mechanisms and large size, while their counterparts, Islamic Shariah-windows, having strong corporate governance mechanisms tend to invest more in human capital to yield positive market value. Overall, the analysis suggests that the financial crisis may have further spurred the impact of investments in human capital on the market performance.

Keywords: human capital investment; corporate governance; market performance; financial crisis; Islamic banks; applied ethics.

1. Introduction

The world has witnessed various evolutionary stages in the field of banking and finance. An overall slowdown in the financial markets around the globe has been observed during the recent financial crisis of 2007-2008, which shook the foundations of the centuries-old financial system and has led to doubts regarding the proper functioning of the conventional banking model (Bourkhis and Nabi, 2013). There have been calls for radical changes in the existing financial system. While the radical transformation may threaten the profitability and survival of existing incumbent conventional banks (CBs), it may also lead a cohort of new opportunities and powerful new players such as Islamic banks (IBs) into the limelight as possible and viable alternatives.

Driven by religious business ethics, IBs entered the financial sector in mid-1970's to provide banking solutions that comply with Islamic jurisprudence (Shariah) which prohibits the charging of interest (*riba*), engaging in speculative transactions (*gharar*) and financing of specific illicit activities (Beck et al., 2013). Shariah places strong emphasis on justice and fairness and as such, encourages the sharing of profit and loss and thus risk-sharing, as well as requires all transactions to be backed by a real economic transaction that involves tangible assets. For IBs, their revenue streams come mainly from investment, trade-based profit and fee-based services. Besides deposit products (savings and investment accounts), their asset-side products can be either equity-based such as *mudarabah* (capital-labour partnership or joint venture) and *musharakah* (capital-capital partnership), or interest-free debt-based products like *murabahah* (cost-plus sale) and *ijarah* (leasing). Hence, the Islamic banking business model is clearly different from conventional banking model as it is faith-driven which strives to conduct its operations in an ethical manner with an ethical identity and must be Shariah-compliant (Haniffa and Hudaib, 2007).

Since its inception about half a century ago, Islamic banking and finance has grown unabatedly; it is now considered one of the fastest growing segments in the field of finance (see Abedifar et al., 2016; Olson and Zoubi, 2016). According to the World Islamic Banking Competitiveness Report, Islamic banking is growing at a rate of 15% to 20% per annum globally with assets held by Islamic banks set to achieve USD 2 trillion (Nazim and Bennie, 2016). Furthermore, the superior performance of the Islamic finance industry during the global financial crisis, in which the credit and asset growth of IBs were at least twice that of CBs, has garnered increased focus on the Islamic banking business model

Despite their impressive growth, IBs cannot remain complacent, as competition in the banking sector has intensified over the past decade (Ariss, 2010). Hence, it is imperative for IBs to consider embracing new strategic priorities and putting in place appropriate mechanisms that will help sustain their performance.

This infers that, to sustain the current robust growth, IBs need to develop new products to fulfil the increasing needs of their clients. Such product innovation requires higher knowledge resources, particularly human intellectual capital, to execute innovative ideas and convert them into tangible assets. Therefore, it is argued that the strength of Islamic banking business model lies in its distinct knowledge base driven from the principles of Shariah, which can be purposefully mobilised to sustain competitive advantage in the market (Keenan and Aggestam, 2001). Thus, human capital is the catalyst of competitive advantage for IBs and these banks are expected to invest more in their stocks of human capital in order to maintain their ethical identity as well as sustain the ongoing robust growth trends. Research in human resource management clearly indicates that investing in human capital can yield better firm performance (Becker and Huselid, 2006; Morris et al., 2017; Subramony et al., 2008; Wang et al., 2009), and some studies urged governing bodies to adopt investment

strategies that increase and retain firm-specific human capital (Crook et al., 2011; Peña and Villasalero, 2010).

Bank performance relies profoundly on good governance mechanisms to constrain agency problems and moral hazard. This aspect has garnered substantial attention, particularly following the financial crisis (Aebi et al., 2012; Pathan and Faff, 2013; Wintoki et al., 2012). Studies examining the relationship between governance mechanisms and the performance of conventional banks (see Adams and Mehran, 2012; Andres and Vallelado, 2008; Francis et al., 2012) have commonly considered board size, board independence and CEO role duality. However, the impacts of these aspects on performance in previous studies were not clear. While CBs adopt a single layer governance mechanism, IBs have an additional layer of governance in the form of the Shariah Supervisory Board (SSB). The SSB provides oversight on commitments to ethical practices (Choudhury and Hoque, 2013; Safieddine, 2009), such as avoiding speculation in lending and investment activities, that may subsequently affect performance (Al-Suhaibani and Naifar, 2014; Mollah and Zaman, 2015). This finding highlights the complexity of the Islamic banking business model and the significance of human capital at the governance and operational levels. Hence, to satisfy their clientele, IBs require an ambidextrous stock of human capital that not only possesses contemporary knowledge of economics but also Shariah knowledge. Thus, IBs are expected to invest more in their human capital to yield profitability and market valuation. However, this aspect has largely been ignored by previous research in this area. Understanding whether human capital has a significant effect on the likelihood of IB survival and how this effect differs during a time of financial turmoil is an important detail for governing bodies in particular, which are weighing the level and other specifics of human capital requirements to achieve the desired level of banking stability.

Therefore, this paper addresses a lacuna in the bank performance literature by focusing on the impact of investments in human capital and the corporate governance mechanism on the market performance of IBs while controlling for bank-specific characteristics. This paper contributes to the literature on banking in several ways. First, this is the first cross-country study to examine the influence of investment in human capital and the corporate governance structure on the market-based performance of Islamic banks. Second, this study constructs a unique database using hand-collected data on investments in human capital, which has not been done in previous research. Finally, this study argues that Islamic banking is not a homogeneous group as considered by earlier research. In examining the effect of human capital investments and corporate governance on performance, this study also extends pooled sample estimations by splitting the sample into full-fledged Islamic banks and Islamic Shariah-windows in three different periods i.e., before, during, and after the financial crisis. In a cross-country environment, these extended analyses capture several interesting findings.

2.   Background

An emerging body of literature has attempted to identify and examine distinct features of the Islamic banking model and has performed comparative analysis with rival conventional banks. The aspects investigated include, but are not limited to, asset quality (Beck *et al.*, 2013), stability (Čihák and Hesse, 2010; Hasan and Dridi, 2010), efficiency (Bourkhis and Nabi, 2013), valuation (Elnahass *et al.*, 2014), risk (Abedifar *et al.*, 2013), relationship banking (Ongena and Şendeniz-Yüncü, 2011), mutual funds (Abdelsalam *et al.*, 2014), mortgage loans (Ebrahim, 2009) and other risk dimensions such as loan default rates (Baele *et al.*, 2014). The empirical literature submits significant differences between conventional

and Islamic banks in terms of their performance efficiency during the financial crisis, in which the latter outperformed the former.

While the financial crisis accorded Islamic banking an opportunity to prove its resilience, it also highlighted the need to address important challenges confronting the industry. Ordinarily Islamic banks are perceived as intermediary financial institutions; however, unlike conventional banks, financial intermediation is not the ultimate goal for Islamic finance. Islamic banking has emerged as a potential alternative ethical method of banking and finance, shaped by the ontological and epistemological sources of Islam (Platonova et al., 2016). Such institutions came into existence to provide ethical/cooperative financial solutions to society and are not subject to any ethnic group. Therefore, such institutions are expected to be more innovative in providing alternate banking solutions. Sorescu and Spanjol (2008) note that firm value increases with innovation breakthroughs, which ultimately positively affect firm market valuation. In service firms such as banks, much of the organisational knowledge resides within its stock of human capital, and service innovation tends to emanate from such knowledge (Kor and Mahoney, 2005). Thus, product and service innovation is primarily dependent on an organisation's stock of human capital (Prajogo et al., 2016).

Human capital is highly significant to IBs, as these financial institutions are unique and differ fundamentally from their conventional counterparts, which are mainly focused on profit maximisation through the spread between the interest rates (i.e., interest rate received from the capital borrowers and interest rate paid to the depositors) (Mamatzakis and Bermpei, 2015). Conversely, IBs focus primarily on non-interest income activities such as investments in various Shariah-compliant projects to earn profit. Hence, IBs require multitalented human capital to run their operations in a Shariah-compliant manner. Thus, such institutions are

expected to invest relatively more to nourish their stock of human capital to meet the ethical commitments underlying their ethical business model.

