**What Drives Risk Disclosure in Islamic and Conventional Banks? An International Comparison.**

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**Abstract**

This paper examines and compares the relationship between risk disclosure and corporate attributes in Islamic and conventional banks. Using a comprehensive risk disclosure index covering 9 dimensions, we analyze the level of risk related disclosure (RRD) in a sample of 72 Islamic banks and 97 conventional banks across 11 countries. The RRD index shows that Islamic banks disclose less information about risk comparing to conventional banks. Listed banks, larger banks and aged bank disclose more information about risk than the others. Block holders, foreign ownership and board size affect negatively risk disclosure. However, board independence and the percentage of foreign directors in the board affect positively risk disclosure. Moreover, banks with higher Tier 1 ratio disclose less information about risk. Our results encourages regulators to improve corporate governance mechanisms in their banking systems through the optimization of ownership structure (dispersed ownership) and the board’s composition in order to promote higher level of transparency and RRD.

**Keywords:** Risk disclosure, ownership, board of director, banks, Islamic banks

**Introduction**

Banks’ risk disclosure has come under scrutiny in the aftermath of the major financial crush of several US investments banks (Bear Stearns, Lehman Brothers, Merrill Lynch), the ramification on other banks in Europe and Asia (e.g. Royal Bank of Scotland, Bradford & Bingley, Fortis, Hypo and Alliance & Leicester, BNP Paribas…) and the ensuing turmoil on the global financial markets. These series of events underlined the failure to account for business uncertainty and the inadequacy of risk management practices, thereby compromising the reliability and relevance of corporate disclosures [Al-Hadi et al., 2016; Al-Hadi, 2017; Jorion, 2009; Magnan & Markarian, 2011; Oliveira et al, 2013]. While the financial distress went global and moved beyond the banking industry, banks’ regulation and supervision were plunged at the height of the debate. Risk exposure and related information were at the heart of many regulatory reforms from various institutions (e.g., ICAEW, 1997, 2011; SEC, 1997, 2010; BCBS, 2006, 2008) and accounting standards setters all over the world (e.g. IASB, 2005,2013; FASB, 2010, 2012) to ensure that stakeholders are protected from material levels of information asymmetry [Elshandidy et al, 2018; Bamber & McMeeking, 2015].

Prior researches [Bischof, 2009; Ernst & Young, 2008; KPMG, 2008, 2009; PriceWaterhouseCoopers, 2008; Oliveira et al., 2013] suggest however that enhancing risk-based regulation does not necessarily lead to an increase into the quality of risk disclosure. According to Oliveira et al. (2013), banks tend to comply with the minimum required, provide dispersed risk related information within their annual reports and do not present a reliable and transparent picture about their risk profile. Oliveira et al (2013) noticed further that some deficiencies continued to exist (e.g. boilerplate VaR and sensitivity analysis; generic liquidity risk disclosures…) even after the adoption of high quality standards and regulations. This is because managers still enjoy some flexibility regarding the non-disclosure of risk information if they consider it as proprietary and commercially sensitive. For instance, there is a crucial role to be played not only by institutional supervisors and regulators but also by self-enforcement mechanisms in corporate attributes and governance practices to guarantee appropriate levels of compliance with minimum disclosure requirements and to promote higher transparency about banks’ operational uncertainties and risk vulnerability [Bischof, 2009; Craig, Lima Rodrigues & Oliveira., 2011a].

Compared to non-financial firms, few studies have examined the relationship between banks’ risk disclosure, their attributes and the characteristics of their governance structures in developed countries [e.g. Barakat & Hussainey, 2013; Oliveira, Rodrigues, & Craig., 2011a] as well as in emerging markets [e.g. Abdallah et al, 2015, Al-Hadi et al., 2015; Al-Hadi et al, 2017; Amran, Bin, & Hassan 2009; Neifar & Jarboui, 2017; Ntim et al, 2013]. In particular, the existing body of empirical research on the factors that underlie banks’ risk disclosure in emerging economies has four major limitations. First, most of these studies focused on one aspect of risk reporting such as market risk disclosure (Al-Hadi et al., 2015; Al-Hadi et al, 2017), or operational risk disclosure (Neifar & Jarboui, 2017) while banks’ transparency about other major risk types (e.g. capital adequacy, liquidity risk…) is important for both market discipline and for their financial stability. Second, these papers focused on either financial institution at an aggregate level or on Islamic banks within only the six Gulf Cooperation Council countries (GCC) which show a relatively homogenous context and similar pattern regarding the compliance with risk related regulations. Third, the way in which corporate governance was measured departs from the measures commonly used in the literature.

While Abdallah et al (2015) and Al-Hadi et al (2017) computed subjective governance quality scores based on either investors’ perception or the number of governance related items disclosed by financial firms, Al-Hadi (2015) and Neifer & Jarboui (2017) examined the impact of few governance attributes. Fourth, it is not clear whether Abdallah et al (2015)’s scores which are related to trading history, corporate communication and disclosure can be a holistic and valid measure of governance quality. It even raises questions about possible confounding variable since such measure can proxy for both risk disclosure and a company’s governance context. For instance, the extent to which banks’ features and specific governance mechanisms matter for risk disclosure in a broader context of emerging economies and over a larger time period remains a partially unanswered question. As a matter of fact, there is still scope for assessing the role banks’ attributes and governance structures may play in enhancing their transparency. This is particularly important as banks are quite different from other organizations in their excessive risk taking and the impact this has on the financial system as a whole (Bushman, 2014). Scope exists also for investigating issues more closely related to the nature of financial institutions, such as the distinctiveness of risk reporting amongst conventional and Islamic banks and across jurisdictions in which regulations are more restrictive or permissive.

Our paper makes therefore an important contribution to the governance and disclosure literature by assessing the risk disclosure practices of 169 banks operating in 11 emerging economies including Bahrain, Jordan, Kuwait, Malaysia, Pakistan, Qatar, Saudi Arabia, Tunisia, Egypt, turkey and United Arab Emirates (UAE) over a period of six years (from 2009 to 2014). We answer indeed, the call of Abdallah et al (2015) which considers assessing the impact of ownership and board structure on risk disclosure practices of GCC firms as a potentially rich area of study. We go far beyond the Gulf Cooperation council countries context and provide a cross country and time series analysis of the potential differences between the risk disclosure pattern of conventional banks compared to their Islamic counterparts. Recall that, unlike conventional financial institutions, Islamic financial institutions adhere to Islamic principles and sharia standards (e.g. AAOIFI governance guidelines, ISFB standards) while endeavoring to comply with newly adopted international standards of risk reporting (Abdallah et al, 2015; Olson and Zoubi, 2008). The study is also novel in that it investigates risk disclosure practices as a function of multi-dimensional banks’ attributes that are deemed to be critical to the changing business environment and to newly implemented governance and risk related regulations in emerging markets.

Several important findings emerge from this study. First, results reveal that Islamic banks are more secretive regarding their exposure to material risk than their conventional peers. In as much, our findings identify which factors among institutional features, ownership structure and board characteristics that yield variation in the risk reporting practices among Islamic and conventional banks.

The reminder of the paper is organized as follows. The first section reviews the relevant prior studies and develops testable hypotheses. The next section describes sample selection, data sources and variables’ definition. The third section highlights the research methodology. The fourth section discusses the results. The fifth section provides additional tests and the final section concludes the paper.

1. **Literature review and hypotheses development**

Two theoretical approaches have been proposed to justify risk disclosure practices by non-finance and finance companies. An economic theory approach; and a social and political theory approach. While the former relies on self-interest and profit maximization of corporate management (e.g. agency theory, political costs theory, signaling theory, and proprietary costs theory), the latter focuses on the political and social relationships linking companies to stakeholders in the society (e.g. resources-based perspectives and legitimacy theory). Oliveira et al (2013) suggest that the use of multi-theoretical approaches seems likely to be fertile and to produce insights beyond those revealed in the recent risk disclosure literature. So far, our cross-countries study is grounded on agency theory, political costs theory, resources-based perspectives and legitimacy theory to explore the determinants of risk reporting in the banking sector. In the following paragraphs, we briefly explain the definitions and unique aspects of these theories and how they may apply to the banking industry.

Agency theory suggests that the information asymmetry between the agent (shareholders) and the principal (managers) can be reduced through the implementation of monitoring mechanisms likely to promote higher level of information disclosure [Jensen & Meckling, 1976]. Because investors do not play an active role in corporate management and managers tend to serve their own interests (rather than maximizing shareholders’ value), information about risk would reduce investors’ uncertainties.

Banks are in essence risk- taking enterprises, and therefore, as a part of good risk management system, they are expected to insure an appropriate flow of risk reporting to the marketplace [Linsley & Shrives, 2006]. Such system would help monitor the attitudes of managers towards risk exposure, foster banks’ transparency and decrease the information gap between both sides [Jensen & Meckling, 1976; Linsley & Shrives, 2003; Oliveira et al, 2013].

The political costs theory states that some companies may be subject to deep scrutiny from politics, public and media (Watts and Zimmerman, 1978). In such a situation, politically visible firms will make accounting choices to counter unwanted attention and avoid costs associated with regulatory interventions (Watts and Zimmerman, 1986). According to Healy and Palepu (2001), earlier research sustains the view that information disclosure choices can be associated with political costs’ consideration. Companies will manage to overcome such pressure or attention, by disclosing additional information so as to manipulate their image positively and to distract attention [Birt et al., 2006; Deegan & Gordon 1996]. This argument could be particularly applied to interpret banks’ risk disclosure practice. Financial institutions operate indeed in highly regulated and visible industry. Such regulations may include, for example, minimum capital requirements for banks and financial performance constraints for insurance firms. Risk disclosure could be an effective tool to influence public opinion about banks’ risk profile, signal their compliance with Basel II requirements and to restore their reputations and credibility after the occurrence of global financial crisis.

