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The Impact of Corporate Governance on Credit Risk in Islamic Banks among Gulf Countries: A Case Study

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Abstract. This article aims to determine the relationship between factors of governance and the level of risk in 27 Islamic Golf banks in cooperation with countries (Saudi Arabia, Oman, Kuwait, Bahrain, the United Arab Emirates and Qatar) from 2008-2015. The important empirical question is: do internal mechanisms of governance, e.g., the formation of a board, contribute to the reduction of financial risks, such as credit risks, by Islamic banks specifically located in Gulf countries?

The estimates in this paper are produced by a single-equation model that connects the variables related to governance with credit risk as it impacts the banks' finances. In the first phase of the analysis, our empirical approach tests the impact of each exogenous variable studied on the reduction of bank credit risk in Islamic banks. We also undertake a second phase of multivariate analysis in which the controlled simultaneous effect of all the variables on the endogenous variable is studied.

Results show that internal governance mechanisms regulated by a board have diverging effects on the financial risk of Islamic banks in selected examples, particularly on credit risk.

Keywords: Corporate governance; Board of directors; Credit risk; Islamic banks; Sharia law; Golf cooperation countries.

1. Introduction

Financial liberalization is one of the key components of the global economy, and it has resulted in more frequent financial crises and increased financial instability in the banking industry, as well as the emergence of financial risks. This has stimulated an interest in the establishment of banking governance mechanisms to reduce the problem of banking risk. In the banking sector, the problem of governance is more complicated than it is in other sectors, since banks occupy an important role and form a main component of any national economy. Currently, science and Sharia are an area of study for economists. Islamic banks confront the same risks as other banks do in the classical banking sector. However, Islamic banks must also respect Islamic religious principles and the ethical and moral recommendations provided by Sharia law.

This study addresses the crucial role of Islamic banks in the economic development of all countries. New terms of Sharia adopted by banks draw attention to the Islamic banking sector. Deregulation, rapid changes caused by globalization, and technological advances increase the risks linked to banking systems. Sometimes, during bankruptcy, a bank has a systematic impact on the stability of other banks. Indeed, bank governance does require public interest, but first, we must integrate the rules of governance in the conventional banking sector into Islamic banking.

In light of this, we focused on the following issue: what are the factors that can reduce credit risk in Islamic banks in Golf Cooperation Countries (GCC)? More specifically, our research was intended to identify the impact of the boards of Islamic banks on credit risk in GCC countries.

To answer this question, our study determined the effectiveness of the internal mechanism of governance, namely, the board of directors, in the control and reduction of excess credit risks. As important characteristics of this mechanism, we considered the size of the board, which serves as a proxy for the roles of general directors and the chairman of the board for boards with institutional and foreign directors, as well as the presence of a Sharia Supervisory Board (SSB).

2. The Governance of Islamic Banks

2. 1. The concept of governance in Islamic banks

Any interruption of the banking system’s intermediation process can have a catastrophic effect on the economy. For this reason, stakeholders in the financial sector have great interest in the governance of the financial system. The main factor responsible for some banking crises in several countries is poor governance (Morck, 2004; Murphy, 2004).

Corporate governance in traditional banking markets was examined in detail for this study. However, as Yunis (2007) notes, "very limited data is available on the corporate governance from the Islamic point of view particularly sector governance structures of Islamic finance, despite its rapid growth since the mid-1970s and their increasing presence in global financial markets".

The structure of corporate governance is different in the Islamic financial services sector compared to the traditional banking sector. According to the standards of Sharia, an Islamic financial institution (IFI) is required to appoint a committee of Islamic scholars called a "Sharia Supervisory Council (SSC)" or a "Sharia Supervisory Board (SSB)". An SSB is a collegiate body (Fuqaha, specialists in Islamic jurisprudence) that issues legal opinions, referred to as Fatwas that relate to the legitimacy of operations and products offered by the bank and verifies that these opinions are implemented. This advice is independent of a board of directors, and SSB members are allowed to attend board meetings to discuss the religious aspects of their decisions (Accounting and Auditing Organizations for Islamic Financial Institutions [AAOIFI], 2005). To have accredited legitimacy, Islamic banks must establish a stringent system of governance. Therefore, from an Islamic point of view, good governance allows a bank to promote itself as compatible with Sharia law.

2. 2. The internal governance mechanisms in Islamic banks

2. 2. 1. The board of directors (BD)

The board of directors reduces the consequences of conflicts of interest (Fama 1983). The goal of the leader is to maintain good management to achieve higher profitability and a better reputation in the financial market. Shleifer and Vishny (1997) also consider rooting strategies adopted by the executive to ensure that he becomes irreplaceable in the organization.

The board of directors delegates tasks and responsibilities to management to run the company. They monitor succession planning for positions held by directors and approve their remuneration.

Rather than focusing on risk management, capital management and internal control, the board examines compliance with guiding principles and capital management methods. Thus, the board ensures that managers apply the rules and standards for the banking sector and guides leaders to develop strategies and control procedures to reduce banking risks, including financial, operational, legal and strategic risks. In addition, the communication of financial results between the board of directors, shareholders and SSB is required.