2.1 Development of hypotheses

2.1.1 *Firm resources and competitive advantage*

Proponents of human capital theory (e.g., Becker, 1975; Schultz, 1961) opine that firms constantly strive to generate and maintain competitive advantage by investing either in internal stock of knowledge assets i.e. training (Hatch and Dyer, 2004) or in acquiring external experts i.e. direct recruit (Thornhill, 2006). Firms learn when they expand or upgrade their knowledge stocks. For example, training stimulates internal flows of knowledge and guides future actions, without constraining them (Dierickx and Cool, 1989). This increases the distribution of knowledge across organisational members, facilitates the emergence of common meanings, and enables existing capabilities to be synthesised and reconfigured (Galunic and Rodan, 1998). Similarly, newly acquired external knowledge through recruitment allows the firm to restructure their knowledge portfolios and achieve important synergies from their knowledge assets (Zahra and George, 2002). Newly hired employees bring fresh knowledge and perspectives, which broadens understanding, sharpens problem-solving skills, and facilitates learning (Kor and Mahoney, 2005). Thus, firms' competitive capabilities stem from unique combinations of nourishing existing and acquiring new knowledge assets (Afuah, 2002). The empirical evidence clearly suggests that investing in human capital can yield positive performance outcomes (Becker and Huselid, 2006; Subramony et al., 2008).

2.1.2 *Human capital investments (HCI) and performance*

Human capital is a critical organisational capability that corresponds directly to the propensity to service innovativeness to satisfy customer needs and improve firm value (Dotzel et al., 2013). Colombo and Grilli (2005) suggest that firms with greater human capital stocks (i.e., higher education or skill) are likely to have better entrepreneurial judgements, and, as long as human capital continues to be developed, staff can improve their job performance and ultimately improve the firm's performance (Hsu, 2007). This inference also finds support in other literature streams. Human capital theorists (e.g., Becker, 1964; Schultz, 1961) for instance, simply reason that an increase in worker's skills, knowledge, and abilities most likely translates into increased organisational performance.

It has been argued that a firm's knowledge essentially resides within its human capital, and that firm performance tends to emanate from such knowledge (Kor and Mahoney, 2005). Thus, when organisations build a specific asset (i.e., human capital) consisting of knowledge and skills relating to creativity and development of new ideas, it results in an increase in firm performance (Prajogo et al., 2016). Therefore, governing bodies must understand the means to effectively harness and leverage their stock of human capital, such as constantly investing in human capital resources (Kor and Mahoney, 2005) to attain and sustain a competitive advantage in the market (Grant, 1996). This finding infers that investments in human capital are tied to higher efficiency of human capital, which, in turn, positively affects organisational performance.

Theory at both the micro and macro level predicts that a firm's willingness and ability to make investments in human capital enables the firm to appropriate much of the value created by this human capital (Crook et al., 2011; Molloy and Barney, 2015). This assumption has been tested empirically at national and sectoral level. Bryant and Javalgi (2016) investigated the impact of total investment in human capital and global economic integration in developed and developing economics and reported that nations that invest

heavily in their pool of human capital attain higher economic growth. Similarly, Effiok et al. (2012) found that greater level of economic growth in Nigeria was directly related to the investments in human capital. Using the same basic argument, O'Mahony (2012) found that human capital formation in the form of continuous learning, contributes significantly to nation's economic growth within Europe; Galor and Moav (2004) found that human capital accumulation (training and recruitment) was a prime engine of national economic growth. This finding is supported by other empirical studies at sectoral level in the service sector.

Úbeda-García et al. (2013), for example, submits that investment in human capital training helps a firm to achieve a differential positioning within the sector. Their study reported a significant positive relationship between investments in training programmes and overall performance i.e., productivity, profitability and customer satisfaction within the hotel industry. A later study by Úbeda-García et al. (2014) confirmed these findings. Similarly, Bosma et al. (2004) submit that investments in human capital have a direct significant impact on the profitability and survival likelihood of Dutch start-up firms.

In the financial sector, Peña and Villasalero (2010), for instance, analysed the investment strategies of 202 Spanish banks in relation to market changes. They found a positive relationship between investments in staff training and financial performance. They further reported that banks that invest heavily in training and staff development favour internal promotions and thus achieve higher employee retention rates. Saá et al. (2004) analysed the strategic development on human capital within savings banks in Spain and reported that banks that developed their pool of human capital through training and development achieved superior levels of productivity and profitability. Similarly, Bartel (2004) reported a significant positive relationship between investment in human capital and growth rate of deposit and loans of US retail banks.

Conversely, Blatter et al (2012) argues that firms no longer rely solely on continuing to develop existing human capital through training programmes as they seek alternatives to implement simultaneously. With the rapidly changing globalised world, the demands for skilled human capital-related skills and knowledge have also changed. Consequently, firms must frequently hire new workers who match the job profile. Hence, the cost of hiring new workers will be considered an investment rather than an expense. Saks and Burke-Smalley (2014) observed that external (direct recruitment cost) and internal (on-the-job training) investments help the firm to develop a strong pool of human capital, which has a strong positive impact on the firm's overall performance.

In sum, the empirical evidence suggests that investments in human capital have the potential to be a competitive advantage for a firm and may enhance a firm's performance (Morris et al., 2017). According to Wang et al. (2009), when demand for human capital is high in the market, firms tend to invest more in their human capital, both internally (through training and development programmes to retain employees) and externally (by hiring individuals who possess required knowledge and skills), to sustain the growth trends. This finding is particularly important for knowledge-intensive firms such as banks that continuously rely on disruptive innovations to sustain a competitive advantage in today's knowledge-intensive era (Prajogo et al., 2016). As noted earlier, the Islamic finance industry is experiencing tremendous growth while competing in a competitive market where demand for skilled human capital is high (Ariss, 2010). Thus, Islamic banks need to invest in internal and external human capital resources to sustain the current growth trends (Hasan and Dridi, 2010). From an Islamic perspective, a revealing indicator of an organisation's ethical stand is the way it treats its employees. The underlying philosophy and ethical values of Islamic banking business model encourage such institutions to achieve consistency between the brand values and staff behaviour by offering those adequate opportunities to develop i.e. training to

equip them with knowledge and understanding of IB business model in order to maintain their ethical identity (Haniffa and Hudaib, 2007).

For IBs, human capital is important, as employees are expected not only to have conventional knowledge and skills related to the provision of such services but also to have good knowledge on Shariah law, as this will enhance the credibility and reputation of IBs. IBs, like other service firms, utilise the knowledge, skills and abilities of their frontline employees to generate unique and imperfectly imitable effective service delivery (Skaggs and Youndt, 2004), which, in turn, creates a competitive advantage for them. Therefore, knowing how investments in human capital affect an IB's market valuation is of paramount importance. Thus, the resource-based view of the firm leads to the following hypothesis (H1):

H1: there is a significant positive relationship between investments in human capital and the market performance of Islamic banks.

2.1.3 *Corporate governance and performance*

2.1.3.1 Board size and bank performance

While there are suggestions for finding an association between board size and corporate performance, no consensuses exist regarding the direction of this association. Andres and Vallelado (2008) reported a U-shaped relationship between board size and bank performance, indicating that an increase in the number of board members enhances the performance of banks; however, when the board size becomes very large, this can have an adverse effect on performance due to high information asymmetries among the board members. Adams and Mehran (2012) argued that board size relates positively with financial returns (ROA) and market value (Tobin's Q), whereas Pathan and Faff (2013) reported a negative association

between board size and economic performance of banks. In contrast, Wintoki et al. (2012) did not find a significant relationship between board size and firm performance.

In the context of Islamic banks, large boards may negatively affect performance due to high coordination costs as the banks already must incur additional cost for another layer of gatekeepers in the form of SSB. Conversely, larger boards may provide balance for effective decision making beyond religious matters. Based on these arguments, the second hypothesis $H2_a$, along with the competing hypothesis $H2_b$, can be defined as:

> $H2_{a-b}$: *An increase in the number of board members could have a positive (negative) effect on the market performance of Islamic banks.*

2.1.3.2 Shariah Supervisory Board (SSB) and bank performance

The central feature of Islamic banks is the presence of the Shariah Supervisory Board (SSB), consisting of a group of scholars who specialise in Shariah and occasionally have a background in Islamic economics and finance (Grais and Pellegrini, 2006). The prime obligations of SSB include: 1) ensuring that all contracts are Shariah-compliant; 2) helping to mitigate the effects of potential risk through due diligence by abiding by the ethical foundations of Islamic moral economy; 3) performing a Shariah audit to satisfy stakeholders that the bank does not operate as an *ex-post* compliance medium (Ullah et al., 2012) (); and 4) issuing *fatawa* (religious verdicts) to create confidence with respect to Shariah compliance (Mollah and Zaman, 2015; Safieddine, 2009;).