Legitimacy theory [Dowling & Pfeffer, 1975; Kaplan and Ruland, 1991; Lindblom, 1994; Suchman, 1995; Deegan, 2002; Magness, 2006] explains that an organization has no right to exist unless it adheres to the system of values of one society within which the organization operates. To meet these social expectations, an organization would alter its activities and comply with outsiders ’values as a part of its legitimation process (Linsley and Kajüter, 2008). According to this theory, banks might knuckle under institutional pressures (such as adherence to Basel II requirements) to gain enhanced social support from stakeholders; and improved legitimacy, resources, and survival capabilities (Carpenter and Feroz, 2001; Fernandez-Alles and Valle-Cabrera, 2006). Banks might also exhibit their compliance and conform to any minimum risk disclosure requirements to enhance their reputations and widen their customer basis. Chen and Roberts (2010) argue however, that, despite its importance, legitimacy theory has abstract underpinnings, which can be further operationalized using resource dependence theory.

The resource dependence theory is built upon a few clear-cut principles. First, an organization needs important resources to survive, grow and pursue its strategies. Second, an organization should compete to obtain and control these resources from its outside environment and from rivals. Third, power (Organizations possessing necessary resources) and its inverse, dependence (organizations depending on others for resources), play key roles in understanding inter-organizational relationships [Pfeffer, 1972; Pfeffer & Salancik, 1978, 2003; Malatesta & Smith, 2014]. Such resources can be in the form of experienced labor, financial funds, loyal customers, and reputation. According to this theory, banks might rely on risk disclosures as an effective tool to raise capital at a cheaper cost of capital from the market while minimizing political costs through improved corporate image and reputation [Pfeffer & Salancik, 1978; Branco & Rodrigues, 2006; Oliveira, Rodrigues, & Craig., 2011b; Pirson & Turnbull, 2011].

* 1. **Islamic versus conventional banks**

The recent financial crisis has drawn the world’s attention to Islamic banking, which, unlike the conventional banking industry, has been more resilient to shocks (Beck et al., 2013). In recognition of the growing interest in Islamic finance, many key financial institutions worldwide revamped their conventional products as *Sharia*-compliant products (Nasr, 2011). As between 2009 and 2016, total assets in Sharia-compliant financial institutions have jumped to US$2.293 trillion with a significant growth potential of at least 10% annually. Several factors have contributed to such substantial growth, mainly its inherent financial stability since Islamic banks prohibit interest and interest-based assets, focus on equity as opposed to debt, and restrict speculation. Indeed, Sharia- compliant banks differ from their conventional counterparts in several ways. Islamic banks are guided by the rules of Islamic law whereby the primary goals are to ensure wealth sharing, general well-being and justice, principles that often conflict with the free market focus on profit maximization (Rahman & Salehnejad, 2005). This legal context is naturally conservative in that it inflicts restrictions on Islamic banks that conventional banks are not subject to (Abdallah, Hassan, and McClelland, 2015). On the one hand, there are prohibitions on: (1) paying or receiving riba (usury, defined as interest or excessive interest), (2) engaging in gharar (risk or uncertainty, known as speculation), and (3) funding illicit sectors (e.g. weapons, drugs and alcohol…etc.). On the other hand, Islamic banks rely on the profit- and loss sharing system when funding debtors. They also require that all transactions should be supported by a real economic transaction that involves a tangible asset (Beck et al, 2013).

Unlike the sharia law system under which Islamic banks operate, conventional banks work under more lenient legal provisions in their efforts to maximize earnings. Conventional banks commonly generate profit from the spread between the interest incurred by debtors and the interest paid to depositors whereby the fluctuating rates of interest charged to debtors is related to the risk of the underlying investment (Abdallah et al., 2015). It follows, then, that the principles which guide Islamic financial banks are more conservative and rigid than are those which govern conventional banks. For instance, Islamic banks are less likely to be engaged in, and therefore disclose, risk than are their conventional counterparts. Hence, we hypothesize that:

*H1. RRD will be lower in Islamic banks compared to conventional banks.*

* 1. **Banks attributes and RRD**

We refer to several firm-specific characteristics that were discussed in recent corporate disclosure literature to explore the determinants of risk reporting.

* Bank size and RRD

Deumes & Knechel (2008) argue that large firms tend to be more complex and have more sophisticated transactions. This feature suggests higher risk profile which translates into higher information asymmetry among stakeholders. Consistent with the agency theory, RRD is likely to reduce agency costs induced by the information asymmetry between managers and shareholders (Watts & Zimmerman, 1983). Likewise, larger firms exhibit higher level of public visibility which implies higher scrutiny among stakeholders and increased inherent risk (Amran, Bin, & Hassan 2009; Brammer & Pavelin, 2008).

According to the legitimacy theory, the disclosure of risk related information will be an answer to greater social and political pressures, a form of discourse intended to manage perceptions of the public and to response to perceived legitimacy threats. Thereby, enhanced RRD will be crucial to restoring and preserving banks’ reputation and to fulfilling stakeholders’ expectations (Oliveira, Rodrigues, & Craig 2011a). Finally, larger banks have substantial resources and may be better placed to provide risk information, crucial to ensure market discipline and to build or maintain their legitimacy to operate (Van Hoose, 2007; Deumes & Knechel 2008).

*H2. There is a positive association between size and the level of banks’ RRD.*

* Bank age and RRD

Recent literature (e.g. Alfraih & AlMutawa, 2014; Demir & Bahadir, 2014; Alsaeed, 2006) suggest that old firms might have enhanced their information disclosure practices over time. On one hand, old firms might already have established procedures and well- experienced managers to deal with the technical aspects of their financial reporting. Conversely, younger firms are likely to focus on product and market share development, rather than accounting disclosure. Their managers might be less experienced in running the business and complying with regulatory requirements. Consequently, younger firms’ accounting systems tend to be inappropriate, resulting in lower quality of accounting information (Glaum & Street, 2003).

On the other hand, older firms might have developed a reputation in the market by accumulating public’s judgements over time (Fombrun & Shanley, 1990; Oliveira, Rodrigues, & Craig, 2011b). In contrast, younger firms may lack a “track record” and rich past actions to rely on. Consistent with legitimacy theory and resources-based perspective, bank’s age is related to its public image and reputation, its involvement in improved risk management system, and the extent of trust depositors have in it. The older a bank has been in operation, the higher its public image is likely to be. For instance, higher levels of RRD are expected to build and foster reputation (Abdul Hamid, 2004; Sanchez-Ballesta & Bernal Llorens, 2010; Oliveira, Rodrigues, & Craig, 2011b).

*H3. There is a positive association between bank age and the level of RRD.*

* Financial leverage and RRD

Recent risk disclosure literature (e.g. Amran, Bin, & Hassan 2009; Oliveira, Rodrigues, & Craig 2011b; Elshandidy, Fraser, & Hussainey 2013; Khlif & Hussainey, 2014) suggests that firms characterized by high leverage ratio tend to be more risky and speculative. From an agency theory perspective, agency conflicts increase with high leverage ratio (Hussainey & 2 Elzahar. 2012). Debtholders may require more restrictive debt covenants as they have greater power over the financial structure of high leveraged firms, which will rise agency and monitoring costs. Information disclosure about bank’s exposure and its risk factors may play a critical role in mitigating creditors’ concerns about the solvency of the bank and its capabilities to generate enough cash flows in the future.

Empirical evidence on the association between leverage ratio and risk disclosure is mixed. While some findings show a positive relationship between leverage and the level of risk information (e.g. Abraham & Cox, 2007; Deumes & Knechel 2008; Iatridis 2008; Hassan 2009; Elshandidy, Fraser, & Hussainey 2013), other papers end to an insignificant association between the two variables (Elzahar & Hussainey 2012; Miihkinen 2012; Ntim, Lindop, & Thomas 2013). Given these inconclusive empirical evidences, the following non-directional hypothesis is formulated:

*H4. There is an association between bank leverage ratio and RRD.*

* Financial performance (profitability) and RRD

Corporate disclosure literature argues that managers of profitable firms tend to release more information to show their ability to maximize shareholders’ value, secure their positions and justify their compensation. Conversely, managers of unprofitable firms are less likely to release additional information to hide their bad performance and protect corporate shares from being undervalued (Aljifri et al., 2014; Alsaeed, 2006; Inchausti, 1997). By the same token, Linsley et al. (2006) and Elshandidy, Fraser, & Hussainey (2013) suggest that high profitable firms are inclined to signal, through risk disclosure, their ability to manage risk successfully and to achieve high-quality performance. Khlif & Hussainey (2014) sustain that risk disclosure may decrease investors’ uncertainty about future cash flows and business environment. This is likely to reduce the information asymmetry between corporate management and market participants, yielding to a positive effect on firms’ shares. In contrast, Skinner (1994) puts forth that managers with bad performance may rely on extended risk related information to reassure investors about the firm’s prospects and avoid the adverse effect of future litigation risks. Deumes & Knechel (2008) consider on the other hand that profitable firms have more resources to implement risk management system and to communicate information about the risk they face. Yet, because of their good financial performance, shareholders will de-emphasize inherent risk and thus disregard such type of disclosure, implying less incentives from management to increase RRD.

Empirical results on the relationship between profitability and banks’ risk related information were also inconclusive. While Linsley et al. (2006) end to an insignificant relationship, Al-Maghzom (2016) shows that profitable firms disclose voluntarily more risk information.