The effectiveness of the board, as well as the fundamental role of the SSB, is important in Islamic banks. Governance in accordance with Sharia is particularly exclusive and unique in the Islamic system of financial management, and there is little data available on corporate governance in international financial institutions (Zulkifli Hasan, 2011).

2. 2. 2. The committee of Sharia:

a. The composition of the Sharia Committee:

The Sharia Committee consists of at least three departments, such as a secretariat, a control department and an information department, which work together to achieve the same goal (Hasan and Dridi 2010). The committee appoints an executive council (composed of some members) to periodically review

transactions. These committee members are usually highly competent, well-known people to ensure credibility in the eyes of the various "stakeholders".

Consultation and organization procedures of the SSB with regard to the statutes of Islamic banking, as well as the rules for its decision-making and the transcription of its decisions should be clearly and precisely defined. Prior to any meeting, the SSB is expected to provide the leaders of the Islamic bank with all this information.

Today, thanks to better control of banking and financial techniques, SSBs are no longer limited to their subject of expertise alone; they contribute to the design of new banking solutions in compliance with Sharia law (Kamla and Rammal, 2013).

b. The role of management in Islamic banks:

Leaders in Islamic banks have a different mission from their counterparts in conventional banks because they actually aim to resolve the requirements of a dual system of governance. Therefore, they will not pursue their own interests above the welfare of the bank. To accomplish this mission, leaders of Islamic banks must work with the SSB, which is not an easy role. They must, therefore, use all their expertise and their vigilance to operate a financially sound institution. A good leader of an Islamic bank should not be rigid. He must balance professional knowledge and Sharia law in practice, or his mission will soon lead to the destruction of the organization. Thus, the leader himself must be virtuous and ethical. He must possess, in addition to organizational and leadership qualities, those qualities that allow him to establish within the organization an ethical and cooperative culture.

2. 3. The specific risks of Islamic banks:

2. 3. 1. The credit risk

Credit risk emerge when a financial institution is expecting a payment that has been contractually agreed between the institution and the homologue and the obligors are unable to fulfill their obligations (Rivai and Arvyan, 2010).

According to McNeil et al (2005), credit risk is the change in portfolio due to unforeseen changes in the credit quality of the issuer or trading partner. According to Arunkumar and Kotreshwar (2005), credit risk represents about 70% of total risk, while the remaining 30% is shared by market and operational risk.

Credit risk management in Islamic banking is very difficult for the reason that the banks are forbidden to charge interest and penalties. Clients are delaying bank investments starched and banks don’t earn profit or any income.

In addition, Khan (2003) declared that credit risk is source instability in the banking system. Abedifar et al. (2012) has survey the risk and stability in Islamic banking for the period of 1999 to 2009. In terms of insolvency risk, the study showed that small Islamic banks have appeared to be more stable, and that the quality of Islamic bank loans is less sensitive to local interest rates than conventional banks.

2. 3. 2. The risk of unexpected withdrawals

Islamic finance is a kind of finance based on sharia law. The risk of Shariah in compliance can create a financial trouble and menace the activity of the Islamic bank (ie massive withdrawal). For this reason, Islamic banks have used an internal governance mechanism to ensure that all its activities and operations are Islamic.

Khan and Ahmed (2001) indicated that "the risk of withdrawal is also considered one of the risks that may affect Islamic banks, as depositors decide to withdraw their money due to a low rate of return compared to their competitors"

Also according to Obaidullah (2005) "the risk of withdrawal may allow the management vary sharing principles of profit and loss by paying yields of competitive markets to the holders of investment accounts, regardless of the performance achieved."

2. 3. 3. The trustee or reputation risk

The reputation risk is “the potential that adverse publicity regarding a bank's business practices and associations, whether accurate or not, will cause a loss of confidence in the integrity of the institution” (Ginena, 2014). The activities of banks implicate the public largely. Therefore, gaining and maintaining trust is critical to the success of banking (Leventis et al., 2013). Islamic banks in particular cannot afford to lose their credibility when it comes to abiding by sharī‘ah in their activities because such credibility is at the core of their business (Archer and Haron, 2007). The risk of reputation resulting from legal violations, or from hearsay regarding them, may lead to a loss of depositors and other stakeholders, affecting the market position, liquidity, and profitability of the bank (IFSB, 2005).

3. Review of Literature and Formulation of Hypotheses

3. 1. Impact of the characteristics of the board of bank risk

3. 1. 1. Impact of the size of the board of bank risk

Yermack (1996) found that smaller boards play a central role in the control function, since large boards have difficulty coordinating their efforts. Huther (1997) was interested in the effect of the size of the board has on efficiency of a firm. He noted that in American companies, an advantage in efficiency is gained when the board size is reduced. He based his conclusion on the observation that coordination problems in decision making are more widespread in larger groups. Dalton et al. (1999) argue that reducing the size of the board has become a priority in the investment community, especially for companies going through a difficult financial situation. In the same context, Rachdi and Ghazouani (2011) found a negative and statistically significant relationship between small size boards and credit risk in Tunisia, which is consistent with the work of Andres and Vallelado (2008) and Pathan (2009).

