

Corporate governance and risk taking: the role of board gender diversity

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Abstract

Purpose – This paper aims to investigate the association between board gender diversity and bank risk taking in an emerging market context.

Design/methodology/approach – The association between female board directorship and bank risk taking is examined, while controlling for board characteristics, managerial, concentrated, family and government ownership. Two-stage regression with instrumental variables is used for a sample of banks listed in Gulf Cooperation Council (GCC) countries during 2002–2014.

Findings – Results show that banks with more female board directors invest in less risky positions; the association is attenuated when the regulatory capital is larger, providing protection against risky investments, and female directors tend to invest less in risky asset positions in Islamic banks relative to conventional banks.

Practical implications – The relevance of the findings stems from the recent initiatives undertaken by the Basel Committee to address deficient corporate governance structures that lead to bank breakdowns and the diversified economy of the fast-growing GCC market, relying on banking services in the aftermath of the oil price drop.

Originality/value – This paper provides novel evidence on the influence of board gender diversity on bank risk taking in an emerging market context. This paper fills a gap in prior research by examining bank-specific regulatory capital adequacy and Islamic banking aspects.

Keywords Emerging markets, Islamic banks, Corporate governance, Gender diversity, Risk taking

Paper type Research paper

1. Introduction

Since the drop in oil price, the highly dynamic Gulf Cooperation Council (GCC) markets have been facing various challenges to keep the economy resilient. The region has been diversifying and maintaining an investment-driven strategy while relying on a resilient banking system to finance operations. Growth and liquidity have been fuelled by spectacular resurgence of the credit and equity markets, rather than oil services expansion. Therefore, the aim has been to retain the resilience of the banking system and mitigate the probability of bank failures. Global instances of bank failures have been attributed to poor corporate governance practices that failed to manage bank risk taking amidst a massive economic meltdown. According to the report of the [Group of Thirty \(2012\)](#), boards of directors have contributed to the collapse of many banks through the failure to assess risks



JEL classification – G21, G28, G30, G32, J16, M14

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taken by their institutions, evaluate the vulnerability of banks to economic shocks and act with prudence. By the end of 2014, the Basel committee issued a consultative document on the revised principles of corporate governance at banks with a focus on the role of the board of directors in overseeing and managing risk. The board is critical in the oversight of risk management, as well as the governance of risk-related decisions. Furthermore, the board has a significant impact on the financial risks that banks undertake (McNulty *et al.*, 2013).

The regulatory interest of mitigating excessive risk taking is due to the importance of banks in financing economic activities and injecting liquidity into the economic system (Furfine, 2001). Prior research has focused on exploring and examining the association between various governance mechanisms and bank risk taking. However, very little effort has been directed toward a key governance mechanism; gender diversity and female representation on boards of directors. Moreover, the few papers that have discussed this controversial topic have not explored the unique nature of emerging economies, which is affected by specific cultural and social factors.

The aim of this paper is to complement prior empirical literature and provide findings relevant for policy discussions by examining the association between female board directorship and risk taking. It adds to the unexplored topic of the regulatory capital adequacy effect on the association and the Islamic banking aspects. The focus on financial risk, rather than firm performance or value, is an important feature of this study. To account for the potential endogeneity of the female board representation, the analysis is conducted in a two-stage framework. In the first-stage estimation, female board representation is determined by a set of variables of carefully selected instruments. In the second stage regression, bank risk taking is estimated using the predicted value of the female representation measure as the main explanatory variable.

In this context, this study yields several key findings. First, female directorship is negatively associated with bank risk taking. The significance of the association holds after controlling for concentrated, managerial, government and family ownership; board size and outside directorship; and other bank-specific factors. Second, the results suggest that as the regulatory capital ratio gets larger, banks are generally willing to take more risk. Furthermore, well-capitalized banks undertake risky investments as the regulatory capital cushion allows more risky choices. Finally, in banks with larger regulatory capital ratios and those that are well-capitalized, female directors' risk averse investment choices are attenuated. Hence, females are willing to undertake more risky positions as long as the available regulatory capital allows that.

The contribution of this study is threefold. First, there has been a research stream focusing on gender diversity in boards or in top managerial positions (Adams and Ferreira, 2004; Farrell and Hersch, 2005; Francoeur *et al.*, 2008). This line of research investigates board decision-making processes in relation to firm performance rather than risk taking. More specifically, the research on the association between gender diversity or female representation and risk taking has been limited. Moreover, the research has been scarce when it comes to female representation in financial institutions as banking activities are highly opaque and have a high degree of complexity hindering females from climbing the corporate ladder (Quack and Hancké, 1997). Second, the relevance of this study stems from recent initiatives undertaken by the Basel Committee and bank regulators in GCC countries to address deficient corporate governance structures that lead to bank breakdowns and how to strengthen the banking system for a more diversified economy. Key principles emphasized by Basel have been monitoring risks on an ongoing basis, role of the board and composition of the board (Bank for International Settlements, 2010). The main concern is to enhance governance structures in an attempt to mitigate excessive risk taking.

Given the highly dynamic and growing nature of markets in the GCC region and the need to overcome ramifications of the oil price drop, the results of this study are especially relevant. Third, this paper extends research on the association between corporate governance and risk taking. It fills a gap in prior research by examining this association in relation to a key feature of banks, namely, their bank-specific capital adequacy ratio. Prior studies have only treated regulation as an exogenous factor of a more (less) stringent system affecting banks rather than a bank-specific element embedded in regulatory capital ratios (Saunders *et al.*, 1990; Konishi and Yasuda, 2004; Caprio *et al.*, 2007; Laeven and Levine, 2009; Shehzad *et al.*, 2010). Furthermore, this paper draws upon the existence of Islamic banks as a key feature of the banking system in GCC countries, and examines whether their unique nature affects the association between female directorship and risk taking.

One of the innovations of this paper is the use of the risk-weighted assets to total assets ratio to proxy for risk taking in banks. The use of this variable is intended to overcome some of the measurement problems in variables used in prior research and to align to the regulatory measure for risk[1]. Hence, the variables in this study adjust assets for risk weights used by bank regulators to represent credit, operational and market risks.

While the GCC region witnessed reduced growth in the demand for oil, the non-oil sector, however, continued its robust performance growing by almost 5.7 per cent in 2014. The banking sector and other non-oil sectors emerge as the key driver for the GCC, consequently enhancing GDP growth to about 4.2 per cent in 2014 and steadily growing across years. The choice of the sample banks in the GCC region is due to the increasing economic growth of the GCC as a promising emerging market. The financial sector is relatively developed compared to other countries in the Middle East and North Africa region. Moreover, the banking system of the GCC has showed rapid growth prior to the financial crisis period and resilience in the post-crisis period. These characteristics are attributed to the dominance of the banking sector, which exhibits a number of common structural characteristics across countries, compared to capital markets. The GCC region forms an interesting setting where gender diversity in leadership positions is still developing. The region has varying degrees of female representation mirrored in recent policy deliberations to impose female directorship quotas. Some countries have already enforced regulatory quotas for females on boards of directors (for example, the UAE), whereas others are still providing recommendations. The remainder of this paper is organized as follows. Section 2 provides a theoretical framework and sheds light on background information. Section 3 develops the research hypotheses. Section 4 describes the research design. Data sources and sample selection are discussed in Section 5. The descriptive statistics and empirical results are reported in Section 6. Finally, Section 7 concludes.