Given the important role of the SSB for Islamic banks, a larger SSB may enhance bank performance through better monitoring of the activities and constraining excessive risk-taking behaviour of the boards. Arguably, stakeholders may perceive a larger SSB to be an

extra expense in the presence of a larger and independent board. Based on these arguments, the next hypothesis H3$_a$, together with the opposing hypothesis H3$_b$, can be defined as:

H3$_{a-b}$: An increase in the number of SSB members could have a positive (negative) effect on the market performance of Islamic banks.

2.1.3.3 CEO power (role duality) and bank performance

Role duality diminishes board independence and reduces proper execution of the oversight role of the boards (Krause et al., 2014) and provides more power to the CEO in decision making, which may have a negative effect on performance. The prior research on corporate governance suggests that the board's monitoring efficiency is enhanced when the CEO has limited power in influencing the board's agendas and actions (Lehn and Zhao, 2006). For instance, Pathan (2009) reported that role-duality decreases risk-taking and could improve bank performance, whereas Mishra and Nielsen (2000) found a negative relationship between role-duality and financial returns. The arguments, taken together, indicate that the relation between CEO power and performance appears to be ambiguous. The fourth hypothesis *H4$_a$*, together with the opposing hypothesis *H4$_b$*, can be defined as:

H4$_{a-b}$: CEO power could have a positive (negative) impact on the market performance of Islamic banks.

2.1.3.4 Board composition and bank performance

The results for the relationship between bank performance and board independence are also inconclusive. For instance, Pathan and Faff (2013) posited that a higher fraction of independent board directors (non-executive director, NED) on the board dampens bank performance. Similarly, Erkens et al. (2012) observed a negative relationship between board

independence and the performance of 296 banks across 30 countries over the 2007–2008 period. Conversely, Tanna et al. (2011) and Busta (2007) reported a positive relationship between board composition and the performance of UK and European banks, respectively. In contrast, Choi and Hasan (2005) were unable to find any statistical significance between board independence and the performance of Korean banks.

In the context of Islamic banking, the monitoring and advisory functions by non-executive directors may not be as important as the role played by the SSB, which legitimises the activities of the bank. As such, having more non-executive directors adds costs to the bank, which, in turn, may have a negative effect on performance. Conversely, non-executive directors may have expertise in certain operational areas as well as social and business networks and contacts that the banks need to achieve their strategic objectives. The above reasoning appears compelling; hence, the fifth hypothesis $H5_a$, along with the opposing hypothesis $H5_b$, can be formulated as:

> $H5_{a-b}$: An increase in the proportion of independent directors could have a positive (negative) impact on the market performance of Islamic banks.

2.1.3.5 Audit committee and bank performance

The role of audit committees in banks cannot be underestimated, as they oversee the financial reporting and accounting activities, monitor the effectiveness of the internal control system, and oversee the role of external auditor and monitoring compliance to regulations. The research suggests that a larger audit committee is more likely to enhance its status and power within an organisation and demand higher audit quality (Kalbers and Fogarty, 1993). Pincus et al. (1989) suggested that larger audit committees will be more likely to discover potential problems through increase in resources, which would enable them to help improve the quality

of its oversight (Chen and Zhoe, 2007; Demski, 2003) and subsequently lead to better performance. Therefore, the sixth hypothesis H6$_a$ can be specified as:

H6$_a$: An increase in the number of audit committee members could have a positive effect on the performance of Islamic banks.

3. Methodology, Variables and Data

3.1 Sample

The study began by extracting data on Islamic banks listed in the Bankscope database. Although the Bankscope database is considered to be the most comprehensive database for banking, it has certain limitations regarding Islamic banking (for details, see Čihák and Hesse, 2010). However, the database provides standardised figures such that most of the items are comparable across time and banks (Olson, and Zoubi, 2016). Furthermore, many recent studies (i.e., Abedifar et al., 2016; Ashraf et al., 2016; Mollah et al., 2016; Olson, and Zoubi, 2016) used Bankscope as a reliable source for Islamic bank data. However, the classification for Islamic banks in the Bankscope database is incorrect in places; therefore, all banks included in the sample have been cross-verified with their websites and respective central banks to ensure accuracy. This classification produces a sample of 137 unique Islamic banks.

[INSERT TABLE 1 ABOUT HERE]

In accordance with previous studies (e.g., Mollah et al. 2016; Mollah, and Zaman, 2015; Olson and Zoubi, 2016), data on HCI and bank governance is hand-collected using various sources such as bank annual reports, governance reports, quarterly reports, civic announcements, press releases, CEO/Chairman speeches, websites, Bloomberg and other publicly available resources i.e., local newspapers. Initially, the disclosed data was collected

in the local currencies. The data was converted into US dollars for analysis using the Pacific Exchange Rate Service for FX conversion**.** To ensure data accuracy, observations were discarded where information could not be retrieved. Subject to these constraints, the final sample consists of 273 observations from 2005 to 2010 belonging to 47 unique Islamic banks (see Table 1 for details). For analysis, the sample period was further divided into pre- (2005–2006), during- (2007–2008) and post-crisis (2009–2010) periods. This classification of the financial crisis was informed by the previous literature in which Aebi et al. (2012), Beltratti and Stulz (2012) and Bourkhi and Nabi (2013) defined the financial crisis period as July 2007–December 2008, whereas Brunnermeier (2009) defined the crisis period as October 2007–October 2008. Erkens et al. (2012) argued that the crisis period ended in the third quarter of 2008 with government intervention on a massive scale to bail out banks. In accordance with Peña and Villasalero (2010), the sample was divided into sub-periods to analyse the impact of changes in market conditions on IBs' investment strategies.

3.2 Variables

The main variable of interest in this study is the market-based performance of Islamic banks. In accordance with previous bank performance literature (i.e., Adams and Mehran, 2012; Andres and Vallelado, 2008), a distinct performance measure, Tobin's Q, was employed to measure the market value of IBs. Tobin's Q is a dynamic, forward-looking measure of firm-level economic performance, which reflects the stock market's expectations about the future growth and profitability potential of the company (Kor and Mahoney, 2005). Tobin's Q is computed as the sum of the market capitalisation and the book value of liabilities divided by total assets.

Considerable empirical evidence suggests that investments in human capital have a positive effect on firm performance (Colombo and Grilli, 2005; Dotzel et al., 2013; Kor and Mahoney, 2005; Prajogo et al., 2016; Skaggs and Youndt, 2004; Tharenou et al., 2007). In accordance with previous studies (e.g., Blatter et al., 2012; Dube et al., 2010; Knoke and Kalleberg, 1994; Muehlemann and Pfeifer, 2012), the total investments in human capital (HCI) are calculated as the ratio of total staff training and recruitment expenditure to total assets. Investment intensity variables can be calculated as the ratio of investments to total number of employees or total assets (Bryant and Javalgi, 2016). Following Kor and Mahoney (2005), total investment in human capital are standardised by total assets because some banks do not have available data on number of employees. As discussed in section 2 above, this measurement is argued to be a better measure than employee tenure, because financial resources are deemed essential for long-term human capital accumulation through training and recruitment programmes (Crook et al., 2011).

Note that no disclosure of investments in human capital (HCI) is specifically required by accounting standards, banking laws or stock exchange reporting requirements where the sampled banks are incorporated. Consequently, there is little details or consistent disclosure of HCI contained within financial statements of sampled Islamic banks. All such data is hand-collected using the said resources. In this paper, investments in human capital (HCI) refer to the total estimated revenues paid to vendors for training (e.g., internal staff training, investments in degree programmes, including Shariah education, and non-degree-related external training) and recruitment expenditure in 47 Islamic banks over 2005–2010. Total assets to control for size bias further scale total training and recruitment expenditure. Becker (1975) argues that firms attain and sustain competitive advantage when they expand and acquire knowledge assets through investing in human capital and encourages to use a proxy that captures investments in knowledge assets comprehensively. In addition to Becker's

suggestion, the proxy is appropriate for this study because majority of the selected banks make no segregation between training and recruitment expenditure. All such expenses are disclosed as a total expenditure on training and recruitment. Some banks provide additional notes briefly outlining the areas of investment i.e. internal/external training, recruitment etc. but no accurate costs allocated to each activity. A summary of the operationalisation of the variables is provided in Appendix 1.