In addition, Wang (2012) noted a small change in the size of a Chinese board makes the estimated relationship between the size of the board and the risk much weaker. Trabelsi (2010) showed that the presence of a large number of members in the council has a very negative effect on the performance and credit risks Tunisian banks.

However, Tsorhe et al. (2011) reported that there is no significant difference between the strengths of bank boards in Ghana and that board strength does not have significant impact on capital risk, credit risk nor liquidity risk.

These mixed results demonstrate there is no consensus on the impact of the size of the board on its monitoring capability. Some argue that a larger size improves the board's ability to monitor. Others, on the contrary, claim that limiting the board to a small number of administrators strengthens board control and subsequently improves corporate financial performance.

Thus, the Size of the Board of Directors (SBD) does not have a clear impact on the control and reduction of excess risk. However, the more solid arguments suggest that the presence of a large BD has a negative effect on banking risk. Therefore, in this case study we hypothesize that a large BD with varied expertise could help to better assess the risk of investment projects, thus reducing bank risk. As a result, we posit the following hypothesis:

H1: The size of the board has a negative impact on bank credit risk.

3. 1. 2. The impact of the dual functions of CEO and chairman of the board on banking risk:

Another feature that may influence the effective control of the administrators on the board of directors is the blending of functions that govern organization. According to Salhi and Boujelbene (2012), the term duality means assigning the same person to two different positions, e.g., CEO and chairman of the board.

Krause and Semadeni (2013) found that the separation of the functions of CEO and chairman of the board improves the future performance of the business if the current yield is low because it serves to reduce the credit risk. Durgayanshi (2014) investigated the relationship between corporate governance and risk-taking. He provided results that indicated that the combination of the positions of chairman and executive manager for one person to fulfill has had a negative effect on bank risk.

However, other papers have found that the consolidation of roles has advantages. It avoids the possibility of poor communication between members in different roles and it offers more flexibility to seize opportunities. Proponents of the stewardship theory such as Cannella et al. (1993) conjectured that the combination of functions increases the financial performance of the company because the CEO has all the information to disclose to the board of directors.

Similarly, Weir et al. (2002) argued that a combined role can project a clear sense of direction and have a positive effect on financial performance.

We therefore put forth the following hypothesis:

H2: Duality has a positive impact on the risk of Islamic banks.

3. 1. 3. Impact of institutional directors on bank risk

Institutional investors (financial or otherwise) play an active role in bank governance. They represent shareholders or influential partners for the bank through their significant financial resources, enabling them to become active investors in control of managers (Agrawal and Mandelker, 1992; Whidbee, 1997). Thus, the presence of institutional administrators can influence the disciplinary power of the board. They tend to undertake the supervision of officers, (Agrawal and Knoeber 1996). The agency theory holds even assuming that institutional administrators and especially financiers have better access to information and greater expertise in performance analysis (Jensen, 1993). The study of the relationship between these

institutional administrators and bank risk-taking is also justified by the administrators' expertise.

Representatives of these directors to the board can influence the decisions of leaders to maximize the returns on their investments and thus improve the performance of the bank (Carleton, et al. 1998). They also have privileged access to information because of their many activities and the investments they make. This implies that institutional administrators possess better knowledge of the sector, a wealth of information on the environment and, therefore, a better appreciation of the performance of leaders (Paquerot and Alexander, 2000). Furthermore, Mamoghli and Dhouibi (2009) also argued that institutional investors have better expertise in the field of risk-taking that could encourage leaders to make a better selection of investment projects.

Based on the findings of Jensen (1993) and previous empirical results, we formulate the following hypothesis:

H3: The higher percentage of institutional administrator's increases, bank risk decreases.

3. 1. 4. The impact of external director on bank risk

Although internal directors are considered to be connoisseurs of the activity of the firm, most empirical studies advocate for the presence of outside directors on the board of administration. Agency theory suggests that outside directors play an important role in the surveillance of managers' performance. Jensen (1993) found that a significant percentage of outside directors on a board contributes to a significant reduction in the various banking risks (total risk, return on assets, idiosyncratic risk, systematic risk and the risk of insolvency). Independent administrators are the most important attribute of the board, allowing better control of management and limiting managerial discretion (Sengupta and Bhojraj, 2003). In the same framework, Claessens and Laven (2004) found that the introduction of outside directors in Islamic banks leads to improved competitiveness within local banking systems and subsequently less risk. Andres et al. (2005) noted that a high proportion of independent directors on the board should lead to better performance of the firm since these administrators can reduce conflicts of interest and ensure more cohesive management. Brown et al. (2011) posited that independent directors provide effective monitoring. Lin et al. (2010) agreed that the presence of foreigners on a board helps to maximize shareholder wealth and ensure the sustainability of the company because of their skills and experience.

