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EQUITY HOLDERS' MARKET DISCIPLINE IN GCC COUNTRIES

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ABSTRACT

This paper aims to study Equity holders'(EHs) discipline in three GCC countries, Bahrain, the UAE, and KSA for the period (2004-2014). We test bank risk monitoring in the 2008 crisis period by comparing the perceived risk proxied by BETA during the pre-and post-crisis episodes. We find significant differences in BETA values in Bahrain and the UAE. Then, we use the fixed effect model and the random effect model to regress BETA on CAMEL variables measuring bank risk. We study bank reaction by regression relevant CAMEL variables to EH monitoring on BETA of a lagged period. Our results show that in Bahrain, the coefficients of the variables Liquidity and Size are significant. Thus, EHs, in Bahrain, monitor their bank using financial information on Liquidity and Size. However, we find no responsiveness of the banks to this monitoring. Thus, there is no evidence of EHs' discipline in GCC countries. We contribute first, to fulfilling the gap in market discipline literature in Emerging countries, specifically, Bahrain, KSA, and the UAE. Second, we shed light on the market discipline of a special type of banking-IBs. Third, we innovate a new monitoring signal, BETA values assessed by EHs.

INTRODUCTION

In recent years, international prudential regulation has integrated market discipline with bank supervision. Therefore, this pillar would contribute to boosting bank risk evaluation and control. Islamic banks (IBs) are a growing and essential part of the international banking system. The characteristics of the core principles regulating IBs imply specific risks. A primary principle is that investment account holders (IAHs) share the risk-profit enterprise with entrepreneurs. This may weaken the banks' motivations for due diligence and loan optimization since risk can be transferred to IAHs.

Moreover, larger payouts to IAHs can lead to the dilution of equity holders' (EHs) ownership rights. On the other hand, low payouts may enhance deposit shrinking and induce potential liquidity and solvency problems. Furthermore, IBs are allowed to smooth payouts to overcome liquidity problems, which creates information asymmetry about actual payouts. To face these agency problems, EHs of IBs would exert market discipline. The market discipline theory presumes two components: market monitoring and bank reaction. Market monitoring implies that investor valuations of the condition of a firm are reflected in its security prices. Thus, these prices would change in case of excessive risk-taking or bad performance reflected in the accounting information on bank risk. The changes in security prices would lead to the second component; market influence, where the banks react by behavior consistent with their solvency (Flannery, 2001; Bliss and Flannery 2002; Bliss, 2004; Lane, 1993; Hamalainen et al., 2005; Bliss, 2014; Flannery & Bliss, 2019).

EHs' discipline of banks has been considered in many countries in Europe and the US (Berger et al., 2000; Chicoma et al., 2003; Uchida & Satake, 2009; Schaeck et al., 2012; Fahlenbrach et al., 2012; Acharya et al., 2013; Baele et al., 2014). However, most studies have investigated only the first stage of this mechanism, EH monitoring. Few researchers have dealt with the second stage, bank reaction. Furthermore, few papers have focused on emerging countries' market discipline, especially in GCC countries.

We contribute to these very scarce studies focusing on IBs of GCC countries by observing another important market discipline source, EHs. We address the research questions of whether EH monitoring is at work in IBs of GCC countries, whether banks respond to this monitoring, and whether the financial crisis has affected this monitoring.

We observe the IBs from 2004 to 2013 to investigate the effects of the financial crisis of 2008. These banks belong

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to Bahrain, the United Arabian Emirates (UAE), and Saudi Arabia (KSA). We choose these countries because they have a sufficient number of IBs to perform statistical tests. We suggest that EHs monitor banks' excessive risk-taking by attributing elevated values of systematic risk. Comparing BETA values during the pre-and post-crisis episodes, we found significant differences in Bahrain and the UAE. However, this outcome is not sufficient to presume market discipline. Indeed, regressing BETA values on bank information, we prove liquidity- and size-related bank monitoring only in Bahrain. Concerning the second component, we find no evidence of the bank's reaction to EH monitoring. Therefore, only EHs monitoring works in Bahrain.

Our first contribution to the current literature is to fill in the gap in studies dealing with market discipline in Emerging markets. Moreover, unlike most studies, we deal with the second stage of market discipline: banks' reactions. This is also one of the few papers investigating market discipline in Islamic banking. Furthermore, we suggest an innovative market signal, the return volatility measured by BETA, and we focus on new actors: EHs in IBs. Dealing with the monitoring of IBs is of primary importance, due to their growing and innovative contribution to the financial system, by offering new financial engineering and attracting new investors (IMF, 2018). This paper may help bank financial stability by enhancing compliance with international prudential standards since pillar 3 of Basel II and Basel III is a market discipline. It also supports policymakers in examining and developing the relevance of accounting information used by EHs. It would also encourage banks to reduce excessive risk-taking and disclose relevant accounting information voluntarily.