Several firm-related control variables were also employed as suggested by the extant literature (Beltratti and Stulz, 2012; Berger and Bouwman, 2013; Čihák and Hesse, 2010; Erkens et al., 2012) to explain the potentially confounding effects of bank-specific characteristics. Among firm-specific variables, the size of the bank significantly influences the performance. Larger banks enjoy a superior franchise value and can use diversification as a tool for investment in organisational resources (Abedifar et al. 2016). Larger banks may also use different technologies and business models for their operations (Ashraf et al. 2016). Thus, bank performance may vary across banks of different size. Equally, longer established banks may enjoy performance advantages over relative newly incorporated banks (Beck et al., 2005), therefore, it is imperative to control for bank age. Leverage is another important factor in explaining bank performance (Beck et al., 2013; Fahlenbrach et al., 2012). Berger and Bouwman (2013) observed a strong relationship between leverage and a bank's probability of survival and market share at all times (during banking crises, market crises, and normal times) and Grove et al. (2011) reported a significant negative relationship between leverage and the performance of US commercial banks during a crisis. Similarly, firms with a larger number of existing subsidiaries have complex business structures, and their investment portfolios are more diverse than those of their counterparts (Bushman et al., 2004). The governance mechanism of such firms is also different from others; this has a direct impact on firm performance (Markarian and Parbonetti, 2007). The prior research suggests that this type

of auditor is perceived as very important in the capital markets (Mansi et al., 2004), which could be used a proxy for audit quality to predict bank failure (Jin et al., 2011). Similarly, the Gulf region, as the birthplace of Islamic banking and teeming with petro-dollars from Muslim majority countries, serves as an ideal market for Islamic banks. Previous studies have reported performance differences between Islamic banks operating in Gulf and non-Gulf countries (Mollah et al., 2016; Murjan and Ruza, 2002). Finally, recalling the developed and developing economy argument, banks operating in the former economic regimes may follow different investment strategies and achieve different level of performance as a consequence (Claessens et al., 2001). Higher HCI may be due to the size of a bank or due to the market condition (Beck et al., 2000). Following Bryant and Javalgi, (2016), country-level clustering is performed by dividing the sample into developed and developing economies to control for the impact of economic regime.

All the firm-related variables discussed above are employed to explain the potentially confounding effects of bank-specific characteristics on performance. Table 2 provides a summary of operationalisation for all the control variables included in the regression analysis.

[INSERT TABLE 2 ABOUT HERE]

4. Empirical Results and Analysis

4.1 Descriptive statistics

Table 3 reports descriptive statistics *viz.* mean, standard deviation, minimum, maximum, skewness and kurtosis for all variables used in the main analysis.

The overall market performance of sampled IBs in all four periods is sound with stable Tobin's Q scores of 1.01, 1.02, 1.0 and 1.0, respectively, suggesting that investors' confidence in IBs remained unshaken during the study period. The positive Q-ratio suggests

that sampled Islamic banks sustained strong market valuation at all times, including the financial crisis period.. Regarding the continuous independent variables, it can be observed that the average investments in human capital slightly increased from 0.09 in pre-crisis to 0.12 during-crisis but later decreased to 0.07 in post crisis period, respectively.

[INSERT TABLE 3 ABOUT HERE]

In terms of corporate governance-related variables, no significant fluctuations can be observed except for the Shariah Supervisory Board (SSB). The average size of the SSB slightly decreased to 4.2 during-crisis as compare to all other periods. Regarding the firm-related variables, it can be observed that the average firm size decreased during the crisis, indicating the impact of the crisis; however, an increase in the post-crisis period suggests market adjustment. Leverage and number of subsidiaries has constantly decreased on average during and after the crisis. All other firm-related variables have largely remained unchanged.

[INSERT TABLE 4 ABOUT HERE]

Table 4 presents the Pearson correlation results between the dependent variable Tobin's Q and the independent variables. Tobin's Q is positively related to HCI post-crisis, indicating a strong relationship between investments in human capital and the market value of IBs. None of the governance-specific variables are found to be associated with the market-based performance of IBs at any of the times.

The Variance Inflation Factors (VIFs) for all regressions is also computed for all regressions to check for multicollinearity (column 2). The highest value of VIF is 3.93, 3.78, and 3.26 in pre-, during- and post-crisis period, respectively, well below the conventional value of 10 (Salama and Putnam, 2013). Likewise, the lowest value of tolerance is 1.15, 1.07 and 1.17 for all three periods, well above the conventional value of 0.1. Hence, there is no multicollinearity between the independent variables.

4.2   *Multivariate Analysis*

Empirical model

Alternative versions of the following model (Eq. 1) have been used to test the extended hypotheses.

$$MBP = \alpha + \beta 1 HCI + \beta 2 CG \, (LnBSize + LnSSB + CEOpower + NED + LnACS)$$
$$+ \beta 3 FIRM \, (LnFSize + Fage + Risk + Sub + BIG4 + Region$$
$$+ DEcon) + \varepsilon$$

where MBP denotes market-based performance measure, Tobin's Q; HCI is the ratio of total staff training and the recruitment expenditure to total assets, CG, includes all five measures of corporate governance variables. FIRM includes all seven firm-specific control variables.

The model is used to analyse the effect of (i) investments on human capital; (ii) governance structure (board size, SSB size, CEO power (role duality), board independence (NED), and audit committee size); and (iii) firm characteristics (firm size, firm age, level of risk, firm complexity, type of auditor, operating region and economic regime) on the market-based performance of IBs using Tobin's Q as proxies.

4.2.1   *Do investments in human capital and corporate governance affect IBs' market performance?*

Table 5 presents the results for the investments in human capital and the performance of IBs. To estimate the market value of sampled IBs in the pre-, during- and post-financial crisis periods, parsimonious versions of Eq. 1 have been used.

[INSERT TABLE 5 ABOUT HERE]

As can be observed in the third column of Table 5, the relationship between market performance measurement (Tobin's Q) and investments in human capital is positively and significantly related at the 1% level during the study period. As expected, the result is consistent with prior studies for conventional banks (e.g., Holland, 2010; Olson and Zoubi, 2016). Hence, hypothesis H1 is supported. Similarly, HCI relates positively with Tobin's Q at the 1% and 5% levels in the pre- and post-crisis periods, respectively. Hence, the results suggest that investment in human capital also helped IBs sustain market performance before and after the financial crisis. The results lend support to the argument of Tharenou et al. (2007) that firms yield higher performance through investments in human capital. Equally, the results indicate that IBs' willingness and ability to make investments in human capital in varying marketing environments enabled them to appropriate much of the value created by their human capital pool (Molloy and Barney, 2015).

In terms of corporate governance variables, the regression results indicate a significant positive association between board size and Tobin's Q at all times. Hence, the evidence supports hypothesis $H2_a$. This finding is consistent with that of Adams and Mehran (2012), who also found a significant positive relationship between board size and Tobin's Q. Interestingly, SSB size is only significantly related with the market value of sampled IBs at the 10% level during the financial crisis period, indicating that an increase in the number of SSB members has a negative effect on the market performance of Islamic banks. Hence, there is not enough statistically significant evidence to support hypothesis $H3_b$. The statistically significant negative relationship during the crisis at the 10% level, suggests that the market perceives IBs with larger SSBs less favourably. These findings are contrary to those reported by Mollah and Zaman (2015), who found a positive relationship between SSB size and the performance of IBs. Strikingly, CEO power (role duality) was found to be positively associated with Tobin's Q. Hence, the finding that CEO duality has a positive impact on the

market performance of Islamic banks supports hypothesis H4a. Similar trends were observed in the pre- and during-crisis periods. This finding is inconsistent with that reported by Krause et al. (2014). However, no significance in the relationships was found in the post-crisis period. The result indicated board independence and audit committee size to be insignificant at all times. The former result is inconsistent with that reported by Andres and Vallelado (2008). Thus, there is insufficient statistically significant evidence to support hypotheses H5a-b and H6a.

With respect to firm-related control variables, firm size and firm age positively relate to market performance, while the level of risk and firm complexity negatively relate to the market performance of IBs at all times. These findings are consistent with those of Mollah et al. (2016), Mamatzakis and Bermpei (2015) and Grove et al. (2011) in the context of Islamic and conventional banks, respectively. Similarly, the type of auditor (positively) relate to Tobin's Q. This finding indicates that IBs audited by Big4 firms had a perceived higher market valuation. Lastly, economic regime (positively) relates with Tobin's Q.

5. Discussion of findings

The regression results suggest that investments in human capital led the sampled IBs to achieve sustained market performance in the pre- and post-financial crisis periods. Hence, it is argued that, with the development of human capital through investment, an IB's ability to merchandise its talents improves, resulting in stable market performance. This interface finds support in the earlier studies (Bosma et al., 2004; Colombo and Grilli, 2005; Holland, 2010), which reported that human capital contributes both directly and indirectly to business performance in the banking sector. IBs' strategy to rely on long-term human capital accumulation can be viewed as idiosyncratic problem-solving knowledge capital. Thus, the

results suggest that the financial crisis may have spurred the impact of investments in human capital on the market performance of IBs.