Additionally, Adams and Mehran (2003) and Yermack (1996) concluded that the percentage of external directors has no effect on performance and the reduction of bank risk.

Based on these insights, we expect the following to be true:

H4: External directors on the board of directors have a negative impact on the banking risk.

3. 2. The impact of the presence of the directors of the Sharia Supervisory Board

The complexities associated with the administration of Sharia compliance represent an additional risk for Islamic banks. Moreover, the profit- and loss-sharing mode of financing does not require any collateral or guarantees, which can increase credit risk for Islamic financial institutions. Furthermore, lower leverage and higher solvency through reserved liquid assets can allow Islamic banks to meet stronger demand for credit and maintain a stable external rating (Hasan and Dridi 2010).

All Islamic financial institutions have a Shari'a committee, and conventional ones that offer Islamic products have a Shari'a supervisor, which is essentially a compliance committee to establish the validity of transactions and conditions and their conformity to the principles and rules of Sharia. The Sharia Supervisory Board (SSB) can be defined as a collegial body composed of lawyers employed by a public or private institution to ensure that transactions comply with the legal and ethical principles of Islam (Ould Sass, 2009). Furthermore, this committee is an independent body of lawyers specialized in Fiqh Al Mouamalat (Islamic Trade doctrine).

Therefore, the SSB ensures compliance to the standards of Sharia in international financial institutions. As a result, the Sharia Board has a major place in the structure of any Islamic financial institution, serving to increase performance and reduce the institution's financial risks.

Therefore, we identified the following hypothesis:

H5: The presence of a Sharia board has a negative impact on bank risk.

4. Empirical Validation in Gulf Countries

4. 1. Definitions and measures of study variables

This section is specifies the variables of the study and the selected measures, recalling that our model is defined as follows:

Credit risk = f (characteristics linked to the board, the members of the SSB and control variables).

4. 1. 1. Dependent variable

In our study, there is a single dependent variable which measures **credit risk.**

There are plenty of credit risk measures that are defined by various financial ratios. The ratio of outstanding doubtful credit to total credit (net) is a measure of the quality of the credit portfolio, since a high score in this ratio indicates the deterioration of banking activity, which implies a higher risk of default for the bank. Another ratio measure is the portion of the reserve for credit risk represented in the total credit. A large value of this ratio leads to anticipated losses on the credit portfolio.

Based on Goyeau et al. (1998) and given the structure of the accessible data bank, the ratio of loans to customer deposits as a measure of bank credit risk is interesting to us. On the other hand, Greuning and Bratanovic (2004) proposed to limit this variable to all established bank loans based on collected deposits.

$$RC = \frac{Credit\ customer}{client\ deposits} \quad (1)$$

4. 1. 2. The independent variables

4. 1. 2. 1. The variables related to the characteristics of the Board

a) The size of the board (SBD)

This variable measures the number of directors on the board of directors. It is used by Abbott et al. (2004) and Yermack (1997).

$$SBD = Total\ number\ of\ directors\ on\ the\ board \quad (2)$$

b) Duality of functions of general director and chairman of the board (DUAL):

According to Daily and Dalton (1994), O'Sullivan (2000) and Gul et al. (2004), the dual function of general director and chairman of the board is measured by a dummy variable that takes the value 1 when both positions are held by the same person and 0 otherwise.

DUAL = 1 if the two functions of general director and chairman are occupied by the same person.

= 0 otherwise.

c) Presence of institutional administrators (ADMIN)

The measurement of this variable is based on the presence of institutional directors on the board, it is measured by the ratio of the number of institutional directors to the total number of directors on the board. This variable measures the importance of monitoring and management. Institutional investors are more involved with the board of directors.

$$ADMIN = \frac{Number\ of\ institutional\ administrators}{Total\ number\ of\ directors} \quad (3)$$

d) Attendance of outside directors (ADMET)

As in the studies by Beasley and Petroni (2001), Carcello et al. (2002) and Marimuthu (2008), this variable measures the ratio of the number of foreign directors to the total number of directors.

$$ADMET = \frac{Number\ of\ foreign\ directors}{Total\ number\ of\ directors} \quad (4)$$

4. 1. 2. 2. Variable linked to the committee of Sharia (CSC)

The SSB is a binary variable that takes the value one (1) when the number of directors on the Sharia Committee is at or above three, which is the minimum number of directors of the committee, and zero otherwise.

This variable is measured by Godard (1998) and Ould Mohamed Bachir Sass (2009).

CSC = 1 if the number of directors equal to or greater in three
= 0 otherwise

4. 1. 2. 3. The control variables

a) The size of the bank: (SIZE)

The size of the bank, as a control variable, is always tested in empirical studies, and in most cases it has been validated. It is regarded as a control variable because economic of scales can affect bank risk. Bank size is represented through several measures. Both Beasly and Salterio (2001) and Firth and Rui (2006) measured bank size by using the logarithm of the enterprise market. In other studies, such as Menon and Wiliams (1994), Carcello et al. (2000), Godard (2001) and Fermandez and Arrondo (2005), this variable is measured by the logarithm of total assets.