The rest of this paper is structured in the following way: the first section deals with the conceptual approach, while the second section shows the literature review. Section three proposes the hypotheses, and section four introduces the methodology. The descriptive statistics are detailed in section five. Section six presents the results.

Conceptual Approach

The Theory of Market Discipline

The theory of market discipline presumes two stages—market monitoring, where investor assessments of the firm's condition are reflected in its security prices. Thus, in case of perceived excessive risk-taking or bad performance reported by the accounting information on bank risk, the investors' monitoring would induce changes in the security prices. These changes would lead to the second stage of market discipline: the influence of this monitoring on firms. This influence can be direct or indirect. Direct influence occurs when market signals pressure the bank to reverse its risky action, which the investors disapprove of. Indirect influence occurs when supervisors respond to the information signaled by market monitoring by corrective influence (Flannery, 2001; Bliss & Flannery, 2002, Lane, 2003; Hamalainen et al., 2005; Bliss, 2014; Flannery & Bliss, 2019). Recently, Flannery and Bliss distinguished between ex-ante market discipline, where market discipline leads to firms avoiding risky behavior, and ex-post market discipline, where market discipline leads to firms revising excessive risk-taking (Flannery & Bliss, 2019).

EHs in IBs as Actors of Market Discipline

A large stream of the literature suggested that the option value is not always aligned with the risk increase of the underlying asset. EHs may be expected to consider both expected profits and risk so they can be good monitors of their banks (Bliss, 2004; Merton et al., 1978; Geske & Shastri, 1985; Ritchken et al., 1993).

Specifically, in IBs, in addition to the exposition to market volatilities related to the bank's performance, the risk of Islamic financial instruments exposes the bank to potential depreciation of its share capital and, therefore, decreases EHs' payouts. Indeed, these products are embodied in the ethical principles of the Sharıah (Islamic legal, ethical system). These principles generally aim to integrate social concerns, building justice between the money holder and the entrepreneur (Ullah & Jamali 2010; Darus et al., 2015; Muhammad, 2020). One of the most important ethical principles is the ban on interest. So, Islamic deposits are raised as profit-sharing investment accounts (PSIA). Depositors are remunerated on the outcome of these profit-sharing agreements instead of fixed interest installment as in conventional banking. Capital is based on a musharakah agreement, where capital partners invest their funds at risk, pursuing profit.

However, these social specificities make it more difficult for IBs to recognize and manage bank risks. Thus, EHs face two specific agency problems. The first is due to the specificity of risk-sharing of Islamic deposits (PSIA) and IAHs bearing all losses. This may weaken the banks' incentives for necessary vigilance and loan monitoring. Furthermore, low payouts to IAH may enhance deposit shrinking, leading to potential liquidity and solvency problems. To overcome these problems, the bank may reduce the EHs' payout to the benefits of the IAHs, inducing a dilution of equity holder rights. The motivation of increasing the share-profit of the IAHs may also encourage the bank to take an excessive risk (Siddiqui, 2008; IFSB, 2010; Shaikh, 2011; Shamsuddin & Ismail, 2013; Louhichi & Boujelbene, 2016; Hamza, 2016; Hamza & Saadaoui, 2013; Hassan & Aliyu, 2018; Grira et al., 2019; Grira, 2021).

The second agency problem is induced by the smoothing techniques used for liquidity management. These techniques replace conventional financial instruments prohibited by the ban of interest. As documented by the profit distribution theory, IBs smooth the profit share of the IAHs to increase their funds using reserve techniques (Taktak et al., 2010; IFSB, 2010; Farook et al., 2012; Jedidia & Hamza, 2014; Othman & Mersni, 2014; Shawtari et al., 2015; Wafaretta et al., 2016). Consequently, there is information asymmetry between the EHs and the bank about the actual risk and profit of the PSIA. As the profit equalization reserve belongs to both IAHs and EHs, there is also information asymmetry concerning the bank's use of this reserve to smooth the PSIA profit or increase dividend payments to bank EHs.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Many studies have examined equity holders (EHs) as suitable actors in market discipline by regressing market signals on bank characteristics. Gendreau and Humphrey (1980) found that highly levered banks face high costs of equity and debt. Berger et al. (2000) showed that equity- and bond-market signals better predict bank soundness than supervisors' evaluations. Gunther et al. (2001) showed that equity prices provide relevant information on bank failure. Krainer and Lopez (2004) proved that both equity prices and bond yields explain rating changes well. Fahlenbrach et al. (2012) and Acharya et al. (2013) found that stock returns were lower for banks with higher illiquid assets. Still, these relative cost changes have not led bank managers to revise their leverage positions relative to other banks. Flannery (2001) also found no evidence of bank influences on either EHs or bondholders' monitoring.