2. Background

The financial outcomes of gender diversity, especially those related to firm performance, have been discussed through agency theory. However, the agency theory has been rarely used to develop the framework underpinning the relation between board diversity and risk taking. From an agency theory perspective, managers undertake less risky decisions to shield their non-diversifiable human capital. On the other hand, shareholders have a more aggressive risk preference to maximize their interests (Jensen and Meckling, 1976). Accordingly, bank boards are expected to encourage risk taking in an attempt to align risk preferences of the principal and agent. Diverse boards including females, foreigners and minorities have a relatively different insight and a fresh perspective. The diverse structure of boards can help correct biases in the formulation of corporate strategies thereby reducing the losses flowing from the separation of ownership and control (Dewatripont *et al.*, 1999; Westphal and Milton, 2000). However, the agency theory does not provide a clear prediction

of the association between board diversity and financial performance. The inconclusive evidence of the agency theory-based research has been described as unconvincing or methodologically challenging (Choudhury, 2014).

From a stakeholder theory perspective, firms may give more voice to women, being part of their stakeholders, to cater to their needs, signal a sense of commitment toward society and benefit from a diverse set of intellectual capital. Dallas (2002) confirmed these claims as he found that women bring knowledge, perspective, creativity and judgment when incorporated into groups. These advantages are superior to those related to the smoother communication associated with less diverse groups. Based on the stakeholder theory, even if no significant association exists between gender diversity and firm financial performance, putting women on the board is still giving a good signal to stakeholders and society. Therefore, many developed countries such as Norway and Canada have devised legal instruments for female quotas in the boards of state-owned and publicly traded firms. Germany has passed a quota-based legislation in 2014 that was effective starting 2016. Similarly, the EU has voted to make the quota-based legislation effective by 2018 across EU countries for state-owned firms and by 2020 for publicly listed firms.

Based on resource dependence theory, boards serve as a link to the firm with other organizations to benefit from information expertise, support from important groups and the creation of legitimacy for the firm. Accordingly, diverse boards with politically connected members may facilitate dealing with regulators. Hence, Agrawal and Knoeber (2001) found that directors with political and legal backgrounds are more likely to be on the boards of companies that face government regulation or provide services to government enterprises. Accordingly, the resource dependence theory, unlike the stakeholder theory, provides the strongest support to the link between board diversity and firm financial performance.

In an attempt to bridge the gap between international corporate governance practices and those in GCC countries, Hawkamah (the Institute of Corporate Governance) was found to provide guidance on enhancing governance practices across companies and industries[2]. It is responsible for the development of governance codes, the assessment of current practices and the provision of technical assistance. The institute has been recently concerned with assessing the governance practices of banks in the region. In a research conducted by Hawkamah, there has been a decline in the number of seats women occupy on boards of list firms of the GCC region (Hawkamah, 2012).

In the survey on women in the labor force in GCC countries, McKinsey and Company (2014) found that 32 per cent of female population participates in the labor force. This participation varies across countries, with KSA having the lowest female participation and Qatar and UAE having the highest female participation. Nonetheless, women hold less than 1 per cent of executive committee and board positions. The reason of low representation is not attributable to lack of education, as female graduates in the GCC region outnumber male counterparts.

Bank risk-based capital requirements increasingly have emphasized the role of regulatory capital as a cushion allowing banks to absorb adverse shocks. Therefore, bank regulators use risk-based capital requirements to mitigate excessive risk taking. Moreover, they impose certain penalties on those banks that hold very little capital, reduce the effect of some regulations and allow expanded activities for well-capitalized banks. For banks operating in the GCC countries, regulators follow the Basel guidance on defined ranges of regulatory capital ratios describing the banks' capitalization status[3]. Banks having a tier 1 capital ratio above 6 per cent are classified as well capitalized[4]. If banks fall below the minimum regulatory requirement set by Basel Committee of 4 per cent for tier 1 capital, the regulatory intervention becomes very costly[5]. The cost of regulatory intervention can

escalate to putting banks into receivership/conservatorship if they become significantly undercapitalized or critically undercapitalized[6].

The banking landscape in GCC countries is characterized by the existence of Islamic banks, which face additional challenges in improving their risk management and capital adequacy policies due to their adherence to Islamic *Sharia* principles (El Tiby, 2011). Therefore, the risk exposure of Islamic banks is unique due to the uniqueness of their financial instruments and asset–liability management model (Abou-El-Sood and El-Ansary, 2017). Moreover, the governance structure of Islamic banks is multi-layered due to the requirement of having a report by the *Sharia* Supervisory Board (SSB), a regulatory board governing the operations of Islamic banks, which represents an added governance mechanism. At the macro level, the SSB is a central body that provides counseling for all Islamic banks in each country. At the micro level, each bank has its own SSB, which reviews the transactions/contracts of Islamic banks, gives assurance on whether banks adhere to *Sharia* regulations and provides suggestions to be implemented. Assets of Islamic banks, relative to conventional banks, are composed of profit–loss sharing finance instruments. This implies different modes of exposure to credit risk, balance of portfolio risk with higher regulatory capital levels (Ariss, 2010) and moral hazard issues that occur due to special relationship between Islamic banks and investment account holders (Abedifar *et al.*, 2013). Hence, there is a need to account for the different nature of Islamic banks operating in the GCC markets.

3. Hypotheses

3.1 Gender diversity

Results drawn from the psychology literature and experimental economics suggest that females are generally risk averse as apparent in their investment decisions (Charness and Gneezy, 2012). Similarly, considerable empirical evidence drawn from behavioral finance supports the greater risk aversion of women relative to men when making financial and investment decisions (Barber and Odean, 2001; Halko *et al.*, 2012). Kamas and Preston (2012) attributed the results to differences in confidence affecting the degree of competitiveness of females relative to males. Miller and Ubeda (2012) suggested that women are more sensitive to the decision-making context. Another explanation is that women tend to be more constrained by a budget, hence keep track of their finances relative to men. They tend to cut down their spending, whereas men tend to earn extra money (OECD, 2013, p. 24). Croson and Gneezy (2009) concluded that gender differences in confidence, in emotional reactions to risky situations, and in the perception of uncertain situation are the main factors affecting gender differences in risk taking.

In the GCC countries, women have limited representation on boards. This might be attributed to cultural, socioeconomic or religious reasons (Bayanpourtehrani and Sylwester, 2013). Although women have high-quality education, the cultural perspective comes into play to interfere with their ability to enter the boardroom and make influential decisions. Adams and Ferreira (2004) argued that when firms operate in riskier environments, the boards tend to be more homogeneous. Furthermore, De Cabo *et al.* (2009) found that banks with lower risk have higher proportion of women on the board. Fondas and Salsalos (2000) attributed the results to better managerial control leading to improved bank performance when boards have greater female representation. The following hypothesis expresses the association:

H1. There is a negative association between female board directorship and bank risk taking.

The results of Pletzer *et al.* (2015) indicate that the mere representation of women on boards is not significantly associated to corporate financial performance if other factors are not

considered. Furthermore, [Sila et al. \(2014\)](#) found that the negative association between gender diversity and risk is driven by heterogeneous firm-specific factors. Hence, this paper investigates other factors to complement prior studies.

There is a need to control for the Islamic banking model, as the agency theory in Islamic banks is complex and different from that in conventional banks. In an Islamic banking model, management acts as an agent for the shareholders, while it acts as an agent for the investment account holders who invest in Islamic financial instruments. This gives rise to conflict of interest although the capital of both shareholders and investment account holders is equally at risk. The conflict is aggravated by the fact that, unlike shareholders, investment account holders are denied access to any monitoring mechanism to mitigate potential conflict of interest by management ([Archer et al., 1998](#)). However, Islamic banks apply *Sharia* principles, which act as idiosyncratic governance mechanisms that alleviate the need for other traditional governance mechanisms ([Safieddine, 2009](#)).