Conversely, Helbok & Wagner (2006) and Oliveira, Rodrigues, & Craig (2011b) find that low profitable banks give greater importance to disclosing their assessment and management of operational risks. Given these mixed evidences, we formulate the following non-directional hypothesis:

*H5. There is an association between bank profitability and RRD.*

* Bank listing status and RRD

Listed companies must comply with listing rules imposed by security markets. They are often subject to specific requirements regarding corporate governance, transparency and financial reporting (e.g., Leftwich, Watts and Zimmerman, 1981; Cooke 1989; Wallace et al. 1994). On one hand, listed companies suffer from greater agency problems, are more visible in society, and are thus exposed to higher stakeholders’ monitoring compared to unlisted companies (Branco and Rodrigues, 2006; Oliveira et al., 2006; Oliveira, Rodrigues & Craig, 2011b). On the other hand, listed companies need more resources to operate and therefore put more efforts in implementing disclosure strategies that help them get access to the required funds at lower cost of capital. In a similar vein, Oliveira, Rodrigues and Craig, (2011b) suggest that listed Banks tend to manage their public visibility and promote their social legitimacy through risk-related disclosure. Because most important stakeholders do not play an active role in a bank’s daily management, listed banks are subject to extra institutional pressures to comply with minimum RRD requirements. These RRD are considered crucial to mitigating information asymmetries, fostering stability of the banking system, increasing market discipline and sustaining the access to capital.

Thus, we expect that:

*H6. There is a positive association between bank listing status and the level of RRD.*

Recent studies have shown also a growing interest in how governance mechanisms (CG) influence financial reporting. Taylor et al. (2010) suggest that firms with strong CG practices are more involved in corporate risk disclosure. Our study uses a set of five CG mechanisms that are more likely to affect risk disclosure in annual reports of banks in emerging markets. It focuses on major investors 5% or more, foreign investors, board size, board independence and board foreign members as follows.

* 1. **Governance characteristics and RRD**
* Large shareholders and RRD

Large outside shareholders play a critical role in corporate governance, because their sizable stakes give them incentives to bear the cost of monitoring the integrity and the efficiency of firms’ management (Barakat & Hussainey, 2013). Large shareholders exert indeed, governance through two basic mechanisms. First, they can directly intervene within a firm and voice for a strategic change either via a public shareholder proposal, a private letter to management, or through voting against directors. Second, they can use share trading strategy and push down stock prices, punishing then managers for their misbehavior. The threat of both intervention and exit mechanisms induces manager to maximize shareholders’ value (Edmans, 2014).

In the banking sector, Barakat & Hussainey (2013) argue that block owners have the power to influence strategic decisions towards risk management and disclosure because of their strong voting rights. For instance, if managers fail to effectively perform their fiduciary duties, major shareholders might activate their influential voting rights and remove the underperforming executive. Oliveira, Rodrigues, & Craig (2011b) suggest however that in banks with major shareholders, agency costs are lower as owners tend to appropriate the benefits of monitoring management. This is likely to reduce managers’ opportunistic behavior and accordingly the level of risk related information. Ntim et al., (2013) contend further, that management of firms with large shareholders may not take on disclosure practices because the costs of risk related information i.e., cost of competition, cost of litigation, and cost of regulation are most probably greater than its possible benefit i.e., information symmetry.

Surprisingly, empirical research investigating the relationship between block ownership and corporate risk disclosure are scarce, with those by Lopes & Rodrigues (2007), Oliveira, Rodrigues, & Craig (2011b) and Ntim et al., (2013) being notable exceptions. These studies find that block ownership has a negative effect on risk disclosure. Thus, our hypothesis is stated as follows:

*H7. There is a negative association between block ownership and the extent of bank risk disclosure.*

* Foreign ownership and RRD

It is widely held that foreign investors are more sophisticated than local investors due to their quality and advanced knowledge about trading and financial market regulations. Choi et al, (2013) contend that an increase in foreign ownership leads to a rise in shareholder activism and to an improvement in board composition. In this case, local firms are subject to greater monitoring system and more refined valuation methods. Nonetheless, foreign investors are at an information disadvantage compared with domestic investors (Choe et al., 2005). Indeed, Huafang & Jiango, (2007) argue that due to space and language barriers, foreign shareholders suffer from a higher level of information asymmetry. If so, foreign investors would associate themselves with firms offering a rich information environment (Jiang & Kim, 2004). On these terms, pressure mounts to the directors to enhance corporate transparency and provide high quality accounting information including RRD (Sami & Zhou, 2004; Mohobbot, 2005). It follows that information asymmetry should decline with an increase in foreign ownership while there is an increase in general transparency in the market.

Empirical finding on the association between corporate disclosure and foreign ownership are mixed. While Haniffa & Cooke (2002) and Barako et al. (2006) showed that higher level of foreign ownership increases corporate disclosure, Mohobbot (2005), Koshini & Ali, (2007) and Mousa & Elamir (2014) found insignificant association between risk related information and foreign ownership. Hence, we state the following hypothesis:

*H8. There is a significant positive association between foreign investors and the extent of bank risk disclosure.*

* Board size and RRD

It is commonly thought that corporations may derive greater benefits from a large board of directors.  From an agency theory perspective, larger boards are associated with increased managerial monitoring, higher performance and better disclosure practice, including risk related information (Bozec & Bozec, 2012; Hussainey & Elzahar, 2012). From a resource dependence theory perspective, it is suggested that larger boards are associated with greater diversity in terms of expertise (Branco & Rodrigues, 2006; Linsley & Shrives, 2006) and experience which increases managerial ability to make important and better business decisions (Hou & Moore, 2010).

As it is, larger boards bring greater networking opportunities, facilitate the securing of critical resources (Jia et al., 2009) and provide advice and counsel to corporate management. The agency theory suggests, however an opposing view regarding the efficiency of larger boards. Jensen & Meckling (1976) argue indeed that smaller boards are better and more effective in improving corporate performance and disclosure. For it is, larger boards are usually characterized by poor coordination, uncandid communication and monitoring, as well as greater director free-riding which can negatively impact RRD and firm performance (Ntim et al, 2013).

Recent studies examined the impact of board size on RRD and provided conflicting results. While Hussainey & Elzahar, (2012) find no relationship between board size and risk reporting, Mousa & ElAmir (2014) end to a negative association between both variables and others find a positive association (Laksmana, 2008; Al-Najjar & Hussainey, 2011; Mellett & Mokhtar, 2013; Ntim et al, 2013).

Given the mixed theoretical and empirical literature, we suggest that:

*H9: There is a significant association between board size and the level of bank risk disclosure.*

* Board independence and RRD

The Agency theory suggests that independent (non-executive) directors play a vital role in monitoring managers' action, limiting their opportunism (Fama, 1980; Fama & Jensen, 1983; Walsh & Seward, 1990) and increasing corporate transparency (Frankel, McVay, & Soliman, 2010).

Legitimacy theory argues besides that the legitimacy gap in modern companies can be filled with the presence of independent non-executive directors who will serve as a surrogate for corporate stakeholders. Their assignment signals a match between corporate and societal values, enhances corporate legitimacy (Ashforth & Gibbs, 1990; Edkins, 2009; Freeman & Reed, 1983; Michelon & Parbonetti, 2012; Ntim et al, 2013) and answers stakeholders ‘concern about RRD (Lopes & Rodrigues, 2007; Pirson & Turnbull, 2011). While independent directors are less involved in the day-to-day running of the business, they tend to be exposed to higher levels of risk in terms of their personal reputation (Oliveira, Rodrigues, & Craig, 2011b). Therefore, they are more likely to respect and honor corporate obligations and more importantly keener in encouraging greater transparency (Lopes & Rodrigues, 2007; Ntim et al, 2013).

Empirically, and consistent with the theoretical predictions, many studies report that independent non-executive directors have a positive effect on risk disclosure (Abraham & Cox, 2007; Lopes & Rodrigues, 2007; Oliveira, Rodrigues, & Craig, 2011b; Barakat & Hussainey, 2013; Elshandidy, Fraser, & Hussainey (2013)). Allini, Rossi, & Hussainey (2016) and Hussainey & Elzahar (2012) find, though insignificant association between the two variables. As to the banking sector, The Basel Committee on Banking Supervision (BCBS) sustains that ‘…Independence and objectivity can be enhanced by including qualified non-executive directors on the board…’ (BCBS, 2012, p. 7). Therefore, we formulate our tenth hypothesis as follows:

*H10. There is a positive association between the proportion of outside directors sitting on the board and banks’ RRD.*

* Board foreign members and RRD

According to Ebrahim and Fattah (2015) foreign board members have accumulated broad experience over years. Their high qualifications compared to local board members can be seen as a resource / benefit to the board consistent with the Resource Dependence Theory (Ujunwa et al., 2012). Foreign members have also developed different strategic visions about financial reporting and stakeholders’ information needs throughout their professional career. Their presence on board may signal thus firm’s ability to deal with international markets and the requirements for better financial disclosure and enhanced transparency. On the other hand, foreign board members are expected to have greater intercultural competence as they are used to work efficiently in different business environments. This is likely to have a psychological effect on their cognitive values and certainly impact their strategic decisions such as the compliance with investors’ requirement for improved disclosure (Fernandes, 2017). Empirically, Fernandes (2017) and Masulis Wang& Xie. (2012) conclude that foreign directors in low enforcement countries, bring stricter rules and therefore make more disclosures since they are more active and more independent of management.

Based on the arguments presented above, we state the following hypothesis:

*H11: A higher proportion of foreign members on the board is associated with a higher level of banks’ RRD*.

1. **The sample and data**

Our dataset is a cross-sectional analysis of the relationship between RRD, corporate attributes and governance structure over the period 2009-2014. We use Bankscope and the Bankers databases for the sample selection. The Bankers magazine published a survey in November 2011 of the top Islamic financial institutions by country. For the sake of consistency in our sample, we include banks which provide only financial statements. In addition, we excluded subsidiaries from our samples. Therefore, we collect data for 72 Islamic banks and 97 conventional banks from 11 countries namely Bahrain, Indonesia, Jordan, Kuwait, Malaysia, Pakistan, Qatar, Saudi Arabia, Tunisia, Egypt, turkey and United Arab Emirates (UAE). The dataset is hand collected from the annual reports and the websites of the respective banks. Data were collected from several sources including Bankscope, and Zawya database, in addition to the annual reports and websites. Financial information was collected from Zawya database and Bankscope in addition to the annual reports.