Chicoma et al. (2003) used another methodology and compared BETA values in pre-and post-crisis episodes in Japan and Latin America. They argued that investors have disciplined banks whenever a significant decline follows a significant rise in BETA coefficients during a crisis episode. Their results showed that turmoil periods reduce bank stock prices' average value. Additionally, stock returns were not influenced by financial indicators.

Accordingly, we address that a significant rise in BETA coefficients of IBs in GCC countries during the crisis episode of 2008, followed by a substantial decrease during post-crisis periods, can be used to assess market discipline. In other words, investors would have identified elevated security risks during the crisis, consequently influencing managerial actions. Therefore, we propose our first hypothesis:

Hypothesis 1*: BETA changes significantly in the pre-and post-crisis periods.*

Other authors focused on BETA as a signal of EHs' monitoring. Jones et al. (2013) found that banks imposed elevated returns rates on opaque investments, elevating systematic risk. Baele et al. (2014) showed that EHs use the accounting information disclosed in banks' financial statements to assess banks' valuation and risk. Investors' valuations of banks were measured by the market-to-book ratio and the semi-volatility. Using regression analysis, they proved EHs' monitoring for both measures. Balasubramnian et al. (2018) found that the B/M ratio and firm and stock characteristics significantly predict default losses and earnings volatility. Amir and Nejad (2018) found that debt ratio, inflation, and the exchange rate negatively influenced systematic risk. Qin and Zhou (2019) added to the independent variable leverage the market to book ratio, firm size, non-performing loan ratios, and off-sheet business activities. Their results showed that leverage and non-performing loan ratios negatively impacted systematic risk. Jaafar et al. (2020) showed that leverage and growth are the most significant factors of the systematic risk of Shariah-compliant firms. Tripathi and Thukral (2018) and Tahir et al. (2020) also proved the significant linkage between systematic risk and leverage.

As these authors provided evidence of the influence of bank conditions on returns volatility or systematic risk, we suggest that BETA is a good proxy of EHs risk estimation.

Regarding the Islamic banking context in Emerging markets, very few papers have examined the market discipline of IBs. By the way, we aim to contribute to increasing knowledge in this field, and we assume that investors of IBs in GCC countries use firms' fundamentals to assess equities' risk. In the banking literature, the variables that reflect bank fundamentals are CAMEL variables, which relate to management, capital adequacy, efficiency, management, and earnings. Indeed, a comprehensive set of recent studies confirmed the early findings that these indicators are good predictors of bank failure (Liu et al., 2021; De Haan et al., 2020; Bongini et al., 2018). Accordingly, we suggest our second hypothesis:

Hypothesis 2*: BETA depends significantly on the CAMEL variables.*

Some authors also provide strong evidence of the financial crisis's influence on the firms' betas. They include a dummy variable to consider the crisis period (Slimane et al., 2017; Choudhry & Jayasekera, 2012; Bellelah et al., 2017). We suppose that the financial crisis influences BETAs of IBs. Thus, we address our third hypothesis:

Hypothesis *3: BETA is significantly influenced by the financial crisis.*

Most of the current literature has established that EHs monitor banks' risk-taking activities. However, very few authors examined banks' reactions. Baele et al. (2014) provided evidence that banks reacted to market signals; when receiving a risk signal, they increased their long-term target capital levels and decreased their liquidity risk. However, when receiving a negative valuation, they increased their target profit levels mainly by reducing their cost-to-income ratio. Garel et al. (2018) suggested that investors influence managerial behavior. They showed that banks' institutional ownership is negatively related to leverage.

Still, very scarce literature focused on bank reaction to market monitoring in Emerging markets. To the best of our knowledge, no studies have considered EHs' discipline in IBs. We contribute to fulfilling this gap in GCC countries, and we suggest that IBs respond to EHs' monitoring by boosting their soundness, as reflected in the CAMEL variables. Thus, CAMEL would change in response to market monitoring proxied by lagged BETA values. Therefore, we set hypothesis 4:

Hypothesis 4*: CAMEL variables depend significantly on the BETA of a lagged period*

MATERIALS AND METHODS

Sample and Data

We observe three GCC countries, Bahrain, the United Arab Emirates (UAE), and Saudi Arabia (KSA), for the period 2004 to 2014. We make this choice because these countries have the sufficient data necessary for statistical tests and verification, all else the same if EHs' discipline is different from one country to another, as well as IAHs' discipline. Moreover, we use the same period study from 2004 to 2014 to better compare EHs' and IAHs' discipline and investigate the impact of the 2008 financial crisis. The selected banks are observed for ten years, permitting pooled data. The data are collected from Thomson Reuters and the Data stream database.