3.2 Regulatory capital adequacy

Regulators have formulated the regulatory capital adequacy ratios in such a way as to mitigate excessive risk taking by requiring a larger capital cushion to cover expected and unexpected losses of risky investments, as well as by imposing certain constraints and sanctions if the minimum capital ratios, required by bank regulators, have not been met. However, prior research works argue that capital adequacy induces banks to undertake more risky decisions by investing in lower-quality assets, in what is known as moral hazard, simply because the regulatory capital cushion allows it. [Flannery \(1989\)](#) concluded that capital adequacy induces higher risk taking as capital requirements reduce monitoring incentives, thereby reducing the quality of banks portfolios ([Besanko and Kanatas, 1993](#)). [Blum \(1999\)](#) explained the positive association in light of the intertemporal effect. As an additional unit of equity tomorrow is more valuable to a bank. Given the high cost of raising equity, banks can increase equity tomorrow by increasing risk today. Accordingly, banks are inclined to increase their risky investments when they have the necessary regulatory capital cushion[7]. Hence, it is expected that the regulatory capital adequacy attenuates the negative association between female directorship and risk taking. This conjecture does not contradict that in *H1* as prior studies generally investigated the risk attitude of females in the population. Female directors may possess different skills and attributes that have helped them to climb the corporate ladder and become directors. Moreover, the educational and expertise requirements to join the board entitle them to use their knowledge and judgment depending on situation-specific factors ([Sila et al., 2014](#)). The following hypotheses capture this argument:

H2a. The larger is the regulatory capital ratio, the less pronounced is the association between female board directorship and bank risk taking.

A well-capitalized bank, with at least 6 per cent tier 1 capital, is free from certain regulatory constraints. Therefore, according to [Elyasiani and Jia \(2008\)](#), the performance and stability of well-capitalized banks are stronger than those of banks that are not well capitalized. [Shrieves and Dahl \(1992\)](#), [Calomiris and Wilson \(2004\)](#) and [Flannery and Rangan \(2008\)](#) provided evidence of the significant association between regulatory capitalization and asset risk for US banks. [Jeitschko and Jeung \(2007\)](#) attributed these results to “the asset substitution effect of capital,” where increased capitalization induces banks to increase asset risk. Therefore, this paper examines whether the effect of the regulatory capital ratio on the association between ownership concentration and risk taking is more pronounced for banks that fall above the well-capitalized threshold than those that fall below it. The following hypothesis expresses the conjecture:

- H2b.* The association between female board directorship and bank risk taking is less pronounced for banks that fall above the well-capitalized threshold than for those that fall below it.

3.3 Risk taking in Islamic banks

It is argued that Islamic banks have lower credit risk relative to conventional banks (Abedifar *et al.*, 2013). This could be explained according to the banking theory (Diamond and Rajan, 2000, 2001), which points out that depositors monitor bank lending to mitigate excessive risk taking. In the context of Islamic banking, the religiosity of depositors creates a discipline to monitor Islamic banks. According to the risk preference theory, religious observance is generally associated with risk aversion. Hence, Islamic bank depositors may be more sensitive to bank performance and demonstrate greater risk aversion than those at conventional banks. Moreover, women tend to exhibit more religiosity and risk aversion relative to men (Miller and Hoffmann, 1995). According to empirical evidence from sociological literature (such as Mol, 1985; Suziedelis and Potvin, 1981; Thompson, 1991), women are brought up as more nurturing, passive and submissive, which are characteristics associated with more religiosity and risk aversion. Therefore, the following hypothesis conjectures that:

- H3.* The association between female board directorship and bank risk taking is more pronounced in Islamic banks relative to conventional banks.

4. Research design

It is necessary to model bank risk taking as a function of female directorship as a main explanatory variable along with other control variables. Yet, there is a possibility that other unobserved factors, than female directorship, determine the risk taking decision. Furthermore, it is possible that these unobserved factors affect female directorship as well. For instance, a bank with low risk appetite may be more likely to choose female directors [for instance, De Cabo *et al.* (2009) found that women would be likely excluded from the boards of banks with higher risk]. To address the endogeneity of risk taking and the self-selection problem, bank risk taking and female directorship are modeled as endogenous variables. Using two-stage regression techniques, the following model is estimated:

First stage regression:

$$FEM_{it} = \alpha_1 + \alpha_2 Lev_{it} + \alpha_3 ROA_{it} + \alpha_4 Size_{it} + \alpha_5 CostInc_{it} + \alpha_6 BS_{it} + \varepsilon_{it} \quad (1)$$

FEM_{it} denotes the proportion of women on the board and is measured by the ratio of female directors to the total number of directors on the board. Based on the review of prior literature, bank leverage, performance, size, efficiency and board size are significant determinants of female representation on bank boards (for example De Cabo *et al.*, 2009). To measure bank leverage, Lev_{it} proxies the protection provided to the bank based on the equity invested. It is measured by the ratio of total equity to total assets. To measure bank performance, ROA_{it} denotes net income to average total assets. Bank size is proxied by $Size_{it}$ and is measured by the natural log of total assets. $CostInc_{it}$ denotes bank efficiency and is measured by the ratio of operating costs to operating income. Finally, there is a need to control for the possibility that banks hire women on boards of directors for impression management (Singh *et al.*, 2002)[8]. BS_{it} proxies for the preference for homogeneity in the sense that banks that have a bias against female representation see diversity as unfavorable

and tend to prefer small and homogeneous boards. It is measured by the natural log of the number of directors on the board. All coefficients are expected to be positive (De Cabo *et al.*, 2009). Second-stage regression to test governance hypotheses:

$$Risktaking_{it+1} = \beta_{1,1} + \beta_{1,2}FEM^*_{it} + \sum_{j=1}^n \beta_{1,j}Controls_{jit} + \varepsilon_{it} \quad (2)$$

Risk taking is a multi-faceted phenomenon that cannot be captured by a single measure. Therefore, the dependent variable ($Risktaking_{it+1}$) is a proxy for the degree of bank risk taking captured in each of the risk weighted assets portfolio, widely used by regulators. Alternative measures of risk are used for robustness for comparable results with prior literature. Results are reported in the robustness tests section[9]. The variables used in prior studies have been criticized for not directly measuring management risk-taking decisions. The reason risk-weighted assets to total assets measure is used is that it is more likely to reflect changes in portfolio risk of banks without any time lags (Berger *et al.*, 2014). The dependent variable denotes the summation of total assets risk weighted at 0, 20, 50 and 100 per cent all divided by total assets. Hence, the dependent variable reflects the regulatory aim of mitigating risk and they tie in well with the regulatory risk classes. For the main inferences, a year fixed-effects model and a two-way clustering technique are used to adjust the standard errors. This specification controls for heteroscedasticity and intertemporal firm-specific and year-specific dependence in regression residuals[10].

The dependent variable in this model, $Risktaking_{it+1}$, denotes risk[11]. The explanatory variable FEM_{it} denotes the proportion of women on the board and is measured by the ratio of female directors to the total number of directors on the board. $\beta_{1,2}$ is expected to be negative as banks with a relatively higher proportion of women on the board undertake less risky investments.