These findings add to previous work that has contributed to enhance the impact of investments in human capital on firm performance (e.g., Peña and Villasalero, 2010). Similarly, the results supplement the findings of De Saá Pérez and Falcón (2004), who observed that Spanish banks, which developed their pool of human capital, achieved a superior level of profitability. Therefore, as Islamic banks compete in dynamic global markets, it is essential for IBs to increasingly adopt ambidextrous strategies where exploration and exploitation capabilities are combined simultaneously (Ferraris et al., 2017). IBs' focus on the development of their human capital through investments can be viewed as an ambidextrous strategy to optimise their human capital pool to preserve their ethical identity (Haniffa and Hudaib, 2007) and current robust growth.

These findings also lend empirical support to the earlier theoretical suggestions of Molloy and Barney (2015) that a firm's willingness and ability to make investments in human capital enable the firm to appropriate much of the value created by the human capital. Consistent with Wang et al. (2009), it is interpreted that Islamic banks took advantage of the robust growth and continuously invested in their stock of human capital during the financial malaise to sustain the growth trends. Such investments were a source of competitive advantage for the sampled IBs, which helped them sustain their market performance (Morris et al., 2017; Saks and Burke-Smalley, 2014). Consistent with Úbeda-García et al. (2013) and Úbeda-García et al. (2014), it is argued that IBs' strategy to invest in human capital helped them to achieve differential positioning within the financial sector. Equally, IBs strategy to continuously invest in their stock of human capital may hint their commitment towards *applied ethics* to sustain their relationship with internal i.e. employees and external (e.g. depositors) stakeholders echoing (Berrone et al., 2007), who submit that firm's commitment

to applied ethics improves firm performance, which ultimately results in an increased stakeholder satisfaction.

The results show that larger board size asserts a positive effect on the market-based performance of IBs, which challenges mainstream studies on corporate governance in the banking sector where it is argued that as board size increases control and monitoring functions are impaired (e.g., Mamatzakis and Bermpei, 2015; Pathan and Faff, 2013). Furthermore, the results are consistent with the findings of Adams and Mehran (2012) that performance increases with board size for complex organisations such as banks. Thus, the costs associated with the freeriding behaviour of directors (e.g., Coles et al., 2008) on large IB boards do not appear to outweigh the beneficial effects of large boards in IBs. Thus, it is argued that large board size is justified for IBs due to the complex nature of their business; IBs need expertise on both economic and Shariah-related issues. The analysis further suggests that, although the SSB is an integral part of the Islamic bank business model, having a larger SSB does not help IBs boost their market performance, possibly due to the market perceiving them as an additional expense in the presence of larger governing boards. This finding implies that a large SSB increases the costs of monitoring and communication, which, in turn, deteriorates the market performance of IBs, consistent with the *'agency cost'* hypothesis (Jensen, 1993). The study also finds evidence that CEO power exerts a positive impact on the market-based performance of IBs. This finding indicates that IBs perform better when the CEO chairs the board. Thus, IBs could benefit from the unity of control that the powerful CEO would offer. These results elucidate and provide an alternative view to Mollah and Zaman (2015), who argue that CEO power has a negative impact on the performance of Islamic banks.

Another important observation is that the Islamic banking sector is not a homogenous group. When Islamic banks first entered the sector five decades ago, they operated as full-

fledged or standalone banks. After the 1990s, Islamic banks gained recognition as serious market competitors, and many conventional banks began to establish Islamic subsidiaries to take advantage of the high global demand for the Shariah-compliant products as well as to tap high net worth customers. However, studies examining the performance of Islamic banks often failed to consider the effect of adopting different business operational strategies, i.e., operating as a full-fledged bank or as an Islamic window (i.e., subsidiary of conventional banks), on Islamic banks' performance. Therefore, it is imperative to perform further analysis by segregating the IBs to determine the association between investments in human capital, corporate governance and market performance of both sets of banks.

5.1   Further analysis

A homogeneity test is performed on the sampled IBs to divide them into fully Islamic banks and Islamic subsidiaries, based on their business strategy. The classification is informed by a detailed profile review of each bank using different sources such as the bank's website and central banks linked to the individual bank. This is a crucial issue that have been largely overlooked by the previous studies in the context of Islamic banking. The classification of Islamic banks in full-fledged Islamic banks and Islamic Shariah windows (subsidiaries) is clearly articulated, informed by several resources. Each banks' company profile is thoroughly analysed using its website, annual reports, governance reports and ownership structure. Similarly, the bank is cross verified with its respective central bank (in the country where the bank is based). To insure the classification, the profile of mother company (if any) and/or major institutional shareholder of the bank is also analysed in details using available resources. Additionally, in Bankscope database, some investment banks and Mudarabah companies are treated as '*Islamic banks*'. Such firms do not perform the intermediary role (i.e. accepting deposits and lending) hence, shall not be treated as intermediary financial

institutions. All such firms are excluded from the sample to ensure the comparison is between banks, offering full-fledged banking services not Mudarabah or investment companies, *per se*.

Based on this through analysis, a fully-fledged Islamic bank incorporate to a full service intermediary financial institution (Islamic bank) that conducts its business in accordance with the Shariah law and as such does not deals in conventional banking business simultaneously. Whereas subsumed under Islamic Shariah Windows are all those extended hands of various conventional banking groups that offer Islamic finance services alongside conventional banking as their core business or banks offering Shariah-compliant products where conventional bank is the major institutional shareholder.

From the initial sample of 47 Islamic banks, 30 banks were found to be involved in Islamic banking and hence are treated as full-fledged Islamic banks. However, 17 banks were found to be the subsidiaries or extended branches of conventional banks offering full-fledged banking services albeit Sharia compliant under the management of a conventional bank; hence, such banks were treated as Islamic Shariah-windows (ISW).

Based on the new classification, truncated versions of Eq. 1 are used to estimate the effects on investments in human capital and corporate governance features on the market-based performance of both sets of IBs.

[INSERT TABLE 6 ABOUT HERE]

As can be observed in the second to fifth columns of Table 6, full-fledged Islamic banks possess strong market valuation at all times, except during a crisis. Thus, it is again interpreted that investments in human capital are the main value drivers for the sustained market growth of these banks. Furthermore, a large board, small SSB, large firm size, firm

age and developed economic regime, manifests the market value of full-fledged Islamic banks.

In contrast, no significant relationship between HCI and the market value of Islamic Shariah-windows can be observed (the results reported in the sixth to ninth columns of Table 6), except for the full study period. It is interesting to observe that the market performance of ISW is driven by CEO duality, a large SSB, large firm size, a lower number of subsidiaries, big-four auditors and to a lesser extent, operating region being the Gulf-state counties.

Segregate analysis of sampled Islamic banks proves the resilience of full-fledged Islamic banks at all times; in contrast, ISWs are not immune from the crisis. Albeit shallow statistical significance, the negative association between corporate governance-features and Tobin's Q merits further analysis.

According to Shariah law, which underpins Islamic banking, governance in Islamic banking is to achieve social equality and create more value for the society at large, while the conventional governance model focuses on wealth maximisation for shareholders. This finding infers that both sets of banking are expected to invest in their resource base, i.e., human capital, differently and are governed differently; hence, they achieve different levels of market performance. Therefore, to capture the strength of the IB's governance system, in accordance with previous studies (i.e., Larcker et al., 2007; Lara et al., 2009), the individual governance characteristics are combined to create a composite governance quality variable. Specifically, the corporate governance quality measure is based on board size, SSB size, CEO power, board independence and audit committee size. In accordance with the procedures adopted by earlier research (e.g., Hudaib and Cooke, 2005; Salama and Putnam, 2013), an indicator variable is developed that captures the individual governance mechanisms of sampled IBs. Specifically, an Islamic bank is coded 1 for strong governance if

a)   total number of directors serving on the board is between 5-7, 0 otherwise;

b)   total members serving on the Shariah Supervisory Board equals 3, 0 otherwise;

c)   the positions of the CEO and chairman of the board are separate, 0 otherwise;

d)   60% of the board's directors are non-executive directors, 0 otherwise; and

e)   total members serving on the audit committee equals 3, 0 otherwise.

To construct the composite governance measure, all five dichotomous measures for each Islamic bank are summed to create a dichotomous variable. Specifically, for each year, an IB is coded 1 (for strong governance) if the sum of its five dichotomous measures equals 4 or higher, 0 otherwise.