Statistical Tools

To test our first hypothesis, we verify whether BETA changes significantly during the pre-post crisis period. After normality verification using a Shapiro-Wilk test, we perform comparison tests on BETA values pre-and post-crisis. We adopt Student's test for normal distribution and use a Kruskal-Wallis rank test for non-normal distributions.

To test our second hypothesis, we verify whether BETA depends significantly on CAMEL variables. We set Equation 1 to regress BETA on CAMEL variables:

$$\textit{Equation 1: } BETA_{it} = a_i + l_i \text{CAMEL}_{it\text{-}1} + s_i \text{CONTROL}_{it\text{-}1} + e_{it}$$

To test our third hypothesis, relative to the crisis's effect, we use a first dummy variable, taking the value of 1 for the crisis year and 0 for a different year. We use a second dummy variable, taking the value of 1 for the year following the crisis year and 0 for other years.

Our fourth hypothesis aims to verify banks' reactions. We test it with Equation 2, regressing CAMELs on lagged BETA. We use instrumental variables to address any potential endogeneity problem.

$$\textit{Equation 2: } \text{CAMEL}_{it} = a_i + l_i \ BETA_{it\text{-}1} + e_{it}$$

We perform these regressions for ten years to constitute a panel. Two models of panel specification are available: the fixed-effects model and the random-effects model. We use Hausman's test to choose the more suitable one and perform this analysis using STATA.

Variables Measures

BETA Measures

We measure BETA through the regression of bank returns on market returns.

CAMEL Measures

We measure Capital adequacy using the equity–to–total assets ratio and asset quality utilizing the ratio of non-performing loans to loans. Management is measured using salaries and benefits on salaries divided by incomes. Earnings are measured by returns on assets. Liquidity is measured by the proportion of demand deposits in total deposits.

RESULTS

Descriptive Statistics

We compute the descriptive statistics for the three studied countries during all periods. Then, we calculate the statistics for the period preceding the crisis (from 2004 to 2007) and the period following the crisis (from 2009 to 2013). Table 1 presents these statistics.

[Insert Table 1 here]

In examining the Saoudian panel, we notice that-on average-BETA has increased from 0.42 to 0.82 in the crisis year and then declined to 0.53. The capital ratio has decreased from 0.368 to 0.347, while the non-performing rate has increased from 0.015 to 0.029. The demand deposits–to–total deposits ratio is, on average, the same in these two periods; however, the return on assets and salary-to-benefits and -income ratios are, on average, higher after the crisis.

As Table 1 shows, on average, Bahraini banks' BETA increased from 0.07 before the crisis to 0.19 in the crisis, then decreased to 0.07. The capital ratio has declined from 0.42 to 0.263, while the non-performing proportion has increased from 0.04 to 0.19. The demand deposits to total deposits and return-on-assets ratios have decreased on average, while salaries and benefits-to-income ratios have increased.

UAE banks' descriptive statistics show that, on average, BETA has decreased after the crisis, from 0.15 to -0.03 in the crisis year and then to 0.11. In observing CAMEL variables, we find a mixed evolution. The capital ratio has decreased from 0.38 to 0.27, while the non-performing rate has increased from 0.019 to 0.07. The demand deposits–to–total deposits ratio, as well as salaries and the benefits–to–income ratio, have decreased on average, while the return-on-assets ratio is, on average, higher after the crisis.

Results of BETA Coefficient Changes during the Pre-And Post-Crisis Periods

Table 2 shows the results of our testing whether BETA-coefficient changes during the pre-and post-crisis episodes are significant.

[Insert Table 2 here]

The Shapiro-Wilk normality test shows that all distributions were normal-except for BETA during the crisis period in Saudi Arabia and the UAE in 2007 and 2008. Therefore, we use the Student's test for the BETAs of Bahrain, and UAE-except for 2007 and 2008; we perform a non-parametric Kruskal-Wallis test for these two years.

Table 2 shows that a non-parametric test disproves the significance of the difference between $BETA_{2007}$, $BETA_{2008}$, and $BETA_{2009}$ in KSA's case. We found no evidence for significant changes between the country's BETA during the crisis episode and BETA during the pre-and post-crisis periods. Thus, KSA EHs did not significantly increase BETA values during the crisis episode or decrease these values significantly during the following year. Therefore, EHs in the KSA did not take measures to discipline their banks.

However, the Student's-test results for Bahrain suggested a significant negative change between $BETA_{2007}$ and $BETA_{2008}$ followed by a significant positive change between $BETA_{2008}$ and $BETA_{2009}$. Thus, EHs increased BETA values during the crisis episode and decreased them during the following year. Therefore, Bahraini EHs undertook bank-disciplining measures.