We will adopt the second measure referred to above:

$$SIZE = Log\,(Total\ Assets) \tag{5}$$

b) Age of the bank (AGE):

According Belkhir (2007), the age of the bank is measured by the number of years from the founding of the bank until the year of analysis.

$$Age = number\ of\ years\ from\ creation\ to\ 2015 \tag{6}$$

4. 2. Presentation of the study model

Our approach employs a model to test the ability of the internal governance mechanisms within a board of directors to reduce credit risk in Islamic banks in GCC countries.

Our model takes the following form:

$$RC = \beta_0 + \beta_1 * SBD_{it} + \beta_2 * DUAL_{it} + \beta_3 * ADMIN_{it} + \beta_4 * ADMET_{it} + \beta_5 * CSC_{it} + \beta_6 * TAILLE_{it} + \beta_7 * AGE_{it} + \varepsilon_{it} \tag{7}$$

With:

i = 1 ... .27: The banks in GCC countries used in our study,

t = 1 ... .8: The period of our study (2008-2015).

RC: Credit Risk,

SBD: Size of the Board,

DUAL: Duality of the functions of CEO and chairman,

ADMIN: Presence of institutional administrators,

ADMET: Presence of foreign directors,

CSC: Number of directors on the SSB,

SIZE: Size of the bank,

AGE: Age of the bank,

ε_{it} : Error term related to the model equation.

4. 3. Analysis and discussion of the variables

4. 3. 1. Checking the applicable assumptions of linear regression

4.3.1.1. Modeling test for the presence of individual effects (See Appendix A)

The first step is to verify the presence of individual effects in our model. According to Appendix A and based on the Fisher statistic for this test, the prob> F = 0.000, which is less than 5%. Therefore, the F-statistic is significant at the 5% threshold, showing the presence of individual effects.

The second step is to model the presence of individual effects; in other words, to determine whether the individual effects are fixed or random effects. To do this, we employ the Hausman test, which allows us to choose between the fixed effect model and the random effects model.

According to Annexure A, the prob> chi2 is equal to 0.2301, which is greater than 5%. Therefore, we can say that the model is a random effects model, but to further prove this result, we resort to the Breusch-Pagan test for randomness. For this test, we obtained that the prob> chi2 is 0, which is significant at the 1% level, so our model is indeed a random effects model.

4.3.1.2. error autocorrelation test: Durbin Watson test (See Appendix

The Durbin Watson test statistic equals 1.7816888, which is very close to 2. This indicates the absence of errors due to autocorrelation problems.

4.3.1.3. Heteroscedasticity Test: Breush-Pagon test (See Appendix C)

We compare the results from the Breush-Pagon test and the heteroscedasticity test. According to appendix C, the prob> chi2 = 0.000, which is lower than 5%. Therefore, our module suffers from errors due to heteroscedasticity. To correct this problem, we then use generalized least-squares regression (GLS). After performing this regression and testing hypotheses again, we can conclude that the estimate by the generalized least squares method is the best estimate of our model, since it corrects for errors due to heteroscedasticity.

4.3.1.4. Multicollinearity Test (See Appendix D)

To verify the absence of multicollinearity between the independent variables, we calculated the Pearson correlation coefficients between the independent variable and we also calculated the "variance inflation factor" (VIF). The examination yielded a correlation of coefficients of content. Person in the Annex shows that no critical correlation can be raised to part of this picture. According to Kevin (1992), if a serious problem of collinearity between the independent variables is included in the regression model, we would find a correlation of r> 0.8. In addition, Appendix D shows that none of the estimated VIFs exceed 3. This leads us to conclude that there is an absence of multicollinearity problems in our model. We therefore estimate multivariate regressions of our model without concern for multicollinearity between the exogenous variables included.

4. 3. 2. Result of the univariate analysis

The Table below presents descriptive statistics to characterize the sample during the time period studied, as well as the Pearson correlation matrix, to show the correlation of the dependent variable with each explanatory variable.

Table 1 presents descriptive statistics for the variables used in the analysis. Part 1 of the table covers continuous variables; Part 2 covers dichotomous variables.

Table 1: Descriptive statistics

Part 1: Continuous Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
RC	224	1.00214	.5928341	.0274291	4.015152
SBD	224	10.80357	1.793557	7	16
DUAL	224	.125	.3314596	0	1
ADMIN	224	.3910653	.1776073	.1833333	.1943201
ADMET	224	.2515334	.186782	.0247819	.1185714
CSC	224	.9419643	.2343346	0	1
SIZE	224	8.87190	2.820007	1.606381	8.23008
AGE	223	16.63229	11.45572	1	41

Part 2: Descriptive statistics of the binary variable duality and CSC

	Modality	Frequency	Percentage
Function seperation	0	72	63.7%
Function Duality	1	41	36.3%
More or equal to 3	0	53	57%
Less than 3	1	40	43%

4. 3. 3. Multivariate analysis

To present and analyze the results from the regression applied to the sample, we used the statistical software STATA 8.0 to estimate the regression. We use a random-effects GLS method for the regression analyses. We apply this technique, developed by Baltagi and Wu (1999), for several reasons. First, OLS ignores the panel structure of the data (Gambin 2004). Second, a time-invariant parameter cannot be estimated with fixed-effect methods. Third, the CGI does not vary much over time, so fixed-effect estimation could be inappropriate (Wooldridge, 2002) and lead to a loss in degrees of freedom (Baltagi, 2005). Recent studies, such as Pathan (2009) and Mollah and Zaman (2015), also use the random-effects GLS technique in their studies.