The model uses a vector of controls. The variables controlling for ownership structure include $BLOCK_{it}$, which proxies for ownership concentration. $BLOCK_{it}$ is a dummy variable that equals 1 if the bank has a blockholder controlling at least 10 per cent of equity and voting rights and zero otherwise[12]. According to Caprio *et al.* (2007), a bank is classified as having a blockholder if the shareholder has voting rights that sum to 10 per cent or more. Otherwise, the bank is classified as widely held. Its coefficient is expected to have a negative sign due to the ability of blockholders to negotiate managerial incentive contracts to align owner-manager interests compared to small investors (Levine, 2004). $MANAGER_{it}$ is a proxy for management ownership and board structure. It denotes a dummy variable that equals 1 if the bank has a manager or executive who has at least 5 per cent equity stake and zero otherwise. Although managers are inclined to minimize risky activities to protect their human capital, they have incentives to take excessive risks given their equity holdings (Jensen and Meckling, 1976). FAM_{it} denotes the ratio of family member to the total number of board members. The agency theory predicts that family ownership is associated with less risky investments as family relationships provide strong monitoring and discipline (Fama and Jensen, 1983)[13]. GOV_{it} denotes the percentage of shares held by the government. The benefits of close ties with the government include lower budget constraints, government rescue in times of crises and lower cost of debt (Chaney *et al.*, 2011; Faccio *et al.*, 2006). Hence, it is expected that banks with more government ownership undertake more risky investments (Boubakri *et al.*, 2013).

Controlling for board characteristics, BS_{it} denotes board size and it is measured by the natural log of the number of directors on the board. In light of the agency theory, larger boards

bring inefficiencies related to transaction costs and other unnecessary costs to reach group consensus. OUT_{it} denotes outside directorship and it is measured by the ratio of outside directors to the total number of directors on the board. When directors hold many outside positions, they may become too busy to contribute efficiently to decision-making (Adams, 2009). Hence, larger boards and boards with more outside directors are expected to undertake more risky investments.

Controlling for bank characteristics, NPL_{it} denotes non-performing loans to assets. It is used as a proxy for risk inherent in loans; the largest asset in the bank's portfolio (Konishi and Yasuda, 2004; Shehzad *et al.*, 2010). Banks with a larger base of non-performing loans to assets, i.e. larger risk exposure in one year, are expected to reduce their risky loan positions in the subsequent year. $SIZE_{it}$ denotes the natural log of total assets to allow for a possible nonlinear association with risk[14]. Larger banks are more stable and have more diversified operations. Therefore, these banks are expected to have better opportunities to invest in a broader range of loans and other asset positions (Sullivan and Spong, 2007). Bank size is expected to be negatively associated with subsequent year risk taking. To control for the effect of deposit insurance and the potential moral hazard that managers face in financial institutions, franchise value, FRV_{it} , is used as a proxy for the management incentive to exploit the deposit insurance available for banks to take excessive risk. Konishi and Yasuda (2004) defined franchise value as the value forgone in the event of bank failure, receivership or conservatorship. FRV_{it} equals market value of equity plus book value of liabilities to book value of total assets. We expect a negative association between franchise value and bank risk. $Crisis_{it}$ denotes the financial crisis years of 2007, 2008 and 2009. It is expected that banks undertake less risky investments during crisis period.

Model (2) is used to test $H2a$ on the effect of regulatory capital adequacy:

$$\begin{aligned} Risktaking_{it+1} = & \beta_{2,1} + \beta_{2,2}FEM^*_{it} + \beta_{2,3}TCAP_{it} + \sum_{j=1}^n \beta_{2,j}Interact_TCAP_{jit} \\ & + \sum_{j=1}^n \beta_{2,j}Controls_{jit} + \varepsilon_{it} \end{aligned} \quad (3)$$

In Model (2), $TCAP_{it}$ is a measure of regulatory capital adequacy and is calculated as tier 1 capital scaled by total assets. When a bank has a larger regulatory capital base, it is expected to invest in risky positions as it possesses the adequate cushion to absorb potential shocks. According to prior results of Jeitschko and Jeung (2007), among others, $\beta_{2,3}$ and the coefficient on the interaction term are expected to have a positive sign.

To test $H2b$ on the effect of being well capitalized or poorly capitalized, Model (3) is used:

$$\begin{aligned} Risktaking_{it+1} = & \beta_{3,1} + \beta_{3,2}FEM^*_{it} + \beta_{3,3}WELL_{it} + \sum_{j=1}^n \beta_{3,j}Interact_WELL_{jit} \\ & + \sum_{j=1}^n \beta_{3,j}Controls_{jit} + \varepsilon_{it} \end{aligned} \quad (4)$$

In Model (3), the dummy variable $WELL_{it}$ takes the value of 1 if the bank is well capitalized having a tier 1 capital ratio of at least 6 per cent and zero otherwise. In the main specification, the regulatory ratio of 6 per cent is used as a cutoff point. In another specification, $WELL_{it}$ takes the value of 1 if the bank has above median tier 1 capital ratio and zero otherwise. This specification allows for testing the robustness of the effect of being

well capitalized or poorly capitalized based on a sample-specific rather than a regulatory threshold[15]. The coefficient $\beta_{3,3}$ and that on the interaction term are expected to have a positive sign.

To test $H3$ on the gender-risk taking gap in Islamic banks, Model (4) is used:

$$\begin{aligned} Risktaking_{it+1} = & \beta_{4,1} + \beta_{4,2}FEM^*_{it} + \beta_{4,3}IB_{it} + \sum_{j=1}^n \beta_{4,j}Interact_IB_{jit} \\ & + \sum_{j=1}^n \beta_{4,j}Controls_{jit} + \varepsilon_{it} \end{aligned} \quad (5)$$

In Model (4), IB_{it} is a dummy variable, which takes the value 1 if the bank is Islamic and zero otherwise, to capture the unique risk model of Islamic financial institutions. Boumediene (2011) found that Islamic banks have lower credit risk relative to conventional banks due to a more diversified asset base. Moreover, as conventional banks are more leveraged, they tend to be more vulnerable to credit risk relative to Islamic banks. Accordingly, we expect IB_{it} to have a negative coefficient and the interaction term to have a negative coefficient as argued in $H3$.

5. Data and sample

The sample consists of listed banks in the GCC countries for the period 2002-2014. The accounting, governance and regulatory data are collected from banks' annual reports available at Bankscope database. Data on female representation in boards are hand collected from annual reports, national stock exchanges and Hawkamah research. To calculate the market value of equity, price data and the number of common shares outstanding are collected from Gulf Base.

Observations with missing accounting, regulatory, market or governance data are deleted. Also observations at the top and bottom 1 per cent of the sample are winsorized to exclude extreme observations[16]. Although the requirement that data be available on banks for the period 2002-2014 may introduce a survivorship bias, this may not be an issue in the banking industry since the regulators generally do not allow banks to fail through providing governmental protection and deposit insurance. The final sample consists of 50 publicly traded conventional banks and 32 Islamic banks for a total number of 780 bank-year observations covering the period of 2002-2014.

6. Results

6.1 Descriptive statistics

In Table I, mean female directorship is about 2 per cent[17]. The measure of tier 1 capital ($TCAP_{it}$) has a mean (median) of 15 per cent (14 per cent). Therefore, banks operating in the GCC maintain a larger cushion than what is required by the Basel Committee and bank regulators. Mean (median) risk-weighted assets to total assets represent 53 per cent (53 per cent). On average, concentrated shareholders constitute 24 per cent of sample banks, 28 per cent of sample banks have managerial ownership, family owners represent 9 per cent of shareholders, whereas mean government ownership is 28 per cent. On average, outside directorship is 29 per cent. Islamic banks represent 41 per cent of the sample. On average, 71 per cent of the sample banks are well-capitalized based on the regulatory thresholds for capital adequacy.