Similarly, it is important to consider the effect of size on bank's investment strategies. Larger banks may invest less than small banks in their human capital than their size would imply. Accordingly, a dichotomous variable for firm size (FSize) is computed. Specifically, for each year, an IB is coded 1 (for large) if the sum of its FSize is equal or greater than that of the sample median, 0 otherwise. A four-by-four matrix is used to perform the interaction between dichotomous variable for corporate governance and FSize in that an IB is coded 1 for strong governance and large size, and 0 for weak governance and small size.

[INSERT FIGURE 1 ABOUT HERE]

Figure 1 illustrates the interaction effect of corporate governance and bank size on the market based performance of both sets of Islamic banks. It can be observed that the market value of full-fledged Islamic banks increases with lax governance and large size, whereas ISW's market value increases with strong corporate governance, whether the size is large or small. The former finding suggests that, despite the lax governance, large full-fledged Islamic banks tend to invest more in human capital, which in turn results in higher market performance. Hence, the market value of full-fledged banks is closely tied with their size. Conversely, the

interaction effect observed for ISWs suggests that ISWs with a strong corporate governance structure tend to invest more in human capital, which results in higher market valuation. These results warrant further research in this area.

6.   Summary and Conclusion

The main objective of this paper is to identify whether investments in human capital (HCI) and corporate governance features have a significant impact on the market performance of Islamic banks while controlling for other firm-specific characteristics in the pre-, during- and post-financial crisis periods. The regression results based on HCI suggest that Islamic banks (IBs) have effectively invested in human capital, which helped them sustain strong market performance in the pre- and post-financial crisis periods. IBs' focus on the development of their human capital through investments can be viewed as an ambidextrous strategy to optimise their human capital pool to preserve their ethical banking business model as well as the current robust growth.

Furthermore, the analysis suggests that the Islamic banking sector is not a homogeneous group. Based on their operating model, Islamic banks can be classified as full-fledged Islamic banks or Islamic Shariah-windows (ISWs). The segregated analysis suggests that investments in human capital are significantly associated with the former group of banking at all times, whereas shallow statistical significance between HCI and market performance of ISWs across three periods is observed. The disadvantage of operating as an ISW is that they need to spend more on training and recruitment of staff and management and expend higher marketing costs to attract and convince customers of their ethical status, which, in turn, may affect their market performance.

A further analysis suggests that the market value of full-fledged Islamic banks increases with lax governance and large size, whereas ISWs' market value increases with strong corporate governance and large or small bank size. This analysis implies that investments in organisational resources (i.e., human capital) are driven by bank size rather than by the governance mechanism. However, this aspect needs further exploration. Further studies may consider the management (i.e., CEO) profiles while analysing the impact of organisational investments strategies and performance outcomes.

The study makes a significant contribution to research by examining the impact of investments in human capital and corporate governance features on the market value of 47 Islamic banks operating in different countries for the 2005–2010 period, while controlling for firm-specific variables.

The findings also have important implications for those managing and monitoring the Islamic finance sector, as they need to critically analyse and reflect on these determinants to design strategies and mechanisms that will enable their banks to compete effectively and to maintain their competitive advantage in the market. These findings have important implications for managers of conventional banks (CBs). In the context of significant erosion of trust in the interest based conventional banking system, the insights provided into the Islamic ethical banking model could guide the managers of CBs how to achieve consistency between the brand values and staff behaviour to improve their relationship with stakeholders and restore trust. Finally, these findings have important implications for academics and researchers in the area, as they pave the way for further investigation.

The paper is not without limitations. First, it did not include and control for macro-economic factors such as GDP and inflation in assessing bank performance. Hence, future studies may add these factors in the model. Second, the paper includes Islamic banks only; future research may undertake a comparative study with conventional banks. Finally, this

study used an economic measure for HCI; the future research may use a combination of economic and non-economic measures such as level of education and employee tenure.

Compliance with Ethical Standards

The study was not funded by any authority. Hence, there is no potential conflict of interest. Equally, the research involved no human participant and/or animals; thus, compliant with the JBE guidelines, this study meets all the ethical standards.

Ethical approval

This article contains no studies with human participants or animals performed by any of the authors.

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Table 1

Sample description

Country	Bank name	Economic regime	Full-fledged Islamic banks	Islamic Shariah-windows	Full sample (all banks)	Observations	Percentage (%)
Bahrain	Al Baraka Banking Group, Al-Salam Bank-Bahrain, Bahrain Islamic Bank, Gulf Finance House BSC, Ithmaar Bank, Khaleeji Commercial Bank	Developed	4	2	6	35	13
Bangladesh	Al-Arafah Islami Bank, Exim Bank, First Security Islami Bank, ICB Islamic Bank, Islami Bank Bangladesh, Shahjalal Islami Bank, Social Islami Bank	Developing	4	3	7	42	15
Egypt	Abu Dhabi Islamic Bank Egypt, Al Baraka Bank Egypt, Faisal Islamic Bank of Egypt	Developing	3	0	3	18	7
Indonesia	Panin Bank Syariah	Developing	0	1	1	4	1
Jordan	Jordan Islamic bank, Safwa Islamic bank	Developing	1	1	2	12	4
Kuwait	Ahli United Bank KSC, Boubyan Bank KSC, Kuwait Finance House, Kuwait International Bank	Developed	2	2	4	24	9
Malaysia	Bank Islam Malaysia Berhad, BIMB Holdings Berhad	Developed	1	1	2	12	4
Nigeria	Jaiz Bank	Developing	1	0	1	6	2
Pakistan	BankIslami Pakistan Limited, Meezan Bank	Developing	2	0	2	12	4
Qatar	Masraf Al Rayan, Qatar First Banks, Qatar International Islamic Banks, Qatar Islamic Banks	Developed	4	0	4	22	8
Saudi Arabia	Al Rajhi Bank, Alinma Bank, Bank AlBilad, Bank Al-Jazira	Developed	4	0	4	22	8
Sudan	Al Baraka Bank Sudan, Al Shamal Islamic Bank, Blue Nile Mahsreg Bank, Sudanese French Bank	Developing	2	2	4	24	9
Turkey	Albaraka Türk Katılım Bankası A.Ş.	Developed	0	1	1	6	2
United Arab Emirates	Ajman Bank, Dubai Islamic Bank, Emirates Islamic bank, Sharjah Islamic Bank	Developed	2	2	4	23	8
United Kingdom	Al Rayan Bank PLC (formerly Islamic Bank of Britain), Bank of London and the Middle East	Developed	0	2	2	11	4
Total			**30**	**17**	**47**	**273**	**100**

The table describes the sample of the study. The study considers 47 banks (30 fully-fledged Islamic banks and 17 Islamic Shariah-windows) over 15 countries for the period of 2005–2010. The country-wise distribution of the banks, economic regime, observations, and percentage are given in columns 2–8.

Table 2

Summary of operationalisation for control variables

Variable	*Proxy*	*Reference*
Firm size	Log of total asset	Abedifar et al. (2016); Ashraf et al. (2016); Beltratti and Stulz (2012); Mollah et al. (2016); Palvia et al. (2015).
Firm age	Number of years since incorporation	Anderson and Reeb (2003); Beck et al. (2005); Kor and Mahoney (2005); Kotha et al. (2011).
Risk	Leverage	Abedifar et al. (2013); Fahlenbrach et al. (2012); Grove et al. (2011); Mollah et al. (2016).
Firm complexity	No of subsidiaries	Bushman et al. (2004); Markarian and Parbonetti (2007).
Auditor type	Dummy (Big4 vs. non-Big4)	Jin et al. (2011); Mansi et al. (2004).
Operating region	Dummy (Gulf vs. Non-gulf)	Mollah et al. (2016); Murjan and Ruza (2002).
Economic regime	Dummy (developed vs. developing regime)	Beck et al. (2000); Claessens et al. (2001).

*Notes***:** Firm-size (FSize) = log of total assets; Firm age (Fage) = number of years since incorporation; Level of risk (Risk) = using leverage as proxy (total debt/ total assets); Firm complexity (Sub) = total number of existing subsidiaries; Type of auditor (BIG4) = big four vs. non-big four, Operating region (Region) = 1 if the bank is based in Gulf-region, 0 otherwise and Economic regime (DEcon) = 1 if the bank is based in developed economy, 0 otherwise.