For the UAE, as Table 2 shows, we found no evidence of a significant difference between $BETA_{2007}$ and $BETA_{2008}$. Indeed, the results of the non-parametric test are not significant. Nevertheless, the Student's test results suggest significant negative differences between $BETA_{2008}$ and $BETA_{2009}$. We perform a comparison test on $BETA_{2009}$ and $BETA_{2010}$, but we find a significant negative difference again. We apply this test to $BETA_{2010}$ and $BETA_{2011}$ and find a significant positive change. Therefore, UAE EHs increased BETA values significantly during the two post-crisis years and decreased these values three years after the crisis episode. Thus, EHs in the UAE penalized banks two years after the crisis.

Results of EH monitoring

We verify, as Table 3 shows, whether EHs monitor risk-taking banks during regular periods by assessing elevated BETA values. We test Hypothesis 1 and regress BETA values on CAMEL variables (Equation 1).

[Insert Table 3 here]

For the three studied countries, Wooldridge autocorrelation tests yield insignificant results. Thus, there is a serial autocorrelation for the three cases. Therefore, we apply an autoregressive random-effects model and an autoregressive fixed-effects model.

Table 3's first specification presents results relative to KSA banks. Hausman-test results are not significant, which confirms the random-effect model. Our results show that the CAMEL variables' coefficients are insignificant at the 5% level. Therefore, EHs in KSA don't use accounting bank characteristics in their market decisions. They don't attribute BETA values according to banks' risk. Thus, we find no evidence of EHs' monitoring in KSA.

The corresponding results related to Bahraini banks show that Hausman-test results are insignificant, confirming the random-effect model. Two significant and positive coefficients (5% level): *liquidity* (measured by the demand deposits–to–deposits ratio) and the *size* control variable. Also, the positive signs for both variables conform to the signs we have expected. Therefore, Bahraini EHs attribute lower BETA to large and less-liquid banks. So, we find some evidence for EH monitoring in Bahrain. However, these actors are concerned only with liquidity and size. They don't use capital adequacy, asset quality, or earnings in their market decisions.

Our results show that UAE bank regression also yields insignificant Hausman-test results, confirming the random-effect model. These results reveal two significant coefficients: *size* and the *post-crisis year* dummy. However, we find no significant coefficient for the CAMEL variables. Thus, EHs in the UAE attribute low BETA values for large banks and high values during the year following the crisis.

Results of the Financial-Crisis Impact on EH Monitoring

We investigate the crisis's effect on BETA values. As Table 3 shows, we don't find any significant coefficients for the dummies proxying the crisis period for KSA and Bahrain. Thus, KSA and Bahraini BETA are not affected by the financial crisis. Therefore, we find no relation between EHs' monitoring and the financial crisis in these two countries. So, Hypothesis 3 is disproven for KSA and Bahrain. However, Hypothesis 3 holds true for UAE. The dummy coefficient for the year following the crisis is significant for the UAE at the 5% level. Thus, the crisis influenced BETA values in the UAE.

Results of the EHs' Influence

As shown in Table 4, we test whether EHs' monitoring influences monitored banks. We regress the significant variable of Equation 1 on BETA for the lagged year. We observe whether BETA changes entice banks to improve the relevant factors that have induced these changes. Since EHs' monitoring was proven only for Bahrain, we test the influence of this monitoring in Bahrain only.

[Insert Table 4 here]

Table 4 shows that the significant CAMEL variable in the regression of EHs' monitoring for Bahraini banks is *liquidity* (measured by the demand deposits–to–deposits ratio). Thus, we regress this variable on instrumented BETA for the lagged year. The Hausman test yields a negative chi2 result. So, choosing between the fixed- and random-effect models is impossible for this state. However, for the two models, the BETA coefficient is not significant. Therefore, we find no influence from EHs' choices on Bahraini banks' liquidity.

Robustness Analysis

We check our results in different ways. First, we study each examined country alone to control countries' specificities, mainly in the contexts of the Islamic finance framework and EHs' awareness. Then, we choose between the fixed-effect and random-effect models for Hausman-test results. Moreover, we verify possible collinearity. Next, we introduce instrumental variables to address a potential endogeneity problem in equation-testing banks' reactions.