Variables	Minimum	Mean	Median	Maximum	Std
$Risktaking_{it+1}$	0.31	0.53	0.53	0.89	0.09
FEM_{it}	0.01	0.02	0.03	0.04	0.06
$TCAP_{it}$	0.09	0.15	0.14	0.31	0.07
$Block_{it}$	0.00	0.24	0.00	1.00	0.03
$Manager_{it}$	0.00	0.28	0.00	1.00	0.05
$Family_{it}$	0.00	0.09	0.08	0.23	0.11
$Government_{it}$	0.00	0.28	0.20	0.29	0.19
$BoardSize_{it}$	1.61	2.08	1.95	2.30	0.17
$Outsider_{it}$	0.05	0.29	0.27	0.39	0.14
$NonPerform_{it}$	0.01	0.02	0.01	0.04	0.02
$Size_{it}$	8.01	13.01	11.76	15.02	1.14
$Franchise_{it}$	1.01	1.11	1.10	2.45	0.20
$Islamic_{it}$	0.00	0.41	0.00	1.00	0.06
$Well_{it}$	0.00	0.71	1.00	1.00	0.31

Notes: $Risktaking_{it+1}$ = the dependent variable that proxies for risk taking for bank i at year $t + 1$, measured by the ratio of risk-weighted assets to total assets; FEM_{it} = the ratio of female directors to the total number of directors on the board of bank i at year t ; $TCAP_{it}$ = the ratio of tier 1 capital to total assets; $BLOCK_{it}$ = a dummy that equals 1 if the bank has a blockholder that controls 10% or more of voting rights and zero otherwise; $MANAGER_{it}$ = a dummy that equals 1 if the bank has a manager who owns 5% or more of the bank shares and zero otherwise; FAM_{it} = the ratio of family directors to the total number of directors on the board; GOV_{it} = the percentage of shares held by the government; BS_{it} = the natural log of the number of directors on the board; OUT_{it} = the ratio of outside directors to the total number of directors on the board; NPL_{it} = non-performing loans to asset; $SIZE_{it}$ = natural log of total assets; FRV_{it} = market value of equity plus book value of liabilities to total book value of assets; IB_{it} = a dummy variable that equals 1 if the bank is Islamic and zero otherwise; $WELL_{it}$ = a dummy that equals 1 if the bank holding company has a tier 1 capital ratio of at least 6% and zero otherwise

Table I.
Descriptive
statistics – banks in
the GCC countries
(2002-2014)

Table II presents the Pearson and Spearman correlation results. The correlations between all independent variables and the dependent variable $Risktaking_{it+1}$ are significant at conventional levels and have the expected signs. The control variables are correlated with the dependent variable in the predicted direction at conventional significance levels.

6.2 Results of gender diversity and risk taking

Table III displays the first-stage regression parameter estimates. In line with our prediction, female directorship is associated with higher leverage ($\alpha = 0.18$, significant at the 5 per cent level), profitability ($\alpha = 0.21$, significant at the 1 per cent level) and efficiency ($\alpha = 0.17$, significant at the 1 per cent level). Moreover, banks with bigger boards have more female directors ($\alpha = 0.05$, significant at the 5 per cent level) in line with prior research findings that banks add females on boards by increasing board size (Sila *et al.*, 2014) or for impression management (Singh *et al.*, 2002).

Second-stage regression results, in Table IV, display that the female directorship FEM^*_{it} on the board is negatively associated with bank risk taking with a coefficient of -0.08 that is significant at the 5 per cent level. This particular finding is important in the cultural context of GCC countries, where the existence of women on the board is not fully culturally established. Although the director appointment process is not gender neutral as confirmed by Sila *et al.* (2014), women on boards bring a fresh perspective on issues facing the board. This explanation is well grounded in cognitive psychology and decision theory. Consequently, this can help correct information biases in problem-solving and formulation of strategies (Westphal and Milton, 2000).

Table II.
Pearson (above
diagonal) and
spearman (below
diagonal) correlation
coefficients

Variable	$Risktaking_{it+1}$	FEM_{it}	$TCAP_{it}$	$BLOCK_{it}$	$MANAGER_{it}$
$Risktaking_{it+1}$					
FEM_{it}	-0.019 (0.096)				
$TCAP_{it}$	0.019 (0.064)	-0.021 (0.081)			
$BLOCK_{it}$	-0.029 (0.009)	-0.002 (0.833)	-0.006 (0.793)		
$MANAGER_{it}$	-0.019 (0.001)	0.040 (0.102)	0.020 (0.081)	-0.021 (0.004)	
BS_{it}	0.008 (0.011)	0.091 (0.107)	0.009 (0.073)	0.061 (0.119)	
OUT_{it}	0.006 (0.010)	-0.003 (0.281)	0.021 (0.089)	0.028 (0.080)	
NPL_{it}	-0.064 (0.072)	-0.004 (0.198)	0.031 (0.075)	-0.014 (0.102)	
$SIZE_{it}$	-0.198 (0.011)	0.027 (0.018)	-0.002 (0.789)	-0.190 (0.092)	
FRV_{it}	-0.201 (0.001)	0.028 (0.236)	-0.200 (0.001)	0.095 (0.010)	
		0.046 (0.017)	-0.108 (<0.001)	0.001 (0.771)	
				0.026 (0.095)	
					-0.028 (<0.001)
					0.101 (0.128)
					0.013 (0.091)
					0.312 (0.003)
					-0.087 (0.067)
					-0.100 (0.096)
					0.079 (0.029)
					0.010 (0.305)
					0.139 (0.095)

Notes: (*b*-values in parentheses); $Risktaking_{it+1}$ = the dependent variable that proxies for risk taking for bank *i* at year *t* + 1, measured by the ratio of risk-weighted assets to total assets; FEM_{it} = the ratio of female directors to the total number of directors on the board of bank *i* at year *t*; $TCAP_{it}$ = the ratio of tier 1 capital to total assets; $BLOCK_{it}$ = a dummy that equals 1 if the bank has a blockholder that controls 10% or more of voting rights and zero otherwise; $MANAGER_{it}$ = a dummy that equals 1 if the bank holding company has a manager who owns 5% or more of the bank shares and zero otherwise; BS_{it} = the natural log of the number of directors on the board, OUT_{it} = the ratio of outside directors to the total number of directors on the board; NPL_{it} = non-performing loans to assets; $SIZE_{it}$ = natural log of total assets; FRV_{it} = market value of equity plus book value of liabilities to total book value of assets

(continued)

Table II.

Variable	BS_{it}	OUT_{it}	NPL_{it}	$SIZE_{it}$	FRV_{it}
$Risktaking_{t+1}$	0.010 (0.014)	0.012 (0.009)	-0.077 (0.001)	-0.296 (0.043)	-0.159 (0.001)
FEM_{it}	-0.006 (0.189)	-0.008 (0.176)	0.020 (0.097)	0.019 (0.254)	0.039 (0.091)
$TCAP_{it}$	0.018 (0.062)	0.020 (0.050)	-0.003 (0.931)	-0.215 (<0.001)	-0.124 (<0.001)
$BLOCK_{it}$	-0.009 (0.132)	-0.217 (0.102)	0.100 (0.002)	0.001 (0.978)	0.046 (0.301)
$MANAGER_{it}$	-0.092 (0.090)	-0.102 (0.100)	0.081 (0.013)	0.017 (0.819)	0.196 (0.091)
BS_{it}		0.120 (0.020)	-0.007 (0.024)	-0.019 (0.090)	-0.100 (0.041)
OUT_{it}	0.097 (0.021)		-0.018 (0.042)	-0.098 (0.072)	-0.110 (0.046)
NPL_{it}	-0.004 (0.104)	-0.009 (0.073)		0.044 (0.226)	0.032 (0.137)
$SIZE_{it}$	-0.010 (0.122)	-0.086 (0.059)	0.039 (0.316)		0.139 (0.002)
FRV_{it}	-0.078 (0.030)	-0.109 (0.039)	0.031 (0.029)	0.107 (0.014)	