Applying GLS regression for our whole sample gave the following results:

Table 2: Results of the estimation of GLS regression

Rc	Coef	Std. Err	z	p>|z|	[95% Conf Interval]
SBD	-.0939238	.0241514	-3.89	0.020	-1412596 -.1046588
DUAL	.1440228	.115105	1.24	0.014	-.0831575 .3712032
ADMIN	-.3197329	.2695094	-1.19	0.235	-.8479615 .2084958
ADMET	-.1630169	.3815574	0.43	0.669	-.5848218 .9108556
CSC	-.2793979	.3759569	-2.70	0.029	-1.01626 .4574641
SIZE	-1.523010	1.326209	0.12	0.019	-2.440809 2.741309
AGE	-.0073337	.0036748	-1.94	0.953	-.0145361 -.001313
CONST	2.255111	.4472757	5.04	0.000	1.378467 3.131755

4. 3. 4. Overall estimate of the model

Table 2 provides the estimates of our model obtained by using GLS regression after correcting for the problem of heteroscedasticity. The objective of testing the overall significance of the model is to assess the explanatory power of the model. It involves testing body assumptions: Fisher test.

The model is significant at the 5% level (prob> f = 0.000), according to the estimated results.

The independent variables used in this model do well to explain the phenomenon studied, namely, the level of credit risk.

We see from Table 2, first, that the variable for the size of the board has a negative impact that was statistically significant at a 5% threshold (p> z = 0.020) on the credit risk of Islamic banks in GCC countries. Therefore, Hypothesis 1 is confirmed for the dependent variable of credit risk. Further, larger boards tend to reduce the credit risk associated with Islamic banking in GCC countries. These results align with the results of Trabelsi (2010), which showed that the presence of a large number of members on the board has a negative effect on the performance and credit risk of Tunisian banks. Godard and Schatt (2004) showed that as the number of directors increases, the performance of the company increases and credit risk decreases. Moreover, Blanchard and Dionne (2003) indicated that the use of sophisticated instruments designed to insure against increased risk by increasing the number of board directors justifies the excessive risks taken by managers.

With regard to the duality variable, our empirical results show the coefficient of this variable is positive and statistically significant at the 5% threshold (p> z = 0.014). Thus, Hypothesis 2 is confirmed. These results are intended to confirm the theories of agency by Jensen and Meckling (1976), who note that the separation of decision management and control functions reduces agency costs and improves the performance of firms. Paquerot (1997) and Carapeto et al. (2005) both wrote that when the chairman of the board and the general manager hold the same position, the bank manager will benefit from a higher level of information from administrators, which can give him direct control over credit and the ability to use this credit to develop the bank's human capital, which will, in turn, increase its risk. Trabelsi (2010) confirmed that for the monitoring function to be effective, it is recommended that the director general does not also serve as president

Contrary to our expectations, but parallel to the results we obtained from estimating the effect of the size of the Board, institutional and external directors are linked to higher credit risk in the sample of Islamic banks in our study (p> z = 0.235) and (p> 0.669 = z). This result is inconsistent with Mamoghli and Dhouibi (2009), who argued that institutional investors have better expertise in the field of risk-taking, which can encourage leaders to make better investment selections. Additionally, this contradicts the theory of agency, which similarly assumes that institutional administrators and especially financiers have better access to information and greater expertise in performance analysis. In addition,

Jensen (1993) specified that the relationship between these institutional administrators and bank risk-taking is valid.

Thus, for foreign directors, this result does not meet the income test that Ben Khediri (2006) considered: a significant proportion of outside directors improves risk coverage for the institution. Brown et al. (2011) argued that the independence of directors is crucial for the board to serve as an effective monitoring mechanism.

However, by including the variable of SSB in Islamic banks in our sample, the empirical results show this variable to have a negative impact on credit risk that is statistically significant at the 5% threshold ($p > z = 0.029$). This is also explained by the large number of directors, which is greater than or equal to three. Thus, increasing the number of members of the SSB serves to reduce credit risk in Islamic banks operating in GCC countries. Our results corroborate the results of standards proposed by AAOIFI, which stipulate that an SSB must consist of a minimum of three members and should not include among its members a director of the institution or a shareholder who has significant influence.