Table 3

Descriptive statistics of performance measure and continuous independent variables

Panel A: Full-study period (2005-2010)

	Mean	*Std. Dev.*	*Min.*	*Max.*	*Skew.*	*Kurt.*
Tobin's Q	1.012	0.095	0.811	1.326	1.701	15.326
HCI	0.090	0.237	0.004	1.306	0.227	2.401
LnBSize	2.203	0.442	1.609	3.773	2.174	8.833
LnSSB	4.306	1.355	2	7	0.409	2.388
CEO_{power}	0.144	0.351	0	1	2.031	5.124
NED	0.705	0.249	0.222	1	-0.483	1.988
LnACS	1.158	0.127	1.032	1.386	1.173	2.562
LnFSize	14.593	1.971	10.787	19.836	0.421	3.856
Fage	19.206	13.193	3	53	0.422	2.072
Risk	41.620	21.149	4.369	77.068	-0.045	1.909
Sub	5.759	6.488	0	19	0.878	2.362
Big4	0.813	0.391	0	1	-1.601	3.564
Region	0.319	0.467	0	1	0.778	1.605
DEcon	0.813	0.391	0	1	-1.601	3.564

Panel B: Pre-crisis (2005-2006)

	Mean	*Std. Dev.*	*Min.*	*Max.*	*Skew.*	*Kurt.*
Tobin's Q	1.021	0.088	0.834	1.326	0.763	6.060
HCI	0.091	0.238	0.004	1.307	0.244	2.341
LnBSize	2.193	0.437	1.609	3.773	1.991	8.564
LnSSB	4.305	1.378	2	7	0.456	2.390
CEO_{power}	0.141	0.349	0	1	2.068	5.275
NED	0.701	0.251	0.143	1	-0.487	1.993
LnACS	1.158	0.126	1.032	1.386	1.213	2.646
LnFSize	14.723	1.888	10.787	19.836	0.322	4.053
Fage	19.094	13.144	3	53	0.413	2.043
Risk	43.169	21.311	4.369	77.116	-0.095	1.874
Sub	5.961	6.304	0	19	0.918	2.551
Big4	0.813	0.392	0	1	-1.601	3.564
Region	0.313	0.465	0	1	0.809	1.655
DEcon	0.820	0.385	0	1	-1.669	3.784

Panel C: During-crisis (2007-2008)

	Mean	Std. Dev.	Min.	Max.	Skew.	Kurt.
Tobin's Q	1.001	0.123	0.792	1.760	3.610	24.223
HCI	0.124	0.333	0.007	2.264	0.120	2.185
LnBSize	2.217	0.456	1.609	3.773	2.366	8.942
LnSSB	4.297	1.256	2	7	0.443	2.637
CEO_{power}	0.141	0.350	0	1	2.068	5.275
NED	0.707	0.241	0.25	1	-0.492	2.034
LnACS	1.154	0.125	1.032	1.386	1.253	2.770
LnFSize	14.332	2.062	10.787	19.836	0.583	3.523
Fage	19.406	13.404	3	53	0.433	2.103
Risk	41.048	20.990	4.369	77.068	0.017	2.028
Sub	5.766	6.414	0	19	0.755	2.201
Big4	0.813	0.393	0	1	-1.601	3.564
Region	0.344	0.479	0	1	0.658	1.433
DEcon	0.797	0.406	0	1	-1.476	3.178

Panel D: Post-crisis (2009-2010)

	Mean	Std. Dev.	Min.	Max.	Skew.	Kurt.
Tobin's Q	1.009	0.087	0.811	1.326	0.058	4.862
HCI	0.073	0.180	0.003	0.736	0.238	2.559
LnBSize	2.205	0.444	1.609	3.773	2.243	8.970
LnSSB	4.3125	1.390349	2	7	0.347	2.271
CEO_{power}	0.148	0.357	0	1	1.978	4.911
NED	0.708	0.252	0.222	1	-0.473	1.955
LnACS	1.160	0.130	1.032	1.386	1.098	2.392
LnFSize	14.593	2.008	10.787	19.836	0.455	3.953
Fage	19.219	13.238	3	53	0.424	2.082
Risk	40.357	21.134	4.369	76.296	-0.029	1.889
Sub	5.555	6.746	0	19	0.909	2.281
Big4	0.813	0.392	0	1	-1.601	3.564
Region	0.313	0.465	0	1	0.809	1.655
DEcon	0.813	0.392	0	1	-1.601	3.564

*Notes***:** Tobin's Q = market capitalization + total liabilities/ total assets. HCI = ratio of total staff training and recruitment expenditure to total assets [HCI/total assets]. Board-size (BSize) = log of total number of directors on board; Size of Shariah Supervisory Board (SSB) = log of total number of Shariah advisors; CEO-power (role duality) = dichotomous; yes/no; Board-composition (NED) = fraction of non-executive directors (NED) on the board to total board size; Size of audit committee (ACS) = log of total number of members serving on audit committee. Firm size (FSize) = log of total assets; Firm age (Fage) = number of years since incorporation; Level of risk (Risk) = using leverage as proxy (total debt/ total assets); Firm complexity (Sub) = total number of existing subsidiaries; Type of auditor (BIG4) = big four vs. non-big four, Operating region (Region) = 1 if the bank is based in the Gulf-region, 0 otherwise, and Economic regime (DEcon) = 1 if the bank is based in developed economy, 0 otherwise.

Table 4

Correlation matrix

Panel A: Pre-crisis (2005-2006)

	VIF	Tobin's Q	HCI	lnBSize	lnSSB	CEO_power	NED	LnACS	lnACS	Fage	Risk	Sub	Big4	Region
HCI	1.17	0.0979												
LnBSize	2.18	0.189	0.1237											
LnSSB	1.97	-0.0337	0.0728	**0.5489**										
CEO_power	1.19	-0.0817	0.1796	0.1847	0.1722									
NED	3.93	0.1437	-0.2393	**-0.3673**	-0.1401	-0.2069								
LnACS	1.81	-0.0772	0.0304	0.0179	-0.2074	-0.087	**0.4414**							
LnFSize	1.37	0.0181	-0.1092	-0.1353	-0.1369	0.1465	**0.311**	0.0398						
Fage	1.4	0.0024	0.063	-0.1022	-0.3503	-0.0218	-0.0698	-0.043	0.1023					
Risk	2.79	0.1204	-0.1451	**-0.4351**	-0.1442	-0.1393	**0.7204**	0.0759	**0.3269**	0.0282				
Sub	1.16	0.1406	-0.0992	-0.0614	-0.1681	0.0562	0.0588	0.0957	**0.3114**	0.1092	0.0368			
Big4	2.06	0.095	-0.3268	**-0.3749**	-0.1121	-0.2663	**0.4254**	0.2258	0.0194	-0.261	0.2794	0.0289		
Region	1.61	-0.0684	-0.162	-0.0855	-0.1374	-0.0788	-0.1967	-0.0074	-0.1216	0.1291	-0.2463	0.0552	**0.3239**	
DEcon	1.15	0.0088	0.0362	-0.0713	-0.0444	0.0723	-0.0118	-0.0635	0.0639	-0.0106	0.146	0.0813	0.0358	-0.2113

Panel B: During-crisis (2007-2008)

	VIF	Tobin's Q	HCI	lnBSize	lnSSB	CEO_power	NED	LnACS	lnACS	Fage	Risk	Sub	Big4	Region
HCI	1.07	0.0421												
LnBSize	2.43	-0.1837	0.1911											
LnSSB	2.05	-0.1815	0.0838	**0.5613**										
CEO_power	1.14	-0.1845	0.1858	0.2631	0.1561									
NED	3.78	0.3638	-0.1626	**-0.422**	-0.0979	-0.2071								
LnACS	1.77	0.2915	0.0433	0.0308	-0.1449	-0.0768	0.3951							
LnFSize	1.52	0.2614	-0.0893	-0.2307	-0.0507	-0.0842	0.3786	0.0119						
Fage	1.56	0.0033	-0.0993	-0.1336	-0.3656	-0.009	-0.154	-0.0842	-0.1294					
Risk	2.44	0.2315	-0.0907	-0.4451	-0.228	-0.0846	**0.6168**	-0.0347	0.3936	-0.0179				
Sub	1.32	-0.1084	0.0966	-0.1326	-0.0346	0.0078	-0.1099	-0.075	0.1987	-0.0463	0.1033			
Big4	2.34	0.2614	-0.1506	**-0.4145**	-0.2068	-0.2663	**0.4271**	0.2146	-0.0376	-0.2592	0.2319	0.0578		
Region	1.7	-0.125	-0.0677	-0.096	-0.1724	-0.1035	-0.1639	0.1328	-0.2703	0.1931	-0.2439	0.1249	0.3477	
DEcon	1.37	-0.063	-0.0315	-0.2357	-0.1602	-0.0192	0.045	-0.0917	-0.0381	0.0008	0.2834	0.2744	0.255	-0.0434