Table III.
First-stage
regression of female
directorship
determinants

Variables	Prediction	<i>FEM_{it}</i> Model (1)	
		Coef.	<i>t</i> -stat.
Intercept	±	−0.49	0.97
<i>Lev_{it}</i>	+	0.18	−1.99*
<i>ROA_{it}</i>	+	0.23	−2.88**
<i>Size_{it}</i>	+	0.07	−1.01
<i>CostInc_{it}</i>	+	0.18	−2.71**
<i>BS_{it}</i>	+	0.05	1.98*
Year fixed effects			YES
Country fixed effects			YES
Firm fixed effects			YES
Adjusted <i>R</i> ²			31.93%
No. of Obs			780

Notes: *FEM_{it}* = the ratio of female directors to the total number of directors on the board of bank *i* at year *t*; *Lev_{it}* = the ratio of total equity to total assets; *ROA_{it}* = net income to average total assets; *Size_{it}* = natural log of total assets; *CostInc_{it}* = the ratio of operating costs to operating income; *BS_{it}* = the natural log of the number of directors on the board. A two-way clustering technique is used to adjust standard errors; *, **, and *** represent significance at the 10%, 5% and 1% level, respectively. Significance is one-tailed unless the sign of the coefficient is indeterminate

The control variable *BLOCK_{it}* is significantly associated with bank risk taking with a coefficient of −0.18, which is consistent with prior work (Saunders *et al.*, 1990; Gropp and Köhler, 2010). The coefficient of *MANAGER_{it}*, 0.21, is positive as expected and significant at conventional levels, in line with the agency theory prediction. Family ownership is negatively associated with risk taking, with a coefficient of −0.07, consistent with the monitoring role of family members suggested by the agency theory. Government ownership is associated with more risk taking, with a coefficient of 0.09, as banks are expected to have easier access to government protection in the event of distress.

The coefficients on *BS_{it}* and *OUT_{it}*, of 0.05 and 0.14, respectively, are positive and significant as expected. The results may be explained in light of Adams and Mehran (2014), who illustrated that the beneficial effect of board size on bank performance declines when boards get larger. Larger boards imply the existence of free riders, which may create agency problems. Hence, the positive effect of board size, *BS_{it}*, on risk taking. With respect to the variable *OUT_{it}*, holding many outside directorship positions may eventually counteract beneficial effects of independent boards, which reduces decision-making efficiency.

6.3 Results of regulatory capital adequacy and risk taking

In Table V, the coefficients of *TCAP_{it}* show that when banks have relatively larger tier 1 capital cushion, they invest in more risky positions. The results show that for banks with larger tier 1 capital, relative to those with lower tier 1 capital, female directorship is associated with more risk taking ($\beta = 0.05, p < 1$ per cent). Adams and Funk (2012) pointed out that the degree of female risk aversion may vanish when they climb the corporate ladder as they want to adapt themselves to a fierce male-dominated culture.

To test *H2b*, a cutoff point of 6 per cent tier 1 capital ratio, set by bank regulators to classify banks as being well-capitalized, has been used. Results reported in Table V reveal that female directors in well-capitalized banks tend to invest in relatively highly risky assets ($\beta = 0.08, p < 1$ per cent). These results may be attributed to the benefits that banks enjoy

Variables	Prediction	Risktaking _{it+1} Model (2)	
		Coef.	t-stat.
Intercept	±	0.33	1.06
FEM^*_{it}	–	–0.07	–1.99**
$BLOCK_{it}$	–	–0.15	–1.98**
$MANAGER_{it}$	+	0.19	1.91**
FAM_{it}	–	–0.07	–1.30*
GOV_{it}	+	0.09	1.98**
BS_{it}	+	0.05	1.17
OUT_{it}	+	0.06	1.23
NPL_{it}	–	–0.27	–1.52*
$SIZE_{it}$	–	–0.09	–1.18
FRV_{it}	–	–0.14	–1.99**
$Crisis_{it}$	–	–0.05	–1.79**
Year fixed effects		YES	
Country fixed effects		YES	
Firm fixed effects		YES	
Adjusted R ²		33.17%	
No. of Obs.		780	

Notes: $Risktaking_{it+1}$ = the dependent variable that proxies for risk taking for bank i at year $t + 1$, measured by the ratio of risk-weighted assets to total assets; FEM^*_{it} = the ratio of female directors to the total number of directors on the board of bank i at year t predicted from first-stage regression; $BLOCK_{it}$ = a dummy that equals 1 if the bank has a blockholder that controls 10% or more of voting rights and zero otherwise; $MANAGER_{it}$ = a dummy that equals 1 if the bank has a manager that owns 5% or more of the bank shares and zero otherwise; FAM_{it} = the ratio of family directors to the total number of directors on the board; GOV_{it} = the percentage of shares held by the government; BS_{it} = the natural log of the number of directors on the board; OUT_{it} = the ratio of outside directors to the total number of directors on the board; NPL_{it} = non-performing loans to assets; $SIZE_{it}$ = natural log of total assets; FRV_{it} = market value of equity plus book value of liabilities to total book value of assets; $Crisis_{it}$ = a dummy that equals 1 if the year is a financial crisis year of 2007, 2008, or 2009 and zero otherwise. A two-way clustering technique is used to adjust standard errors; *, ** and *** represent significance at the 10, 5 and 1% level, respectively. Significance is one-tailed unless the sign of the coefficient is indeterminate

Table IV.
Regression results of
the association
between female
directorship and risk-
taking behavior –
banks in the GCC
countries (2002–2014)

when they hold excess capital than the minimum required by regulators, which includes improved risk sharing. Even then, general equilibrium effects may imply a positive association between capital and risk (Gale, 2010). Jeitschko and Jeung (2007) may provide an interesting explanation to the findings. In poorly capitalized banks, the regulatory effect dominates bank risk taking due to banks being prone to strict regulatory scrutiny. On the other hand, in well-capitalized banks, shareholders and managers dominate the regulatory effect and push for more risk taking.

Although the existence of women on the board is associated with less risk taking as revealed by the coefficient of FEM^*_{it} in Model (2), Models (3) and (4) reveal interesting results. The association between female directorship and risk taking is attenuated when banks' regulatory capital cushion allows for investment in more risky positions. The perception in prior literature has been that women are generally more risk averse than men (Jianakoplos and Bernasek, 1998). However, the findings of this study are consistent with those of Schubert *et al.* (1999) who documented that, in contextual financial decisions, preconceptions concerning the risk attitudes of female managers and investors are not founded in reality.