In addition, the estimation results in table 2 focus on the impact of the size of Islamic banks, which is considered a control variable and is measured by the natural logarithm of total assets. This variable has a significant negative impact on bank credit risk ($p > z = 0.019$). Indeed, this result confirms the reputation of Islamic banks of larger sizes to be more effective at managing credit risk. This is consistent with the work of Aggarwal and Jacques (2001) on US banks, which also found a negative impact between the level of capital and risk banking. Murind and Yaseen (2004) on African banks finally Stressing that the results estimation of the second control variable which is the bank's age is not significant on the credit risk in Islamic banks in our sample ($p > z = 0.953$), this can be explained by the done that BI does not yet have the necessary experience to overcome its shortcomings. Indeed, compared with their conventional counterparts, BI beginners are on the market.

In conclusion, the credit risk in Islamic banks in GCC depends on several factors: the size of the board, duality of board member roles, the presence of institutional directors, the presence of outside (independent) directors, the presence of the SSB, the bank's size and the age of the bank.

$$RC = 2.26 - 0.094\,SBD + 0.144\,DUAL - 0.319\,ADMIN - 0.163\,ADMET - 0.279\,CSC - 1.523\,SIZE - 0.007\,AGE \quad (8)$$

(0.0) (0.020) (0.014) (0.235) (0.669) (0.019) (0.953)

Table 3: Summary of the empirical results

Variable	Hypothesis	Regression results	Sign planned	Sign observed
Size of the Board	H1	confirmed	(-)	(-) S
Duality of functions of CEO and chairman,	H2	confirmed	(+)	(+)
Presence of institutional administrators	H3	reserved	(-)	(+)
Presence of foreign directors	H4	reserved	(-)	(+) NS
Number of directors on the SSB	H5	confirmed	(-)	(-)
The size of the bank	Control variable	Significant variable of control		
Age of the bank	Control variable	Not significant variable of control		

5. Conclusion

To test the validity of our hypotheses on the efficiency and characteristics of the board in reducing excessive financial risks, i.e., credit risk, we developed a model based on these five hypotheses, focusing on the characteristics of board size, the duality of board member roles, the composition of the board, and the presence of an SSB. Our empirical validation demonstrates that the size of the board has a negative impact on the credit risk of Islamic banks in GCC countries. The characteristic of duality in our results showed a positive correlation with the level of risk. Similarly, the significant presence of the directors of the SSB has a negative influence on financial risk. Therefore, our results verified hypotheses H1, H2, H5. However, the hypothesis stating that the presence of institutional directors and external directors is beneficial in reducing the credit risk was not proven. Hence, the two hypotheses H3 and H4 were not proven. The control variable bank size in the selected sample had a negative impact on credit risk in Islamic banks, while the age of the bank showed positive effect on credit risk.

Our research is an attempt to reduce financial risk in financial institutions in GCC countries while supporting Sharia councils. This assessment is based on using GLS to estimate our model using a total sample of 27 Islamic banks in GCC countries studied during 2008-2015. The estimates produced from this method highlight the usefulness of certain mechanisms in reducing financial risks. In our study, our empirical findings characterize the impact an administrative council has on the credit risk of Islamic banks in GCC countries, but our findings differ from the predictions of theoretical literature and empirical data. Our results show the size of the board, the duality of leadership positions, the presence of an SSB and the bank's size are significant determinants of credit risk. In addition, our results show the presence of institutional and independent directors and the bank's age are not significant variables in determining the level of credit risk. We confirm that the governance model adopted in Islamic banks relies mainly on the characteristics of the banking systems of every country and that optimal governance differs between sectors (Gilson and Rose, 1993; Gertner and Kalpan, 1996).

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Appendix

Appendix A: Hausman test

1. Hausman fixed.

	---- Coefficients ----			
	(b) fixed	(B) .	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
tca	.0343383	.1198359	.0854976	.0015965
Dual	.0447412	.1099359	.0651947	.0554774
admin	.1387517	-.3362511	.1974994	.2179214
Admet	-.1687715	-.1949562	.3637277	.1548509
csc	.3699844	.3507817	.0192027	..050206
size	2.590710	1.430110	4.018510	2.140126
Age	-.1266793	-.015475	-.1112043	.0157961

Test: Ho: difference in coefficients not systematic
chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 37.28
Prob>chi2 = 0.2301

2. Breusch and Pagan Lagrangian multiplier test for random effects

rc[code,t] = Xb + u[code] + e[code,t]

Estimated results:

	Var	sd = sqrt(Var)
rc	.3526425	.5938371
e	.1980367	.4450132
u	.069272	.2631957

Test: Var(u) = 0
chi2(1) = 21.67
Prob > chi2 = 0.0000

Appendix B: Error autocorrelation test: Derbin Watson test

xtregar rc tca dual admin admet csc size age, lbi
RE GLS regression with AR(1) disturbances Number of obs = 216
Group variable: code Number of groups = 27
R-sq: within = 0.2197 Obs per group: min = 7
between = 0.0778 avg = 8.0
overall = 0.1300 max = 8
Wald chi2(8) = 27.94
corr(u_i, Xb) = 0 (assumed) Prob > chi2 = 0.0005