* 1. **Dependent variable:**

To assess the level of risk disclosure across the studied countries, we use a traditional approach in disclosure studies that is content analysis. Krippendorff (1980) trusts that content analysis guarantees repeatability and valid inferences from data according to their contexts.

We collect data from annual reports which cover different aspects of banks’ financial and non-financial performances. Typically, annual reports provide a review of banks’ activities, their position, their risk and capital resources’ management and their business vision for the future. We perform the risk disclosures’ analysis of the sample banks in all the narrative sections in the annual reports. While the traditional reporting model emphasized backward-looking and quantified information, qualitative and forward-looking information increases the overall quality of corporate reporting and have considerable value for banks’ stakeholders (Chatterjee Tooley, Fatseas, & Brown, 2013). Narrative sections serve indeed as a tool for managers to disclose “their perspectives of the firm to investors, such as why earnings have changed, what liquidity needs the firm faces, what capital resources have been or are planned to be used, what material market risks the firm is exposed to” (Brown & Tucker, 2011, p. 310) and what are the future trends that may affect future operations.

We chose to consider risk related information at an aggregated level since the adoption of international standards of risk reporting in emerging markets is a vital step in their steady integration into the global economic system. It is also worthy to mention that out of our 11 investigated countries; eight countries have already required or allowed the use of IFRS by their listed financial firms. Besides, the literature on the financial sector shows that these firms disclose more comprehensive risk information relative to firms in other industries [e.g., Al-Hadi, Al-Yahyaee, Hussain, & Taylo, 2017; Hirtle, 2007; Nier and Baumann, 2006; Pérignon and Smith, 2010]. Not to mention that most Islamic banks in Bahrain, Jordan, Qatar, Saudi Arabia or Malaysia are either required to comply or moving toward embracing the AAOIFI and IFSB standards at a steady pace.

Scholars relied on different coding schemes when performing a content analysis. These schemes involve the use of either keywords, sentences or pages as a measurement unit. Congruent with recent risk disclosure literature (Beretta & Bozzolan, 2004; Linsley & Shrives, 2006; Amran, Bin, & Hassan 2009; Dobler, Lajili &Zéghal., 2011; Hussainey & Elzahar, 2012; Moumen, Ben Othman & Hussainey, 2015; 2016) we count the number of risk-related sentences to assess the level of risk disclosure by banks. We expect less bias when referring to sentences compared to words since Unerman (2000) suggests that words cannot be coded into different risk categories without reference to the sentence. Krippendorf (2007) argues further that “the meaning of a word typically depends on its syntactical role within a sentence”.

An additional requirement for content analysis is the coding instrument. Our risk assessment instrument encompasses significant risk exposure for banks and focuses on eight types of disclosures, including *capital structure, financial risk, operational risk, financial instruments, reserves, segment information, accounting and presentation policies and general risk information.* We also incorporated another risk sub-component specific to Islamic banks. Extending Nahar, Azim, & Jubb (2016), we develop our index from 4 main sources: the guidelines provided by the International Financial Reporting Standard (IFRS) 7, the Basel II: Market Discipline guideline, The AAOIFI and IFSB standards (specific to Islamic banks), and the accounting literature (Cabedo & Tirado, 2004; Oliveria, Rodriques & Craig, 2011b; Barakat & Hussainey, 2013; Abdallah, Hassan, & McClelland, 2015). Typically, we adopted a two steps process. In the first step we made an extensive review of prior studies and identified the common items used to assess banks’ risk disclosure.

We then cluster these items in accordance with regulatory requirements (IFRS 7; Basel II: Market discipline; AAOIFI and IFSB standards). In total our risk disclosure index includes 69 items grouped into 8 risk sub-categories. to measure the level of risk disclosure by banks, we assign to each of these risk items the number of sentences disclosed in banks’ annual reports. We code risk disclosures any sentence that informs the reader about “any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted or may impact upon the company, as well as the management of any such opportunity, prospect, hazard, harm, threat, or exposure” (Linsley & Shrives, 2006).

We ensure the construct validity of our risk disclosure index and the reliability of our scores by following these procedures. First, as we previously stated, we derive the index categories and items from multiple and varied sources of information (IFRS, Basel II, AAOIFI, IFSB, prior literature). Second, to ensure reproducibility, one single coder performed the content analysis of banks’ annual reports (Krippendorff, 2007). Third, an independent evaluator with financial reporting expertise coded a sub sample of 25 annual reports to ensure the reliability of the scale. Krippendroff (1980; 2007) argues that it is important that at least two researchers do this type of analysis independently and compare results for reliability checking. Fourth, we compare the risk Disclosure Index coded by both academics (the main researcher and the independent evaluator) to ascertain if there were any significant differences. Specifically, we perform an inter- rater reliability test to check for consistency in coding, and for accuracy of risk disclosures’ scores. We rely on Krippendorff’s alpha test, which is the most appropriate test of inter rater reliability (Hayes & Krippendorff, 2007; Krippendorff, 2010). The test generates a Kalpha of 0.825, a satisfactory level of inter-rater reliability for this intra-class agreement coefficient. It is common to require Kalpha = 0.80 as the cut off point for a good reliability test, with a minimum of 0.67 (Krippendorff, 2007).

* 1. **Independent variables:**

Table 1: Model specification and variable measurement

|  |  |  |  |
| --- | --- | --- | --- |
| *Abbreviated Name* | Full Name | Variable description | Data source |
| BLOCK | Number of Blockholders | Number of blockholders– shareholders whose ownership ≥5 % of total number of shares issued. | Zawya data base- bank website-annual report |
| FOREIGN | foreign ownership | Percent of shares owned by foreign shareholders | Zawya data base- bank website-annual report |
| BDSIZE | Board size | The number of board members | Annual report |
| BDIND | Board independence | Ratio of the number of non-executive directors to the total number of the directors | Annual report |
| BDFOREIGN | Foreign directors | Ratio of the number of foreign directors to the total number of the directors | Annual report |
| ROA | Return on assets | Net income/total assets | Annual report: Financial statements |
| LEVERAGE | Leverage | Long-term debt/ total assets | Annual report: Financial statements |
| BANKSIZE | Bank size | Natural logarithm of total assets | Annual report: Financial statements |
| BKAGE | Bank age | Bank age | Bank website |
| LIST | Listed bank | 1 if the IBs is listed in the stock exchange, 0 otherwise | Stock exchange |
| *Control variables* |  |  |
| COUTRANSDEX | Business extent of disclosure index | The index ranges from 0 to 10, with higher values indicating more disclosure. | World Bank |
| GDP | Gross domestic products |  | World Bank database |
| TIER1 | Tier 1 Capital | Shareholders' equity and retained earnings. | Bankscoop |
|  |  |  |  |

1. **Research methodology**

To empirically investigate the relationship between RRD, corporate attributes and governance mechanisms, we use the following OLS regression:

RRDi = αi + β1 BLOCK + β2 FORGN + β3 BDSIZE + β4 BDIND + β5 BDFOREIGN + β6 ROA + β7 LEVERAGE+ β8 BANKSIZE + β9 BKAGE + β10 LIST + β11 COUTRANSDEX + β12 GDP + β13 TIER1 + εi (1)

where RRDi: is RRD index for bank i, Block: is the number of Blockholders for bank i; FORGN: percent of shares owned by foreign shareholders for bank i; BDSIZE: the number of board members for bank i; BDIND: ratio of the number of non-executive directors to the total number of the directors for bank i; EVERAGE: ratio of long-term debt/ total assets for bank i; BANKSIZE: natural logarithm of total assets for bank i; BANKAGE: is the age of bank i, ROA: return on assets for bank i; LIST: is 1 if the bank is listed in the domestic stock exchange and 0 otherwise; COUTRANSDEX: Business extent of disclosure index for the concerned country; GDP: is the gross domestic products for the concerned country; TIER1: is Tier 1 capital for bank i.

We use the first-order Taylor-series linearisation method to control for heterosedasticity and to produce robust standard errors. In addition, we use both lagged and contemporaneous independent variables in Eq. (2). Finally, we use the Ramsey RESET test for omitted variables and model mis-specification, we also use the variance inflation factors (VIF) to examine whether the independent variables are perfectly collinear.

To explore the interrelationship between RRD and FP, we formulate the following system of simultaneous equations that address the potential endogeneity issues in the estimation.

RRD = *f*1 (FP, Z1, ε1) (2a)

FP = *f*1 (EF, Z2, ε2) (2b)

where *Zi* are the vector of control variables and instruments influencing the dependent variables; and εi are the white noise error terms associated with the unobservable effects resulting from firm heterogeneity i.e. unobservable features of managerial behavior that explain heterogeneity in RRD and FP.

Two concerns may arise regarding endogeneity when studying the relationship between RRD and its determinants. First, our results may simply reflect some fundamental omitted variable that influences endogenous variable (Nikolaev & Van Lent, 2005). The second concern is the potential reverse causality between the RRD and some endogenous variables like financial performance FP. To resolve this issue, we estimate the instrumental variable two-stage least squares (2SLS) and the three-stage least squares (3SLS)[[1]](#footnote-1) using a system of two simultaneous equations to study this bi-directional connection using the pooled sample over 2009–2014 as in Eqs. (2a) and (2b).

The choice of instrumental variables is important to a consistent estimation. Our choice for our instruments is motivated by the recent literature on corporate disclosure and especially on corporate social responsibility disclosure. A valid instrument should reasonably predict the endogenous variable and not be correlated with error terms. Previous studies have used stakeholders’ characteristics (power and legitimacy), corporate governance features (board structure and independence) and company visibility as valid instruments (i.e. Brammer & Millington, 2006; Eesley & Lenox, 2006; Mitchell, Agle, & Wood, 1997; Rehbein, Waddock, & Graves, 2004 and Garcia-Castro, Ariño, & Canela, 2010). Since we will use the stakeholders’ characteristics and corporate governance characteristics in our main model (determinants of RRD), we cannot reemploy them as an instrumental variable for the RRD. Therefore, we employ following Garcia-Castro, Ariño, & Canela (2010) and Mallin, Farag, & Ow-Yong. (2014), bank visibility as our instrument for RRD. Though, we redefine bank visibility as a dummy variable that takes the value of 1 if the bank is listed in the stock market of the respective country and 0 otherwise.