Additionally, we examine crisis effects in two ways. First, we perform comparison tests between BETA during the year of the crisis and BETAs during the year following the crisis. We perform either parametric tests or non-parametric tests, depending on the results of our normality verification. Second, we use dummies proxying the crisis year and the year following the crisis. The results for KSA were robust. Indeed, comparison tests give no evidence of any significant differences. Also, neither the crisis-year nor post–crisis-year dummies' coefficients are significant. Thus, we find no evidence of a crisis impact on EHs in KSA. For EHs in the UAE, our comparison tests show that BETA values have significantly increased during the post-crisis years and decreased two years after the crisis. This result conforms to the post-crisis dummy variable's significant coefficient. So, we find strong evidence for the crisis's impact on EHs in the UAE. For Bahrain, our comparison tests show that BETA values significantly increased during the crisis year and decreased a year after the crisis. However, the dummy variables' coefficients for the crisis and post-crisis periods are insignificant.

We also use different measures to gauge the significant independent variables in testing EHs monitoring. During specification-testing of Bahraini bank monitoring, we show a significant coefficient of *liquidity* (measured by the demand deposits–to–deposits ratio). We use the cash and securities–to–deposits ratio as a substitute measure. Our result is the same; this substitute measure's coefficient is also significant.

DISCUSSIONS

Concerning the BETA disciplining actions during the crisis, our comparison results for KSA show that the BETA differences between pre-and post-crisis periods and during the crisis were insignificant. So, EHs' behavior in KSA was not influenced by the crisis. Thus, these EHs had full confidence in their government's measures to face the crisis. Yet, for Bahrain, our comparison tests suggest significant differences between BETA during the pre-and post-crisis periods and BETA during the crisis period. Bahraini EHs have significantly increased BETA values during the crisis episode but reduced these values during the year following the crisis. We obtain UAE results similar to our Bahraini results, though with some delay. Indeed, our comparison tests' results prove that EHs have attributed high BETA values during the two years after the crisis. These values decreased during the following year. Therefore, Hypothesis 1 is confirmed for Bahrain and UAE cases.

According to Chicoma et al. (2003), this outcome can be explained through EH's disciplining action. These actors punish banks for excessive risks during the crisis by elevating BETA values, leading banks to adjust their behavior. Then, EHs reward this change in behavior with decreases in BETA values during the year following the crisis. We verify this statement more by examining the relation between BETA and bank-risk or CAMEL variables.

Our Saudi Arabia and the UAE findings show that market risk doesn't depend significantly on CAMEL variables. Thus, Hypothesis 2 is rejected for KSA and the UAE. These results can be explained by EHs in KSA and the UAE fully trusting their banking systems. These two countries' EHs are unaware that their banks may not operate according to their best interests because of IAHs' conflicting objectives. Indeed, we show through our conceptual approach that the profit-and-loss–sharing relation in Islamic banking may, on one side, dilute EHs' ownership rights in the case of larger payouts to IAHs. Conversely, this relation may threaten EHs' wealth if poor payouts encourage deposit shrinking and induce potential solvency and liquidity problems.

Nevertheless, Hypothesis 2 is confirmed for Bahrain, where we found evidence that BETA depends on banks' liquidity and size. Therefore, Bahraini EHs essentially pay attention to liquidity and bank size. Bahraini EHs seem more aware of their potential contributions to wealth development and banking-system performance. According to the Islamic Finance Development Indicator, this founding aligns with the ranking of Bahrain as the fourth developed country in Islamic finance in the world and second in MENA countries. Moreover, it is ranked first among MENA countries in awareness, governance, and corporate social responsibility activities (Refinitiv, 2021). Indeed, this pioneer country has fostered the Islamic finance industry through its directing institutions. Thus, The Central Bank of Bahrain has innovated many popular financial instruments and products. The Bahrain Institute of Banking and Finance has helped promote Islamic finance and banking growth. It also helped and guided many countries in setting up their own Islamic financial structures and regulations. Furthermore, the Accounting and Auditing Organization for Islamic Institutions has promoted bank accounting information's usefulness in EHs' assessments and decisions.

Our results for Bahrain align with previous studies proving EHs' monitoring (Bank for International Settlements, 2006). Our results also conform to the results of Fahlenbrach et al. (2012) and Acharya et al. (2013), who found that stock returns were lower for banks with highly illiquid assets. However, our finding contradicts those of Amir and Nejad (2018), Qin and Zhou (2019), Jaafar et al. (2020), Tripathi and Thukral (2018), and Tahir et al. (2020). They proved the significant influence of leverage on systematic risk.

Furthermore, our findings for the UAE reject a precious assumption by Chicoma et al. (2003) that increased BETA during the crisis episode, followed by a decline in the next year, proved market discipline. Indeed, we find no evidence of a significant relationship between market risk and bank risk in the UAE. Therefore, the EHs' assessments of BETA values increase during the crisis year followed by a decrease, don't align with market discipline-rather, it reflected general actions due to the crisis effect.