Theta

Min	**5%**	**median**	**95%**	**max**
0.0000	0.0000	0.0000	0.0000	0.0000

Rc	Coef	Std. Err	z	p>|z|	[95% Conf Interval]
SBD	-.0935042	.0267226	-3.50	0.000	.1458796
					-.0411288
DUAL	.1007351	.1425125	0.71	0.080	.1785843
					.3800545
ADMIN	-.3594093	.3465832	-1.04	0.300	-1.0387
					. 7216434
ADMET	-.135251	.4371991	-0.31	0.757	-.9921455
					. 3198814
CSC	0.09966	0.2097765	0.48	0.035	-.3114944
					. 5108144
Taille	1.952110	8.40^{e}-10	0.23	0.017	1.45e-09
					1.84e-09
AGE	-.0073337	.0036748	-2.29	0.922	-.0245477
					-.001913
CONST	2.364003	.4815674	4.91	0.000	1.420148
					3.307857
rho_ar	.61683431	(estimated autocorrelation coefficient)			
sigma_u	0				
sigma_e	.40951298				
rho_fov	0	(fraction of variance due to u_i)			

modified Bhargava et al. **Durbin-Watson = 1.7816888**
Baltagi-Wu LBI = 1.2929676

Appendix C : Heteroscedasticity Test

reg résidus 2 tca dual admin admet csc size age

Source	**SS**	**df**	**MS**
Model	647.483459	7	92.4976371
Residual	|420.988119	215	1.95808428
Total	1068.47158	222	4.81293504

Number of obs = 216
F (7, 215) = 47.24
Prob > F = 0.0000
R-squared = 0.6060
Adj R-squared = 0.5932
Root MSE = 1.3993

résidus2	Coef	Std. Err	t	p>|t|	[95% Conf Interval]
TCA	.2203564	.0584427	4.03	0.000	.350834
					.1204461
DUAL	1.496018	.2968342	5.04	0.060	-2.081096
					.91094
ADMIN	.0843988	.7042183	0.12	0.905	-1.303657
					1.472455
ADMET	-.6533577	.9772861	-0.67	0.505	-2.579646
					1.272931
CSC	1.183248	.4270672	2.77	0.006	2.025023
					.3414737
SIZE	3.00e-09	3.35e-09	0.90	0.072	9.59e-09
					3.60e09
AGE	-.1218082	.0095906	-12.70	0.604	-.1407118
					-.1029046
CONST	9.36719	.9896141	9.47	0.000	7.416602
					11.31778

Wald chi2(8) = 27.94
Prob > chi2 = 0.0000

Appendix D : Multicollinearity Test

Variable	VIF	1/VIF
Admet	1.73	0.577693
admin	1.63	0.611742
Age	1.37	0.730710
tca	1.20	0.830568
csc	1.14	0.876963
dual	1.10	0.907644
size	1.02	0.982814
Mean VIF	1.31	

تأثير الحوكمة الرشيدة على مخاطر الائتمان في البنوك الإسلامية: دراسة حول دول مجلس التعاون الخليجي

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ملخص البحث. البنوك الإسلامية هي مؤسسات مالية خاصة تولد تحديات متميزة في حوكمة الشركات. تقيس هذه الدراسة تأثير متغيرات حوكمة الشركات على مخاطر الائتمان من خلال دراسة تجريبية لعينة من ٢٧ مصرفا إسلاميا في دول مجلس التعاون الخليجي خلال الفترة ٢٠٠٨-٢٠١٥.

السؤال التجريبي الهام لهذه الدراسة هو: هل تساهم الآليات الداخلية للحكم، مثل تشكيل مجلس الإدارة، في الحد من المخاطر المالية، مثل مخاطر الائتمان، من جانب المصارف الإسلامية في بلدان الخليج؟

يستند هذا التقدير إلى نموذج في معادلة واحدة لربط المتغيرات ذات الصلة بمجلس الإدارة بمخاطر الائتمان حيث أنه يؤثر على المخاطر المالية للائتمان المصرفي. ويختبر منهجنا التجريبي، في المرحلة الأولى من التحليل، تأثير كل متغير خارجي يدرس على الحد من مخاطر الائتمان المصرفي في المصارف الإسلامية؛ ويوفر المرحلة الثانية من التحليل متعدد المتغيرات حيث التأثير المتزامن الذي تسيطر عليه جميع المتغيرات المدروسة على المتغير الداخلي.

وتبين نتائجنا ان حجم المجلس، وازدواجية المناصب القيادية، وهيئة الرقابة الشرعية وحجم البنك من اهم العناصر التي تأثر على مخاطر الائتمان في البنوك الاسلامية الخليجية. وبالإضافة إلى ذلك، تظهر هذه النتائج ان وجود أعضاء مجلس إدارة مؤسسيين ومستقلين، وكذلك أعمار البنك ليست متغيرات هامة في مستوى مخاطر الائتمان.

الكلمات المفتاحية: حوكمة الشركات؛ مجلس الادارة؛ مخاطر الائتمان؛ البنوك الإسلامية؛ دول التعاون الخليجي.