We assume that listed banks in stock markets are more visible to investors and media and are likely to adopt consistent policies with stakeholders such as engaging in RRD. Hence, we expect that our instrumental variable is likely to be correlated with RRD and not with financial performance. We believe also that the selected instrumental variable satisfies the necessary conditions for valid instruments assuming that the disturbance is not autocorrelated[[2]](#footnote-2). Furthermore, we use the Breusch & Pagan (1980) test of independence to investigate whether cross-equation disturbances are indeed correlated and if the equations need to be estimated simultaneously. Beiner, Drobetz, Schmid, & Zimmermann. (2006) claim that the advantages of 3SLS rest on instrument validity and the correct specification of the model.

To test the instrument validity, we employ the Sargan (1964) mis-specification test with the null hypothesis of “No mis-specification”. If the null hypothesis is rejected then the model is likely to be incorrectly specified and/or some of the instruments are invalid. In addition, to test for the correct specification of the system of simultaneous equations, we apply the Hausman specification test (Hausman, 1978) to compare between 2SLS and 3SLS estimates. The null hypothesis of the Hausman test and “the 3SLS results are consistent and efficient while the 2SLSresults are also consistent but inefficient”.

1. **Results and discussion**

In this section, we analyze the results of the RRD index of the 169 banks (72 Islamic banks and 97 conventional banks) over the period 2009–2014.Table 2 presents the descriptive statistics of the RRD Index scores across countries. The results show that, over the years 2009 to 2014, the average aggregate RRD Index is higher for conventional banks than Islamic banks. The index scores show that the extent of disclosure across countries varies considerably. Regarding Islamic banks, Turkey has the highest RRD index score of 663, followed by Malaysia at 617 and Pakistan 449. The lowest scores are observed by Tunisia and Egypt, 20 and 168 in 2011 respectively. Regarding conventional banks, UAE has the highest RRD index score of 613, followed by Malaysia at 539 and Turkey 527. The lowest scores are observed also in Tunisian and Egyptian’ conventional banks, 69 and 204 respectively. Table 2 shows that the level of RRD in Islamic and conventional banks evolve in parallel. In other words, countries experienced a high level of RRD in the annual reports of conventional banks (or in Islamic banks) also are showing a high level of RRD in the annual reports of Islamic banks (or in non-Islamic banks) and vice versa. Our primary finding provide insight that the country level dimensions play an important role on the level of RRD in the domestic banking sector.

Table 3 presents the weighted average RRD index scores during 2009-2014. As reflected in the analysis of the country’s RRD, we find that, for both Islamic and conventional banks, the financial risk dimension generally scores highly across all countries whilst the segment information scores the lowest. The highest disclosure score relates to the financial risk dimension (D2) which is 183 for Islamic banks and 167 for conventional banks followed by the scores of Financial instruments (D4) for Islamic banks and accounting and presentation policies (D7). On the other hand, the lowest disclosure score relates to segment information (D6) which has a weighted average score of 0.86 for Islamic banks and 9.08 for conventional banks. This finding is consistent with the perception that banks pay relatively little attention to segments information whereas the financial risk, financial instruments and accounting and presentation policies are areas that successful banks which want to comply with best practice risk management would place significant emphasis on.

Table 4 presents the descriptive statistics of the covariates during 2009-2014. The sample size is 72 Islamic banks and 97 conventional banks across 11 countries and the average RRD index ranges from 10 (for Islamic banks 10 and 20 for conventional banks) to 1684 (for Islamic banks 1684 and 1296 for conventional banks) with an average of 432 (for Islamic banks 420 and 440 for conventional banks). The average return on assets (ROA) ranges from −15% to 52% with an average 2% (both for Islamic and conventional banks is 2%). 54% of banks constituting our sample are listed in the stock exchange (46% for Islamic banks and 60% for conventional banks). The average age of the banks constituting our sample is 31 years old (18 for Islamic banks and 41 for conventional banks). The average leverage is 64% (64% for Islamic banks and 63% for conventional banks).

Table 4 also reports that the number of block holders range from 0 to 7 size ranges from 2 to 9 members with mean value of 2.54 (2.25 for Islamic banks and 2.86 for conventional banks), whereas the average foreign ownership is 38% (49% for Islamic banks and 26% for conventional banks). The average board size is 9.28 members (8.9 member in Islamic banks and 9.71 members in conventional banks) with standard deviation 2.09. In average 56% of the board members are independent directors (64% for Islamic banks and 46% for conventional banks), in addition the proportion of foreign directors in the board is 31% on average (41% for Islamic banks and 21% for conventional banks). The average tier 1 ratio is 3.03% (4.57%for Islamic banks and 1.2% for conventional banks).

Table 5 reports the outputs of the correlation matrix of the covariates used in the analysis. It is clear that there are no significant correlation coefficients greater than 50%, therefore our estimation is not subject to multicollinearity problem.

Table 6 presents the outputs of Eq. (2) in which we investigate the main determinants of RRD in particular some corporate attributes, ownership characteristics and corporate governance mechanisms using cross sectional analysis over the period 2009 to 2014. Panels A, B and C report the estimation outputs for pooled sample, Islamic bank sample and conventional banks sample respectively over the observed 6 years. Results show that Islamic banks disclose less information about risk than conventional banks. As expected, the Islamic coefficient has a negative sign in each of the 6 RRD regressions except for the regression in which Financial risk, Financial instruments and Reserves are used as a measure of RRD. Specifically, the Islamic coefficients are significant when the measure of RRD is overall risk (p < .1), capital structure and adequacy (p < .01), operational risk (p < .01) and segment information (p < .01). Our findings are consistent with Abdallah et al, (2015) and reflect the inherently conservative nature of the principles that guide Islamic banks to provide financial products that serve the interests of society more broadly than do their conventional counterparts which are more risk taking in the pursuit of profit maximization.

Among corporate attributes, our results indicate a positive and significant relationship between bank size (p < .01), bank age (p< .01) and the extent of RRD by Islamic banks. Financial leverage (p < .01) seems though to negatively impact their level of risk information. These findings support our 2nd, 3rd and 4th hypotheses and suggest that Islamic banks appear to adopt legitimacy strategies for two major reasons. First, since publicly visible Islamic banks (as assessed by size) face higher scrutiny among stakeholders, they are likely to enhance their legitimacy by complying with Basel II requirements. Enhanced legitimacy improves indeed market discipline because of stakeholders monitoring and pressure (Bliss & Flannery, 2002; Carpenter & Feroz, 2001; Ferna´ndez-Alles & Valle-Cabrera, 2006; Frolov, 2007). Second, from a resource-based perspective, Islamic banks with higher levels of corporate experience and reputation (assessed by company age) follow legitimating strategies through RRD to manage stakeholders’ perceptions of their reputation (Bebbington et al., 2008; Sa´nchez-Ballesta & Bernal Llo´rens, 2010). Conversely, high leveraged Islamic banks tend to reduce their RRD to avoid creditors’ concerns about their increased inherent risk.

Results regarding conventional banks are slightly different. The highest levels of risk disclosures were made by large listed banks with high leverage ratio, consistent with our multi-theoretical framework. Conventional banks’ visibility requires then a higher level of legitimacy to fulfill stakeholders’ expectations. RRD are tools to reduce information asymmetries between owners and debtholders help managing social and political pressures and improve investors’ confidence.

Ownership structure’s effect on RRD shows likewise different results for conventional banks versus Islamic ones. While conventional banks with block owners seems to disclose less RRD (p < .1), Islamic banks with foreign owners (p < .1) exhibit the same trend toward the disclosure of risk information. These findings confirm on one hand our 7th hypothesis and reject our 8th hypothesis on the other hand. They are indeed consistent with Lopes & Rodrigues (2007), Oliveira, Rodrigues, & Craig (2011b) and Ntim et al., (2013). Our results suggest besides that block owners as well as foreign owners do have superior access to private information including RRD, reducing hence bank management’s incentive to disclose such information in their annual reports. As powerful investors, block owners might have other efficient means of communicating with banks’ management, for example, one-to-one meetings. However, the low presence of foreign owners in Islamic banks may have prevented them from fulfilling their monitoring role.

Board features seem to influence in the same way banks’ willingness to communicate about their risk profile and the way they manage such exposure. While board size affects negatively (p<.01) RRD by conventional banks, the presence of independent and foreign members on the board of Islamic banks increases their level of RRD (p< .01). These findings corroborate our 9th, 10th and 11th hypotheses and are consistent with Abraham & Cox, (2007), Lopes & Rodrigues, (2007), Oliveira, Rodrigues, & Craig, (2011b), Barakat & Hussainey, (2013), Elshandidy et al. (2013) and Mousa & ElAmir (2014). They indicate besides that small boards in conventional banks are more efficient in fulfilling their monitoring role with regard banks’ transparency about their risk factors. Furthermore, our results bring forward the crucial role of independent and foreign board members in enriching Islamic banks’ informational environment. As suggested, a board equipped with better resources in terms of qualification and experience can follow robust processes to identify, monitor, and report risk information to satisfy the specific stakeholders of Islamic banks.

As regard to control variables, our multiple regression analysis shows that the higher the country GDP, the lower is RRD by conventional banks in these countries. Moreover, Islamic banks in countries with higher disclosure index are more transparent about their risks and opportunities. Our finding is consistent with Grassa and Chakroun (2016). For both Islamic and conventional banks, the higher TIER1 capital the lower is the level of risk disclosure. This suggests that healthier banks reveal less risk information as they are unlikely to be a subject for extra pressures from stakeholders.