6.4 Results of risk taking in Islamic banks

Results of Model (5) in Table V indicate that Islamic banks generally undertake less risky investments relative to conventional banks in the sample ($\beta = -0.03, p < 10$ per cent). Female directors tend to undertake less risky positions in Islamic banks relative to conventional banks ($\beta = -0.09, p < 5$ per cent). This result may be attributed to religiosity constraining excessive risk taking through enhanced internal and external monitoring (Kanagaretnam *et al.*, 2015). Adhikari and Agrawal (2016) pointed out that banks in religious contexts mitigate excessive risk taking through growing their asset-base more

Variables	Prediction	Model (3)		Risktaking _{it+1} Model (4)		Model (5)	
		Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
Intercept	±	1.08	1.01	1.13	1.09	2.01	0.91
FEM [*] _{it}	–	–0.06	–0.07	–0.01	–1.00	–0.04	–1.23
TCAP _{it}	+	1.07	1.28*				
FEM [*] _{it} × TCAP _{it}	+	0.05	2.69***				
WELL _{it}	+			1.10	1.99**		
FEM [*] _{it} × WELL _{it}	+			0.08	2.89***		
IB _{it}	–					–0.03	–1.31*
FEM [*] _{it} × IB _{it}	–					–0.09	–1.76**
BLOCK _{it}	–	–0.09	–0.87	–0.06	–0.91	–0.05	–0.87
MANAGER _{it}	+	0.21	1.28*	0.17	1.29*	0.08	1.10
FAM _{it}	–	–0.05	–1.20	–0.03	–1.18	–0.03	–1.18
GOV _{it}	+	0.07	1.30*	0.08	1.32*	0.04	1.01
BS _{it}	+	0.05	1.08	0.02	1.10	0.03	0.92
OUT _{it}	+	0.14	1.01	0.11	1.18	0.09	1.07
NPL _{it}	–	–0.19	–1.19	–0.21	–1.29*	–0.18	–1.30*
SIZE _{it}	–	–0.04	–1.76**	–0.08	–1.20	–0.05	–1.69**
FRV _{it}	–	–0.07	–1.68**	–0.09	–1.59*	–0.06	–1.54*
Crisis _{it}	–	–0.04	–1.58*	–0.05	–1.55*	–0.04	–1.62*
Year fixed effects		YES		YES		YES	
Country fixed effects		YES		YES		YES	
Firm fixed effects		YES		YES		YES	
Adjusted R ²		37.27%		36.91%		38.13%	
No. of Obs.		780		780		780	

Notes: Risktaking_{it+1} = the dependent variable the proxies for risk taking for bank holding company *i* at year *t* + 1, measured by the ratio of risk-weighted assets to the sum of total assets; FEM^{*}_{it} = the predicted value of the ratio of female directors to the total number of directors on the board of bank *i* at year *t*; TCAP_{it} = the ratio of tier 1 capital to total assets; WELL_{it} = a dummy that equals 1 if the bank holding company has a tier 1 capital ratio of at least 6% and zero otherwise; IB_{it} = a dummy variable that equals 1 if the bank is Islamic and zero otherwise; BLOCK_{it} = a dummy that equals 1 if the bank holding company has a blockholder that controls 10% or more of voting rights and zero otherwise; MANAGER_{it} = a dummy that equals 1 if the bank holding company has a manager that owns 5% or more of the bank shares and zero otherwise; FAM_{it} = the ratio of family directors to the total number of directors on the board; GOV_{it} = the percentage of shares held by the government; BS_{it} = the natural log of the number of directors on the board; OUT_{it} = the ratio of outside directors to the total number of directors on the board; NPL_{it} = non-performing loans to assets; SIZE_{it} = natural log of total assets; FRV_{it} = market value of equity plus book value of liabilities to total book value of assets; Crisis_{it} = a dummy that equals 1 if the year is a financial crisis year of 2007, 2008, or 2009 and zero otherwise. A two-way clustering technique is used to adjust standard errors; *, **, and *** represent significance at the 10, 5 and 1% level, respectively. Significance is one-tailed unless the sign of the coefficient is indeterminate. Only the coefficients of relevant interaction terms are reported

Table V.
Regression results of the effect of the regulatory capital on the association between female directorship and risk-taking behavior – banks in the GCC countries (2002-2014)

slowly, holding less risky assets, relying less on non-traditional banking and providing less incentives to their directors to increase risks.

6.5 Robustness tests

Due to the relatively small mean value of the variable FEM_{it} (2 per cent of board members are females), the test of $H1$ on female directorship and risk taking is performed using a dummy variable $FEMD_{it}$, which equals 1 if the board has a female member and 0 otherwise. For parsimonious reasons, results of the panel data regression are reported in Table VI along with the second-stage regressions. Moreover, in line with prior literature, alternative risk-taking measures are used (Laeven and Levine, 2009; Pathan and Faff, 2013; Berger *et al.*, 2014). Accounting risk-taking measures represent Z-score[18], non-performing loans to total loans, and loan loss provisions to total loans. Market-based risk-taking measures represent the standard deviation of annualized equity returns. The fixed-effects estimators use the within-sample variation to estimate the parameters. Therefore, firm, year and country fixed effects are used to better test the effect of female directorship on bank risk-taking. The results are in line with the main test using the regulatory risk-taking measure.

7. Conclusion and regulatory implications

The motivation of this study mainly lies in the policy discussions on bank risk taking and concerns about recent bank governance breakdowns during the aftermath of the financial crisis of 2007. Moreover, prior research has overlooked a key aspect; banks' endogenous decision to modify their risk-weighted investments in adherence to regulatory capital required ratios. Hence, this study examines the effect of board gender diversity and bank risk taking and interaction with the regulatory capitalization decision. Furthermore, prior work is extended to control for measures of ownership structure and board characteristics. Most importantly, new measures of risk taking are used to be in line with risk-weighted capital measures set by bank regulators to tie in the results to the policy discussions.

Using data of GCC banks during the period 2002-2014, female directorship is found to be negatively associated with bank risk taking, after controlling for concentrated ownership structure, managerial ownership, board size and outside directorship. When banks have larger levels of the regulatory capital ratio, female board members advocate more risky investments. This result is particularly relevant to bank regulators and policy makers as the poorly capitalized banks are prone to more regulatory scrutiny. Hence, the regulatory effect of mitigating excessive risk taking is dominant. On the other hand, well-capitalized banks are more inclined to engage in more risky investments due to the effect of other stakeholders (shareholders/managers) being more dominant. An interesting finding corroborating further investigation is that female directors make decisions to invest in more risky positions when the regulatory capital cushion allows it. This is contrary to the preconception that female directors are generally risk averse, which has been one factor of keeping them out of boardroom. Risk aversion is attenuated as female directors perceive the opportunities inherent in capital adequacy and the rewards of risk taking. Status characteristics theory predicts that low-status groups, such as females, are held to a higher standard to demonstrate their managerial ability than high-status groups (Hillman *et al.*, 2002). Kanter (1977) indicated that educational credentials offer opportunities for greater achievement, which helps level the playing field for low-status groups. Hence, there is a need for continued education, mentoring and training of high-order managerial skills to make women more "comfortable" sitting on the board and assuming top management positions. In emerging market settings, women continue to shatter corporate glass ceilings, but still more effort is needed toward changing the mindsets of people at the workplace. Governments and civil societies need to continue

Variables	Predict.	RWA/TA		Z-score		Risktaking _{it+1} NONPERF		LLP/TL		SDEQ	
		Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
Intercept	±	0.42	1.21	0.38	1.00	0.41	1.09	0.40	1.01	0.31	1.01
FEMD _{it}	−	−0.12	−1.99**								
FEM* _{it}	−			−0.11	−1.99**	−0.12	−1.98**	−0.10	−1.98**	−0.11	−2.00**
BLOCK _{it}	−	−0.14	−1.91**	−0.16	−1.97**	−0.12	−1.97**	−0.10	−1.92**	−0.16	−1.98**
MANAGER _{it}	+	0.17	1.92**	0.16	1.91**	0.19	1.95**	0.21	1.91**	0.20	1.91**
FAM _{it}	−	−0.08	−1.31*	−0.05	−1.09	−0.08	−1.30*	−0.07	−1.30*	−0.04	−1.03
GOV _{it}	+	0.05	1.01	0.07	1.20	0.09	1.38*	0.09	1.39*	0.11	1.96**
BS _{it}	+	0.06	1.18	0.05	1.17	0.02	1.13	0.05	1.15	0.04	1.07
OUT _{it}	+	0.03	1.07	0.04	1.00	0.10	1.09	0.09	1.03	0.05	1.20
NPL _{it}	−	−0.19	−1.53*	−0.30	−1.52*			−0.18	−1.53*	−0.31	−1.52*
SIZE _{it}	−	−0.08	−1.18	−0.09	−1.17	−0.09	−1.18	−0.09	−1.20	−0.10	−1.56*
FRV _{it}	−	−0.12	−1.09	−0.14	−1.10	−0.13	−1.30*	−0.12	−1.00	−0.15	−1.97**
Crisis _{it}	−	−0.06	−1.80**	−0.05	−1.79**	−0.05	−1.87**	−0.06	−1.79**	−0.05	−1.79**
Year fixed effects		YES		YES		YES		YES		YES	
Country fixed effects		YES		YES		YES		YES		YES	
Firm fixed effects		YES		YES		YES		YES		YES	
Adjusted R ²		34.99%		39.78%		35.02%		36.91%		29.86%	
No. of Obs.		780		780		780		780		780	