Panel C: Post-crisis (2009-2010)

	VIF	Tobin's Q	HCI	lnBSize	lnSSB	CEO_power	NED	LnACS	lnACS	Fage	Risk	Sub	Big4	Region
HCI	1.22	0.0298												
LnBSize	2.15	-0.017	0.278											
LnSSB	1.86	0.0427	0.2513	**0.526**										
CEO_power	1.17	-0.027	0.1622	0.2288	0.0803									
NED	3.26	0.0015	-0.2762	**-0.4197**	-0.0922	-0.2034								
LnACS	1.68	-0.0195	-0.1829	-0.0376	-0.1918	-0.0998	**0.4151**							
LnFSize	1.31	0.0227	-0.2224	-0.1604	-0.0832	-0.0731	0.2511	-0.005						
Fage	1.35	-0.0547	-0.0307	-0.1152	-0.3049	-0.0403	-0.0723	-0.0187	0.0248					
Risk	2.1	0.0102	-0.1515	**-0.4062**	-0.1939	-0.0921	**0.6192**	0.0066	**0.3008**	0.0312				
Sub	1.26	-0.0332	-0.0332	0.1136	-0.0522	-0.1751	-0.1005	0.0925	0.2554	0.1309	-0.111			
Big4	2.11	0.0479	**-0.3857**	**-0.4009**	-0.1373	-0.2498	**0.4312**	0.2269	0.1151	-0.2577	0.2273	-0.0586		
Region	1.69	0.0354	-0.131	-0.091	-0.1156	-0.0444	-0.2278	0.0178	-0.0231	0.123	-0.2427	0.0723	**0.3239**	
DEcon	1.25	0.0795	-0.1064	-0.1441	-0.1951	0.0317	-0.0217	-0.1311	-0.0604	-0.0361	0.1302	0.0367	0.0256	-0.2375

Notes: *** $p < 0.01$ Correlation is in bold.

Table 5

Cross-sectional OLS regression of Tobin's Q on HCI, corporate governance features and control variables for Islamic banks

	Predicted sign	*Full period* (2005-2010)	*Pre-crisis* (2005-2006)	*During-crisis* (2007-2008)	*Post-crisis* (2009-2010)
			All Islamic Banks		
N		273	89	92	92
HCI	+	0.394***	0.437***	0.284	0.528**
LnBSize	+/-	0.197***	0.134*	0.212**	0.358***
LnSSB	+/-	-0.0083	0.0168	-0.0251*	-0.0093
CEO_{power}	+/-	0.0846***	0.110**	0.0868*	0.0507
NED	+/-	0.0269	0.0951	-0.0314	0.0923
LnACS	+	0.0684	0.142	0.0109	0.153
LnFSize	+	0.0863***	0.0831***	0.0740***	0.0956***
Fage	+	0.00531***	0.00581***	0.00442**	0.00748***
Risk	-	-0.00291***	-0.00396***	-0.0012	-0.00429***
Sub	+/-	-0.00304*	-0.00458**	-0.0011	-0.0047
Big4	+/-	0.161***	0.187***	0.136*	0.155*
Region	+/-	-0.0373	-0.0602	-0.038	-0.0271
DEcon	+/-	0.0773***	0.0613	0.0431	0.109
Constant		-1.111***	-1.109***	-0.811**	-1.768***
Adj. R^2		0.325	0.337	0.21	0.422

*Notes*: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6

Cross-sectional OLS regression of Tobin's Q on HCI, corporate governance features and

control variables for Fully-fledged Islamic banks and Islamic Shariah-windows

	Full-fledged Islamic Banks				Islamic (Shariah) Windows			
	Full period	*Pre-crisis*	*During-crisis*	*Post-crisis*	*Full period*	*Pre-crisis*	*During-crisis*	*Post-crisis*
	(2005-2010)	(2005-2006)	(2007-2008)	(2009-2010)	(2005-2010)	(2005-2006)	(2007-2008)	(2009-2010)
N	173	53	60	60	100	32	34	34
HCI	0.447***	0.537***	0.196	0.883**	0.358**	0.152	0.503	0.417
LnBSize	0.306***	0.253**	0.386***	0.298*	-0.00160	-0.136	-0.121	0.343
LnSSB	-0.0270***	-0.00634	-0.0450***	-0.00275	0.0600***	0.112***	0.0306	0.0648
CEO$_{power}$	-0.0143	0.00932	0.0327	-0.121	0.198***	0.170**	0.211**	0.215*
NED	0.0503	0.0658	0.0549	0.0453	0.109	0.115	0.0396	0.142
LnACS	0.00891	0.0250	0.0181	0.0786	0.0453	0.202	-0.0393	0.182
LnFSize	0.0976***	0.0997***	0.0781***	0.0809***	0.0965***	0.105**	0.0713***	0.190**
Fage	0.00590***	0.00693***	0.00533**	0.00632	0.00227	0.00443	0.00117	0.00536
Risk	-0.00221***	-0.00334***	0.000855	-0.00287	-0.00562***	-0.00784***	-0.00293	-0.0108**
Sub	-0.000655	-0.00341	0.00114	-0.00227	0.00816**	-0.00473	-0.00512	-0.0198**
Big4	0.114	0.199**	0.0591	0.0729	0.152***	0.0867	0.199**	0.324
Region	-0.0386	-0.0490	-0.0428	-0.00783	0.104*	0.0870	0.0705	0.224
DEcon	0.0923**	0.0879	0.0496	0.117	0.0883	-0.0224	0.0644	0.181
Constant	-1.414***	-1.464***	-1.188***	-1.409**	-0.956**	-0.938	-0.273	-3.239**
Adj. R^2	0.487	0.492	0.361	0.538	0.259	0.256	0.082	0.299

Notes: *** p<0.01, ** p<0.05, * p<0.1.

Figure 1

Plots of interaction effect of corporate governance & bank size on market performance
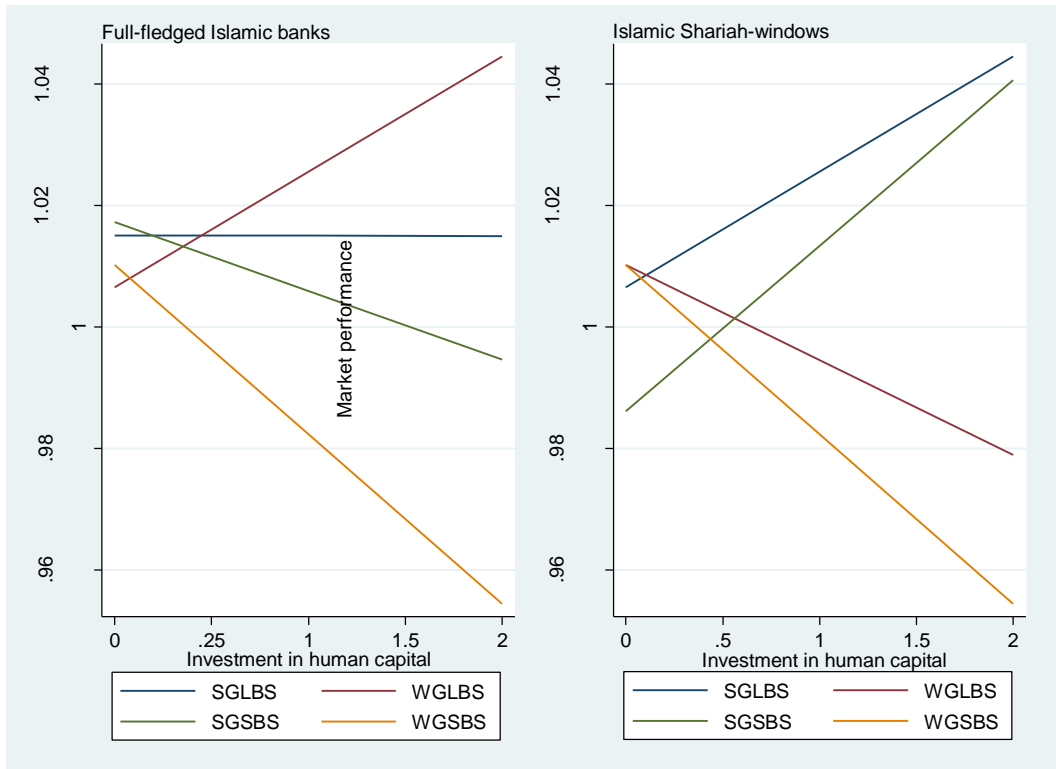
Notes: SGLBS = strong governance & large bank size, WGLBS = weak governance & large bank size, SGSBS = strong governance & small bank size, WGSBS = weak governance & small bank size.