1. **Additional tests**:

In this section, we investigate the bi-directional relationship between RRD and FP. To account for a potential endogeneity between RRD and FP we use Durbin-Wu-Hausman test (e.g., Hausman, 1978). The result of the Durbin–Wu–Hausman test rejects the null hypothesis of no endogeneity at the 10% level. Therefore, we conclude that GLS may lead to biased and inconsistent estimates in our sample. To this end, we estimate Eqs. (3a) and (3b) jointly using three-stage least squares regression to deal with any potential endogeneity between RRD and FP. The 3SLS estimation results for the simultaneous system are summarized in Table 7. Panel A presents the results of the impact of FP on RRD as in Eq. (3a) whilst Panel B presents the impact of RRD on the FP as in Eq. (3b). The coefficient on ROA in the RRD equation remains positive and significant at the 5% level. However, the coefficient on RRD in the FP equation turns out to be statistically insignificant. This suggests that the causality between the two endogenous variables runs from FP to RRD. The result of the Breusch–Pagan test shows that cross-equation residuals were not independent (p-value = 0.02) and, hence, the test rejects the null hypothesis of independence errors and indicates, therefore, that the equations need to be estimated simultaneously. The system presented in Panel A is well specified as the Chi squared is highly significant. On the other hand, the system presented in Panel B is not well specified as the Chi squared is insignificant. The result of the Sargan mis-specification test shows that we cannot reject the null hypothesis of “no mis-specification”, indicating that the instruments of our system are orthogonal to the error terms of the respective equations. We also report the results of the Hausman test; the results show that we cannot reject the null hypothesis of “the 3SLS results are consistent and efficient while the 2SLS results are also consistent but inefficient”. Hence, under the assumption that at least one of the equations of our system is correctly specified, the specification of the entire system cannot be rejected and the most efficient estimates are obtained by applying 3SLS.

1. **Conclusion**

Using a comprehensive RRD index, we explore the impact of firm-specific and governance characteristics on the RRD of banks in 11 emerging countries over the period 2009-2014. Based on the results presented in this study the following conclusions can be made. First, Islamic banks disclose less risk than do non-Islamic banks. This finding reflects the inherently conservative nature of the principles that guide Islamic banks to provide financial products that serve the interests of society more broadly than do conventional banks that are more likely to be oriented to the pursuit of profit maximization. Second, banks that are publicly visible tend to enhance their legitimacy through increased RRD. Third, banks that operate in the context of better quality corporate governance (presence of independent and foreign members on board; less concentrated ownership; small board size) appear to disclose more risk than do their counterparts. These findings are consistent with agency theory and legitimacy theory arguments that assert that information asymmetry will diminish in concert with social pressure and shareholders’ ability to impose monitoring on top managers as a function of having access to a higher quality of relevant information.

Our results offer important implications for theory and practice. First, to the best of our knowledge, this is the first study that explores RRD of banks in post financial crisis context within economically and culturally mixed countries. This focus is significant in that it compares the risk-disclosing practices of conventional and Islamic banks which differ in their risk appetite and the principles they apply to generate profit. At the same time, our sample of banks operate in an environment that is often considered to be highly secretive. Second, even though our study does not directly assess banks’ risk profile, it asserts that Islamic banks are more likely to be risk-averse than are their non-Islamic peers suggesting a worthy grass for future research. Lastly, our results show that high public visibility and better governance characteristics have a strong effect on the extent to which information asymmetry may be decreased in the context of banks operating in countries that struggle to emerge after the recent financial crisis and to continue their integration into the global financial system.

Although this research is one of the pioneering studies that investigate the determinants of RRD in conventional and Islamic banks, it still suffers from some caveats. First, we scored the annual reports (subjectively) manually. Second, since corporate governance definition of best practices is still ambiguous and unresolved (Brickley & Zimmerman, 2010), the internal governance attributes, which departs from the commonly used measure in the literature, might suffer from measurement bias. Finally, cross-country differences in risk reporting informativeness within emerging markets are uncovered by this research. Future research may fill this gap and empirically studying country-level governance factors that explain these differences.

Despite the aforementioned limitations, our research findings are also expected to provide regulatory bodies with useful information about factors that influences the perceived relevance of risk disclosure. Our results show that better quality corporate governance has a direct impact on the extent to which agency problems may be reduced. Regulators should continue their efforts toward the implementation of emerging international standards of corporate governance. Moreover, in order to promote transparency and disclosure, regulators have to improve corporate governance mechanisms in the banking system through the optimisation of ownership structure (dispersed ownership) and the characteristics of the board (board size, board composition and independence).

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**APPENDIX**

**Table 2: Descriptive statistics of the RRD Index by country**.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   |   | **Mean** | **SD** | **Min** | **Max** | **Numb of observed banks** |
| **Aggregate RRD Index** | Islamic banks | 366.1 | 153.6 | 117.0 | 731.0 | 71 |
| non-Islamic banks | 414.7 | 246.6 | 3.0 | 1296.0 | 93 |
|  **Qatar** | Islamic banks | 239.8 | 96.9 | 148.0 | 402.0 | 4 |
| non-Islamic banks | 367.5 | 188.4 | 2.0 | 620.0 | 7 |
| **Bahrain** | Islamic banks | 365.0 | 148.0 | 7.0 | 657.0 | 23 |
| non-Islamic banks | 398.0 | 175.0 | 3.0 | 812.0 | 12 |
| **Egypt** | Islamic banks | 167.8 | 143.4 | 13.0 | 327.0 | 2 |
| non-Islamic banks | 203.9 | 174.3 | 41.0 | 398.0 | 8 |
| **Jordan** | Islamic banks | 257.6 | 42.6 | 182.0 | 318.0 | 2 |
| non-Islamic banks | 367.0 | 199.7 | 75.0 | 860.0 | 7 |
| **Kuwait**  | Islamic banks | 414.6 | 129.0 | 98.0 | 654.0 | 5 |
| non-Islamic banks | 428.4 | 166.4 | 398.0 | 562.0 | 5 |
| **Malaysia** | Islamic banks | 617.4 | 311.1 | 17.0 | 1684.0 | 15 |
| non-Islamic banks | 538.6 | 297.5 | 153.0 | 1296.0 | 17 |
| **Pakistan** | Islamic banks | 448.7 | 163.8 | 292.0 | 680.0 | 2 |
| non-Islamic banks | 370.8 | 135.4 | 242.0 | 562.0 | 6 |
| **Saudi Arabia** | Islamic banks | 419.7 | 152.7 | 66.0 | 656.0 | 6 |
| non-Islamic banks | 414.2 | 183.6 | 118.0 | 633.0 | 5 |
| **Tunisia** | Islamic banks | 20.0 | 15.2 | 1.0 | 42.0 | 2 |
| non-Islamic banks | 69.2 | 56.2 | 40.0 | 222.0 | 9 |
| **Turkey** | Islamic banks | 662.3 | 317.1 | 234.0 | 1284.0 | 4 |
| non-Islamic banks | 526.6 | 166.5 | 345.0 | 795.0 | 7 |
| **United Arab Emirates (UAE)** | Islamic banks | 414.5 | 169.6 | 230.0 | 1345.0 | 10 |
| non-Islamic banks | 613.1 | 186.3 | 134.0 | 1227.0 | 10 |

|  |
| --- |
| **Table 3: Weighted average RRD Index by dimension during 2009-2014** |
|   |   | **D1** | **D2** | **D3** | **D4** | **D5** | **D6** | **D7** | **D8** |
| **Aggregate RRD Index** | Islamic banks | 25.29 | 182.59 | 9.76 | 82.06 | 20.38 | 0.86 | 73.48 | 14.57 |
| non-Islamic banks | 45.85 | 166.65 | 40.86 | 46.84 | 9.68 | 9.08 | 69.98 | 15.52 |
|  **Qatar** | Islamic banks | 3.38 | 93.75 | 1.94 | 60.13 | 6.75 | 0.00 | 45.81 | 12.94 |
| non-Islamic banks | 15.51 | 141.60 | 38.00 | 50.89 | 16.66 | 5.26 | 78.40 | 21.14 |
| **Bahrain** | Islamic banks | 23.70 | 153.60 | 8.98 | 72.03 | 8.80 | 0.18 | 70.73 | 15.06 |
| non-Islamic banks | 40.53 | 151.23 | 42.92 | 49.28 | 9.11 | 14.51 | 72.26 | 14.28 |
| **Egypt** | Islamic banks | 10.37 | 52.40 | 5.88 | 26.42 | 6.95 | 4.65 | 32.00 | 1.82 |
| non-Islamic banks | 12.77 | 64.51 | 7.24 | 32.52 | 8.56 | 5.72 | 39.40 | 2.24 |
| **Jordan** | Islamic banks | 7.17 | 84.58 | 7.67 | 91.92 | 9.58 | 0.00 | 29.42 | 13.92 |
| non-Islamic banks | 38.23 | 139.06 | 37.20 | 51.31 | 7.89 | 16.54 | 62.91 | 13.86 |
| **Kuwait**  | Islamic banks | 22.88 | 182.28 | 6.44 | 95.76 | 8.48 | 0.20 | 77.48 | 13.64 |
| non-Islamic banks | 47.56 | 199.92 | 29.12 | 43.40 | 6.64 | 10.96 | 77.36 | 13.44 |
| **Malaysia** | Islamic banks | 21.93 | 271.41 | 16.23 | 124.54 | 29.21 | 0.00 | 122.75 | 10.25 |
| non-Islamic banks | 72.70 | 227.90 | 66.17 | 54.35 | 11.08 | 5.35 | 90.80 | 10.23 |
| **Pakistan** | Islamic banks | 67.71 | 182.67 | 28.04 | 27.68 | 5.05 | 0.80 | 90.92 | 14.67 |
| non-Islamic banks | 60.13 | 162.23 | 24.90 | 24.58 | 4.48 | 0.71 | 80.74 | 13.03 |
| **Saudi Arabia** | Islamic banks | 11.74 | 224.85 | 7.65 | 96.50 | 16.50 | 1.62 | 45.41 | 14.38 |
| non-Islamic banks | 42.92 | 165.32 | 36.56 | 68.84 | 6.16 | 11.72 | 63.44 | 19.24 |
| **Tunisia** | Islamic banks | 0.50 | 0.00 | 0.00 | 0.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| non-Islamic banks | 10.20 | 9.89 | 23.76 | 0.00 | 5.42 | 0.00 | 9.22 | 8.93 |
| **Turkey**  | Islamic banks | 34.50 | 305.71 | 2.93 | 92.14 | 87.50 | 1.14 | 108.93 | 29.43 |
| non-Islamic banks | 54.63 | 247.17 | 54.29 | 52.51 | 12.97 | 16.91 | 52.06 | 36.06 |
| **United Arab Emirates (UAE)** | Islamic banks | 74.37 | 457.19 | 21.56 | 215.59 | 44.04 | 0.83 | 184.83 | 34.14 |
| non-Islamic banks | 75.35 | 264.63 | 41.12 | 75.69 | 13.08 | 13.61 | 107.41 | 22.18 |