Since we only prove EHs' monitoring in Bahrain's case, we only examine this monitoring's influence on this case. We verify whether Bahraini banks adjusted the CAMEL variable that induced this monitoring liquidity. Our results disprove Hypothesis 4 in the Bahraini context. CAMEL variables don't depend significantly on the BETA for a lagged period in this

case. Bahraini banks don't change the characteristic liquidity that has induced EHs' monitoring, so we don't find any bank responsiveness to EHs' monitoring. This result should relate to EHs' monitoring has not been substantial enough to influence banks. It also conforms to the findings of Flannery (2001), who found no evidence of EH's influence or bondholders' monitoring of bank indicators. However, our finding contradicts the study by Baele et al. (2014) on EHs' discipline. These authors found evidence for banks' reaction to market signals, as banks had swelled their long-term target capital and reduced their liquidity risk in response to these signals.

In summary, we find some evidence for the first stage of market discipline, EHs' monitoring, in Bahrain. However, our results reject the second stage; banks' consequent reaction to market signals. Since we find evidence of EH monitoring's influence in Bahrain only, we cannot document EHs' discipline in GCC banking. We can only suggest EHs monitoring in Bahrain using accounting information on liquidity and size.

CONCLUSIONS

Besides market incentives and government regulations, conscious and aware investors could help develop IBs soundness. This paper adds knowledge to this field in several ways. First, we contribute to filling emerging countries' market discipline literature gap. We examine EHs' discipline in Bahrain, KSA, and the UAE. Second, we shed light on the market discipline of a particular type of banking-IBs. Indeed, unlike conventional banks, these banks are embedded in the principle of profit-and-loss sharing, leading to different risk features. Third, we innovate a new monitoring signal, BETA values assessed by EHs.

Our empirical results suggest that EHs' discipline is not well developed in GCC countries. We find some evidence for the first stage of market discipline, market monitoring, in Bahrain only. However, regarding the second component of market discipline, the bank reaction, our results show no evidence of bank responsiveness. This may be explained by the fact that monitoring in Bahrain is based mainly on liquidity. Therefore, EHs in Bahrain should also monitor assets' quality, capital adequacy, and efficiency to give strong signals to their banks and induce them to behave in a manner consistent with their soundness.

In sum, EHs should be more aware of their ability to monitor banks in the three countries. Thus, our practical contribution is to direct the attention of EHs and policymakers to the potential core position of these market actors to monitor banks' risks and improve banks' soundness. In this way, we help develop IBs founded on important ethical risk-sharing principles between money holders and entrepreneurs. Thus, we contribute to promoting social justice and corporate social responsibility. Besides, market discipline constitutes pillar 3 of Basle II maintained in Basle III. Therefore, enhancing the market discipline of IBs would strengthen compliance with international prudential standards and thus global banking system stability.

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APPENDICES

Appendix A: Table 1 Descriptive statistics

		Saoudian banks					Bahrain banks					UAE banks				
		Obs	Av.	St.d	Max	Min	Obs	Av.	St.d.	Max.	Min.	Obs	Av.	St.d.	Max.	Min.
	All period	33	0.54	0.31	1.22	-0.02	35	0.08	0.07	0.29	-0.03	34	0.09	0.09	0.26	-0.12
BETA	Pre-crisis	9	0.42	0.27	0.62	-0.02	9	0.07	0.06	0.18	-0.03	10	0.15	0.09	0.22	0.05
	Crisis year	4	0.82	0.11	0.98	0.75	6	0.19	0.06	0.29	0.11	4	-0.03	0.06	0.04	-0.12
	Post-crisis	20	0.53	0.28	1.22	0.09	20	0.07	0.05	0.19	-0.03	20	0.11	0.08	0.26	0.01
	All period	32	0.34	0.34	1.83	0.16	41	0.42	0.15	0.82	0.11	32	0.22	0.14	0.82	0.11
Capital/Debts	Pre-crisis	16	0.37	0.25	0.96	0.2	18	0.44	0.16	0.82	0.26	16	0.38	0.2	0.69	0.11
	Post-crisis	16	0.35	0.43	1.83	0.16	23	0.26	0.15	0.82	0.12	16	0.26	0.16	0.82	0.12
	All period	31	0.02	0.02	0.05	0	41	0.12	0.18	0.95	0.01	32	0.06	0.05	0.16	0
Non-Performing	Pre-crisis	16	0.02	0.01	0.03	0	18	0.04	0.02	0.08	0.01	16	0.02	0.02	0.7	0.11
Loans/Loans	Post-crisis	16	0.03	0.02	0.05	0	23	0.19	0.23	0.95	0.03	16	0.07	0.05	0.16	0
	All period	34	0.63	0.32	0.95	0.25	40	0.01	0.09	0.15	-0.44	32	1	0.49	2.2	0
Demand Deposits	Pre-crisis	16	0.63	0.34	0.88	0.31	18	0.06	0.05	0.15	0.01	16	1.12	0.3	2.2	0.65
/Total Deposits	Post-crisis	18	0.63	0.23	0.95	0.27	22	-0.03	0.1	0.02	-0.44	16	0.89	0.51	1.31	0