Notes: Risktaking_{it+1} = the dependent variable that proxies for risk taking for bank *i* at year *t* + 1, measured by: RWA/TA = the ratio of risk-weighted assets to total assets; Z-score = $\frac{ROA + \left(\frac{\text{Equity}}{\text{Assets}}\right)}{\sigma(ROA)}$; NONPERF = the ratio of nonperforming loans to total loans; LLP/TL = the ratio of loan loss provisions to total loans; SDEQ = the standard deviation of annualized equity returns; FEMD_{it} = a dummy variable that equals 1 if the board of bank *i* at year *t* has a female member and zero otherwise; FEM*_{it} = the predicted value of the ratio of female directors to the total number of directors on the board of bank *i* at year *t*; BLOCK_{it} = a dummy that equals 1 if the bank has a blockholder that controls 10% or more of voting rights and zero otherwise; MANAGER_{it} = a dummy that equals 1 if the bank has a manager that owns 5% or more of the bank shares and zero otherwise; FAM_{it} = the ratio of family directors to the total number of directors on the board; GOV_{it} = the percentage of shares held by the government; BS_{it} = the natural log of the number of directors on the board; OUT_{it} = the ratio of outside directors to the total number of directors on the board; NPL_{it} = non-performing loans to assets; SIZE_{it} = natural log of total assets; FRV_{it} = market value of equity plus book value of liabilities to total book value of assets; Crisis_{it} = a dummy that equals 1 if the year is a financial crisis year of 2007, 2008 or 2009 and zero otherwise. A two-way clustering technique is used to adjust standard errors; *, ** and *** represent significance at the 10, 5 and 1% level, respectively. Significance is one-tailed unless the sign of the coefficient is indeterminate

Table VI.
Regression results of
the association
between female
directorship and
alternative risk-
taking measures

providing facilities for working women, laws for protecting the dignity of females at the workplace, quotas to communicate a vision of female participation and awareness campaigns to create a more adaptive culture to female directorship. Further evidence shows that Islamic banks generally invest in less risky positions relative to conventional banks. This evidence agrees with prior literature on the stability and resilience of Islamic banks.

The findings of this study are relevant to banks regulators in emerging markets, especially the highly dynamic GCC markets, on bank governance structures. The economies of GCC countries continue to grow steadily. More importantly, since the oil price dropped, the economy has diversifying and is mainly investment-driven in the infrastructure and services sector. Enhancing the performance of the banking sector and keeping its resilience have been the center of attention in these dynamic markets. Prior evidence suggests that women have strong monitoring incentives (Almazan and Suarez, 2003). This study suggests

that bank excessive risk taking risk is likely to decrease if more female directors are present on boards. Bank regulators need to encourage effective governance mechanisms mitigating excessive risk taking while paying close attention to the cultural and social perspective affecting the extent to which female directorship is embedded in bank boards.

Notes

1. Accounting variables used in prior studies are limited to on-balance sheet risk, whereas stock price volatilities are limited to listed banks (Gropp and Köhler, 2010). Moreover, variables based on loans or loan loss reserve proxy for risk only indirectly.
2. available at: www.hawkamah.org
3. Banks may be classified in one of five categories as being well capitalized, adequately capitalized, undercapitalized, significantly undercapitalized and critically undercapitalized if their regulatory capital ratios are within ranges specified by the regulators.
4. Tier 1 capital represents core capital, which consists of accounting equity after some regulatory adjustments. Tier 2 capital is a junior debt-like measure of capital, which consists of undisclosed reserves, revaluation adjustments, general provisions and loan loss reserves, hybrid instruments and subordinated debt. Total capital is calculated by adding up tier 1 capital and tier 2 capital.
5. It should be noted that, subsequent to the interval examined in this study, Basel III has mandated that 6 per cent should become the minimum capital requirement. According to banks in the GCC countries, the Basel III minimum capital requirements will be effective in January 1, 2019.
6. During the sample period, all GCC countries rely on the standardized approach, where risk weights are defined according to the Basel Accord. Hence, banks do not use the internal ratings-based approach, where bank-specific models are developed to assess risk.
7. Capital adequacy ratios have been used extensively in prior research as proxies for bank risk taking (for example, Shehzad *et al.*, 2010).
8. Impression management entails putting women on the board merely to give a good signal to stakeholders and society rather than to affect performance.
9. For further robustness, alternative proxies are used to gauge risk taking in line with prior literature. Measures used are: standard deviation of profitability (ROA) over 5-year overlapping periods starting, where ROA is measured as the ratio of earnings before interest, taxes, depreciation and amortization to total assets; the difference between the maximum and minimum ROA reported over a 5-year interval, as by Boubakri *et al.* (2013); and standard deviation of the ROA for each firm over the entire sample period, requiring a minimum of five observations in the cross-sectional regressions, as by John *et al.* (2008). Untabulated results remain significant under conventional levels.
10. In alternative untabulated tests, a random effects model is used as well as a Hausman test for the significance of random effects. The results of the Hausman test allow rejecting the hypothesis of absence of correlation between individual effects and independent variables. Consequently, the estimation with the fixed effects model is the most efficient one for the variables and is used to report the results.
11. A log transformation for all dependent variables is used as they represent ratios bounded by 0 and 1. Using a log-transformed dependent variable specification avoids the possibility that predicted values fall outside the feasible range. Therefore, we get unbiased predictions within the observable range.
12. Different cutoff points are used for robustness results. Consistent with prior research, we use a 10% cut-off point for the main test. Adams and Mehran (2003) found that blockholders have smaller equity holdings of bank holding companies compared to the equity holdings of non-

financial firms. Therefore, we use 5 per cent and 1 per cent as cutoff points to define a blockholder in banks. Empirical results are robust to alternative specifications.

13. Family ownership creates little or no separation of ownership and control, thereby the related agency costs are minimized, prompting relatively lower need for monitoring.
14. Size might capture many other factors. One of which might be that big banks are too big to fail. This aspect is not tested in this study. Hence, $SIZE_{it}$ is used as a control variable.
15. In the alternative specification, the coefficients of the explanatory variables and controls are significant at conventional levels and in the expected direction in line with the main inferences.
16. These observations might reflect data errors or are unduly affected by some of the variables being in ratio form (e.g. dividing by a small number).
17. Female representation varies across countries, where the highest representation is in Kuwait and the lowest is in KSA.
18. Z-score is used, denoting the number of standard deviations that return on assets of a bank has to drop below its expected value before equity is depleted and the bank is insolvent (Beck *et al.*, 2013).

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