**Table 4: Descriptive statistics.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | **ALL SAMPLE** |  | **ISLAMIC BANKS** |  | **CONVENTIONAL BANKS** |
|   | **MEAN** | **MEDIAN** | **Std.Dev** | **MIN** | **MAX** |  | **MEAN** | **MEDIAN** | **Std.Dev** | **MIN** | **MAX** |  | **MEAN** | **MEDIAN** | **Std.Dev** | **MIN** | **MAX** |
| **RRD** | 431.99 | 401.00 | 235.13 | 1.00 | 1684.00 |   | 420.80 | 398.50 | 242.38 | 1.00 | 1684.00 |   | 439.94 | 413.00 | 229.80 | 2.00 | 1296.00 |
| **ROA (%)** | 0.02 | 0.01 | 0.04 | -0.15 | 0.52 |   | 0.02 | 0.01 | 0.06 | -0.15 | 0.52 |   | 0.02 | 0.02 | 0.02 | -0.04 | 0.16 |
| **LIST** | 0.54 | 1.00 | 0.50 | 0.00 | 1.00 |   | 0.46 | 0.00 | 0.50 | 0.00 | 1.00 |   | 0.60 | 1.00 | 0.49 | 0.00 | 1.00 |
| **BKAGE** | 31 | 30 | 25 | 1 | 150 |   | 18 | 12 | 16 | 1 | 61 |   | 41 | 36 | 27 | 1 | 150 |
| **LEVERAGE** | 0.64 | 0.66 | 0.20 | 0.00 | 1.42 |   | 0.64 | 0.67 | 0.23 | 0.00 | 1.42 |   | 0.63 | 0.65 | 0.17 | 0.21 | 0.93 |
| **COUTRANSDEX** | 7.09 | 8.00 | 2.32 | 4.00 | 10.00 |   | 7.50 | 8.00 | 2.16 | 4.00 | 10.00 |   | 6.78 | 6.00 | 2.39 | 4.00 | 10.00 |
| **BLOCK** | 2.54 | 2.00 | 1.76 | 0.00 | 7.00 |   | 2.25 | 1.00 | 1.64 | 0.00 | 7.00 |   | 2.86 | 2.50 | 1.81 | 1.00 | 7.00 |
| **FOREIGN** | 0.38 | 0.15 | 0.42 | 0.00 | 1.00 |   | 0.49 | 0.49 | 0.46 | 0.00 | 1.00 |   | 0.26 | 0.10 | 0.34 | 0.00 | 1.00 |
| **BDSIZE** | 9.28 | 9.00 | 2.09 | 5.00 | 17.00 |   | 8.90 | 9.00 | 1.99 | 5.00 | 13.00 |   | 9.71 | 10.00 | 2.12 | 5.00 | 17.00 |
| **BDIND** | 0.56 | 0.55 | 0.24 | 0.11 | 1.00 |   | 0.64 | 0.63 | 0.25 | 0.15 | 1.00 |   | 0.46 | 0.42 | 0.20 | 0.11 | 0.91 |
| **BDFOREIGN** | 0.31 | 0.20 | 0.33 | 0.00 | 1.00 |   | 0.41 | 0.36 | 0.37 | 0.00 | 1.00 |   | 0.21 | 0.14 | 0.24 | 0.00 | 1.00 |
| **TIER1** | 3.03 | 0.17 | 10.73 | 0.02 | 83.00 |   | 4.57 | 0.19 | 13.98 | 0.09 | 83.00 |   | 1.20 | 0.16 | 3.71 | 0.02 | 23.29 |

**Table 5: Correlation matrix.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | RRD | ROA | LIST | BANKSIZE | BKAGE | LEVERAGE | COUTRANSDEX | BLOCK | FOREIGN | BDSIZE | BDIND | BDFOREIGN | GDP GROWTH | TIER1 |
| RRD | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |
| ROA | -0.049 | 1 |   |   |   |   |   |   |   |   |   |   |   |   |
| LIST | 0.02 | 0.048 | 1 |   |   |   |   |   |   |   |   |   |   |   |
| BANKSIZE | **-0.080\*** | -0.014 | **-0.076\*** | 1 |   |   |   |   |   |   |   |   |   |   |
| BKAGE | **0.110\*\*\*** | 0.018 | **0.085\*\*** | 0.016 | 1 |   |   |   |   |   |   |   |   |   |
| LEVERAGE | **0.098\*\*** | 0.055 | **0.278\*\*\*** | -0.069 | 0.003 | 1 |   |   |   |   |   |   |   |   |
| COUTRANSDEX | **0.349\*\*\*** | -0.03 | **-0.335\*\*\*** | **-0.081\*** | -0.024 | -0.067 | 1 |   |   |   |   |   |   |   |
| BLOCK | **-0.149\*\*\*** | -0.058 | **0.129\*\*\*** | 0.014 | **0.078\*** | -0.115 | **-0.176\*\*\*** | 1 |   |   |   |   |   |   |
| FOREIGN | 0.039 | 0.036 | **-0.549\*\*\*** | 0.062 | **-0.365\*\*\*** | **-0.265\*\*\*** | **0.381\*\*\*** | **-0.245\*\*\*** | 1 |   |   |   |   |   |
| BDSIZE | -**0.212\*\*\*** | 0.027 | -0.007 | 0.059 | **0.164\*\*\*** | -0.065 | -0.049 | **0.231\*\*\*** | **0.104\*\*\*** | 1 |   |   |   |   |
| BDIND | 0.006 | **0.066\*** | **-0.094\*\*** | **-0.107\*\*** | **-0.161\*\*** | **-0.109\*\*** | 0.037 | **-0.169\*\*\*** | **-0.009\*** | **-0.275\*\*\*** | 1 |   |   |   |
| BDFOREIGN | -0.019 | 0.038 | **-0.409\*\*\*** | 0.005 | **-0.364\*\*\*** | **-0.290\*\*\*** | **0.315\*\*\*** | **-0.133\*\*\*** | **0.085\*\*\*** | **0.111\*\*** | 0.002 | 1 |   |   |
| GDP  | 0.039 | 0.041 | 0.027 | -0.016 | -0.05 | 0.035 | **0.137\*\*\*** | -0.078 | -0.069 | -0.013 | **-0.008\*** | **0.037\*\*** | 1 |   |
| TIER1 | 0.017 | 0.025 | **-0.167\*\*\*** | -0.62 | 0.003 | **-0.267\*\*\*** | 0.073 | **0.195\*\*\*** | **0.220\*\*\*** | **0.012\*\*\*** | -0.017 | -0.051 | 0.051 | 1 |

\*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% level.

**Table 6: Determinants of RRD.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **PANEL A: POOLED SAMPLE** |  | **PANEL B: ISLAMIC BANKS** | **PANEL C: CONVENTIONAL BANKS** |
|  | Coef | T-stat | P-value |  | Coef | T-stat | P-value |  | Coef | T-stat | P-value |
|  |  |  |  |  |  |  |  |  |  |  |  |
| ROA | -254.92 | -0.61 | 0.54 |  | -21.90 | -0.50 | 0.62 |  | -54.10 | -0.56 | 0.57 |
| LIST | **57.49** | **2.14** | **0.033\*\*** |  | 4.10 | 1.20 | 0.23 |  | **92.60** | **2.44** | **0.04\*\*** |
| BANKSIZE | **27.78** | **7.47** | **0.00\*\*\*** |  | **4.50** | **2.83** | **0.01\*\*\*** |  | **18.35** | **3.73** | **0.00\*\*\*** |
| BKAGE | **0.916** | **1.76** | **0.08\*** |  | **0.57** | **5.03** | **0.00\*\*\*** |  | -0.03 | -0.05 | 0.96 |
| LEVERAGE | 83.99 | 1.34 | 0.182 |  | **-23.00** | **-2.75** | **0.01\*\*\*** |  | **368.86** | **3.63** | **0.00\*\*\*** |
| COUTRANSDEX | **14.857** | **3.1** | **0.002\*\*\*** |  | **4.15** | **5.58** | **0.00\*\*\*** |  | -4.66 | 0.82 | 0.41 |
| BLOCK | -5.25 | -0.85 | 0.396 |  | -3.77 | 0.39 | 0.70 |  | **-13.92** | **-1.87** | **0.06\*** |
| FOREIGN | 8.269 | 0.20 | 0.84 |  | **-10.90** | **-1.94** | **0.05\*** |  | 66.47 | 1.10 | 0.27 |
| BDSIZE | **-33.023** | **-6.00** | **0.00\*\*\*** |  | -3.05 | -0.32 | 0.75 |  | **-18.41** | **-2.57** | **0.01\*\*\*** |
| BDIND | **80.067** | **1.74** | **0.084\*** |  | **26.02** | **3.43** | **0.00\*\*\*** |  | 44.50 | 0.59 | 0.56 |
| BDFOREIGN | **110.45** | **2.27** | **0.024\*\*** |  | **35.50** | **4.42** | **0.00\*\*\*** |  | -48.68 | -0.66 | 0.51 |
| GDP  | **-597.09** | **-2.56** | **0.011\*\*** |  | -19.10 | 1.32 | 0.19 |  | **-818.00** | **-3.29** | **0.00\*\*\*** |
| TIER 1 | **-29.301** | **-2.95** | **0.003\*\*\*** |  | **-55.40** | **3.38** | **0.00\*\*\*** |  | **-19.97** | **-1.99** | **0.05\*\*** |
| LAW |  |  |  |  |  |  |  |  |  |  |  |
| ISLAMIC | **-45.403** | **-1.89** | **0.059\*** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Number of observation | **798** |  |  |  |  |  |  |  |  |  |
| R2 |  | 87.42% |  |  |  | 87.28% |  |  |  | 91.36% |  |

\*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% level.