	All period	36	0.08	0.05	0.21	0.02	45	1.94	2.79	19.7	0.58	32	0.01	0.01	0.04	-0.02
Return On	Pre-crisis	16	0.04	0.04	0.13	-0.01	21	2.63	4.03	19.7	0.58	16	0.02	0.01	0.04	0.01
Assets	Post-crisis	20	0.09	0.05	0.21	0.02	24	1.35	0.79	3	0.58	16	0.01	0.01	0.02	-0.02
	All period	34	0.69	0.38	1.49	0.29	38	1.39	2.51	18.3	0.36	32	0.77	0.38	1.32	0.39
Salary And Benefits	Pre-crisis	16	0.6	0.41	1.49	0.29	19	0.61	0.3	0.91	0.36	16	0.67	0.35	0.79	0.39
/Income	Post-crisis	20	0.74	0.23	1.21	0.44	19	2.28	3.65	18.3	0.79	16	0.84	0.37	1.32	0.71
	All period	34	16.6	0.99	19.5	15.8	47	13.7	1.11	15.9	11.2	32	17	1.11	18.5	14.5
Ln Assets	Pre-crisis	16	17.1	8.25	18.6	15.8	25	13.1	1.12	15.2	11.2	16	16.8	1.05	18.6	15.1
	Post-crisis	20	17.9	0.97	19.5	16.7	22	14	0.99	15.9	12.7	16	17.1	1.17	18.6	14.5

Appendix B: Table 2

		Parametric tests	Non-parametric tests	
Saudi Arabia	**$BETA_{2007}$ < $BETA_{2008}$**		Chi2= 2	p= 0.368
	$BETA_{2008}$ > $BETA_{2009}$		Chi2= 3	p= 0.392
Bahrain	**$BETA_{2007}$ < $BETA_{2008}$**	Ha: mean(diff) < 0 Pr(T < t) = 0.0149		
	$BETA_{2008}$ > $BETA_{2009}$	Ha: mean(diff) > 0 Pr(T > t) = 0.0268		
UAE	**$BETA_{2007}$ < $BETA_{2008}$**		Chi2= 1	p= 0.317
	$BETA_{2008}$ < $BETA_{2009}$	Ha: mean(diff) < 0 Pr(T < t) = 0.0441		
	$BETA_{2009}$ < $BETA_{2010}$	Ha: mean(diff) < 0 Pr(T < t) = 0.0045		
	$BETA_{2010}$ > $BETA_{2011}$	Ha: mean(diff) > 0 Pr(T > t) = 0.0168		

Appendix C: Table 3. Impact of CAMEL variables on BETA

Model 1: $BETA_{it} = \alpha_i + \lambda_i \text{CAMEL}_{it-1} + \sigma_i \text{CONTROL}_{it-1} + \varepsilon_i$

Dependent Variable	**BETA**		
Independent variables	Saudi arabia	Bahrain	UAE
Capital/debts	-0.049	-0.01	-0.316
	(0.931)	(0.925)	(0.166)
Non performing loans / loans	-7.84	-0.127	1.122
	(0.094)	(0.095)	(0.097)
Demand deposits / total deposits	-0.036	-0.009	0.005
	(0.900)	(**0.046**)	(0.955)
Return on Equity	-0.5	0.144	-0.051
	(0.884)	(0.440)	(0.985)
Salary and benefits/income	0.361	-0.021	-0.238
	(0.713)	(0.867)	(0.465)
LN Assets	0.085	-0.029	-0.072
	(0.265)	(**0.046**)*	(**0.038**)*
Dummy Crises	-0.267	0.01	0.07
	(0.131)	(0.761)	(0.177)
Dummy After Crises	0.029	0.01	0.138
	(0.842)	(0.786)	(**0.015**)
Haussman testchi2	9.30	3.8	8.87
Prob>chi2	(0.3177)	(0.8748)	(0.3535)
Wooldridge autocorrelation	(0.4854)	(0.5383)	(0.9055)

Appendix D: Table 4. Impact of BETA on lagged CAMEL variables in Bahrain case.

Model 4: $\text{CAMEL}_{it} = \alpha_i + \beta_i Beta_{it-1} + \varepsilon_i$

Dependent Variable	**Demand deposits/ deposits**			
Independent variable	FE	RE	Haussman test	
BETA	0.0794	-0.394	-0.25	chi2<0
	(0.988)	(0.941)		

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