**Table 7: RRD dimensions and financial performance of Islamic banks.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | **D1** | **D2** | **D3** | **D4** | **D5** | **D6** | **D7** | **D8** |
| ROA | -7.801 | -104.66 | -22.307 | 11.803 | -22.72 | -9.263 | -113.88 | 21.81 |
|   | (-0.13) | (-0.49) | (-0.44) | (0.14) | (-0.54) | (-0.57) | (-1.12) | (0.77) |
| LIST | **13.856\*\*\*** | **32.48\*\*\*** | **-7.441\*\*\*** | 0.913 | **8.32\*\*\*** | 1.14 | 3.84 | 8.14 |
|   | **(93.46)** | **(2.35)** | **(2.25)** | (0.16) | **(3.05)** | (1.09) | (0.58) | (4.45) |
| BANKSIZE | **2.14\*\*\*** | **10.24\*\*\*** | **1.92\*\*\*** | **5.85\*\*\*** | 0.124 | **0.554\*\*\*** | **5.18\*\*\*** | **0.45\*** |
|   | **(3.87)** | **(5.36)** | **(4.21)** | **(7.59)** | (0.33) | **(3.8)** | **(5.69)** | **(1.79)** |
| BKAGE | 0.027 | 0.39 | **0.15\*\*\*** | -0.046 | 0.039 | **0.056\*\*\*** | -0.013 | **0.08\*\*** |
|   | (0.35) | (1.48) | **(2.36)** | (-0.44) | (0.75) | **(2.77)** | (-0.11) | **(2.28)** |
| LEVERAGE | 13.89 | 19.625 | **24.48\*\*\*** | -18.08 | **12.31\*** | **6.44\*\*\*** | 16.74 | **7.19\*** |
|   | (1.5) | (1.55) | **(3.19)** | (-1.4) | **(1.91)** | **(2.63)** | (1.1) | **(1.7)** |
| COUTRANSDEX | **2.93\*\*\*** | **9.415\*\*\*** | 0.789 | 0.368 | **1.147\*\*** | **-0.478\*\*\*** | **2.15\*** | 0.033 |
|   | **(4.13)** | **(3.83)** | (1.34) | (0.37) | **(2.36)** | **(-2.55)** | **(1.83)** | (0.1) |
| BLOCK | 0.324 | -3.93 | **1.28\*** | 0.178 | **-1.17\*** | **0.956\*\*\*** | 0.63 | 0.33 |
|   | (0.35) | (-1.24) | **(1.69)** | (0.12) | **(-1.88)** | **(3.94)** | (0.42) | (0.79) |
| FOREIGN | 4.874 | -15.57 | **-9.369\*** | **35.04\*\*\*** | **11.66\*\*\*** | -1.68 | -9.93 | 1.601 |
|   | (0.8) | (0.74) | **(-1.85)** | **(4.44)** | **(2.8)** | (-1.05) | (-0.99) | (0.57) |
| BDSIZE | **-3.534\*\*\*** | **-11.76\*\*\*** | **-2.92\*\*\*** | **-5.76\*\*\*** | -0.84 | -0.823 | **-7.92\*\*\*** | -0.554 |
|   | **(4.31)** | **(4.15)** | **(-4.32)** | **(-5.04)** | (1.51) | (-0.381) | **(-5.86)** | (-0.48) |
| BDIND | 3.345 | **-60.165\*\*** | **9.369\*** | **-18.69\*** | **-12.57\*\*** | -2.51 | 7.62 | -3.79 |
|   | (0.49) | **(-2.54)** | **(1.65)** | **(-1.95)** | **(2.68)** | (-1.39) | (0.67) | (-1.21) |
| BDFOREIGN | **12.538\*** | **40.52\*** | **11.605\*** | **-17.68\*** | -2.81 | **8.51\*\*\*** | **39.55\*\*\*** | **6.69\*\*** |
|   | **(1.73)** | **(1.61)** | **(1.88)** | **(-1.75)** | (0.57) | **(4.44)** | **(3.31)** | **(2.02)** |
| GDP  | **-172.62\*\*\*** | **-373.03\*\*\*** | **-45.707\*** | **-54.65\*\*\*** | -4.94 | **-20.29\*\*** | -21.54 | -6.74 |
|   | **(-5.03)** | **(-3.14)** | **(-1.61)** | **(-10.14)** | (-0.21) | **(-2.24)** | (-0.38) | (-0.43) |
| TIER 1 | **-2.97\*\*** | **-9.29\*** | **-4.749\*\*\*** | **-3.913\*** | 1.62 | -0.1006 | **-4.09\*** | **-1.22\*** |
|   | **(-2.02)** | **(-1.82)** | **(-3.89)** | **(-1.9)** | (1.61) | (-0.26) | **(-1.68)** | **(-1.81)** |
| ISLAMIC | **-35.703\*\*\*** | 1.005 | **-30.41\*\*\*** | **23.32** | **7.35** | **-7.91\*\*\*** | -6.22 | -1.86 |
|   | **(-10.01)** | (0.08) | **(-10.3)** | **(4.69)** | **(3.02)** | **(-8.4)** | (-1.06) | (-1.13) |
|   |   |   |   |   |   |   |   |   |
| Number of observations | 798 | 798 | 798 | 798 | 798 | 798 | 798 | 798 |
| R2 | 0.7119 | 0.8255 | 0.6662 | 0.8122 | 0.4262 | 0.5579 | 0.7743 | 0.6904 |

 \*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% level.

Table 8: 3SLS estimation results for RD

|  |  |  |  |
| --- | --- | --- | --- |
|  | **PANEL A: RRD equation** |  | **PANEL B: Performance equation** |
|  | Coef | T-stat | P-value |  | Coef | T-stat | P-value |
|  |  |  |  |  |  |  |  |
| ∆ ROA | **-2.49** | **1.69** | **0.07\*\*\*** |  |  |  |  |
| RRD |  |  |  |  | 0.006 | 0.97 | 0.512 |
| LIST | **55.91** | **2.12** | **0.34\*\*** |  | **0.07** | **2.04** | **0.04\*\*** |
| BANKSIZE | **33.92** | **3.70** | **0.00\*\*\*** |  | **-0.003** | **1.98** | **0.049\*\*** |
| BKAGE | **0.877** | **1.71** | **0.08\*** |  | **0.008** | **1027** | **0.203** |
| LEVERAGE | 85.11 | 1.39 | 0.166 |  | **0.026** | **3.19** | **0.001\*\*\*** |
| COUTRANSDEX | **15.204** | **3.23** | **0.001\*\*\*** |  | **-0.07** | **1.11** | **0.268** |
| BLOCK | -3.31 | 0.50 | 0.616 |  | **-0.002** | **2.205** | **0.025\*\*\*** |
| FOREIGN | 13.01 | 0.32 | 0.784 |  | 0.003 | 0.67 | 0.506 |
| BDSIZE | **-33.199** | **-6.15** | **0.00\*\*\*** |  | 0.006 | 0.97 | 0.330 |
| BDIND | **-75.69** | **1.66** | **0.097\*\*\*** |  | 0.006 | 0.97 | 0.330 |
| BDFOREIGN | **112.85** | **2.36** | **0.01\*\*\*** |  | **0.01** | **1.92** | **0.05\*\*** |
| GDP  | **-583.063** | **-2.55** | **0.01\*\*\*** |  | **0.056** | **1082** | **0.07\*\*** |
| TIER 1 | **-29.36** | **3.02** | **0.003\*\*\*** |  | **0.003** | **1093** | **0.05\*\*** |
| ISLAMIC | **-40.53** | **1.66** | **0.096\*\*\*** |  | -0.003 | 1.08 | 0.28 |
| Cons | -152.79 | 0.73 | 0.466 |  | 0.04 | 1.40 | 0.162 |
|  |  |  |  |  |  |  |
| R2 | 0.4512 |  |  |  | 0.293 |  |  |
| Chi-sq | 116.73\*\*\*\* |  |  |  | 123.25\*\*\* |  |  |
| Sargan test (P.value) | 0.175 |  |  |  | 0.023 |  |  |
|  |  |  |  |  |  |  |  |
| 2SLS vs 3SLS (p.value) |  |  |  |  |  |  |  |
| Breusch-Bagan test of independence (p.value)  | 0.02 |  |  |  |  |  |  |

\*, \*\*, and \*\*\* indicate significance at 10%, 5%, and 1% level.

**Risk disclosure index**

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1. The main advantage of 3SLS estimation techniques is that the model allows, not only for simultaneity among the ED and FP, but also for correlations among the error components. Therefore, it is believed that 3SLS estimators can be more efficient than two-stage least square (2SLS) estimators. [↑](#footnote-ref-1)
2. We test for the serial correlation in residuals using both the Breusch–Godfrey–Lagrange Multiplier and Durbin–Watson tests. The results of the two tests show that the residuals are not serially correlated. [↑](#footnote-ref-2)