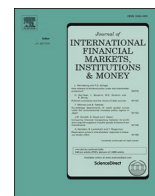


Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Journal of International Financial Markets, Institutions & Money

journal homepage: www.elsevier.com/locate/intfin

Women directors and market valuation: What are the “Wonder Woman” attributes in banking?

Rana Alharbi^{a,b}, Marwa Elnahass^{a,*}, Josie McLaren^a

^a Newcastle University Business School, Newcastle University, UK

^b College of Islamic Economics and Finance, Umm Al-Qura University, Mecca, Saudi Arabia

ARTICLE INFO

JEL Classification:

C23
G01
G21
G28
L50
M4

Keywords:

Board Gender Diversity
Women Directors
Bank Value
Board Attributes
Financial Crisis
Bank Type

ABSTRACT

This study investigates whether women directors' attributes affect market valuation for banks. Functional attributes such as independence and leadership are considered together with professional attributes such as financial expertise, education and nationality. We have constructed a unique sample of 1,019 bank-year observations for the period 2007–2017 for 12 developing countries that are characterized by low women's empowerment/quotas and a dual banking system. Alternative measures for women on the board have been used (i.e. the percentage of women and a dummy indicator). Our findings suggest strong evidence that the presence of women directors on the board is positively associated with bank value. Women as independent board members are also positively associated with market value, whereas women being in a chairperson leadership role has no significant association. Accounting and finance qualifications are positively associated with bank market value, whilst conversely, women directors with a high level of education and those holding international qualifications or whom are foreign, are negatively associated with bank market value. As a mediating effect, we examine the cultural value orientations (i.e. cultural openness to diversity) for our sample countries. Our results demonstrate that women directors have a positive association with bank value in countries which are more open to diversity. The findings regarding women directors' attributes tend to vary depending on the level of culture openness. We additionally examine the impact of different bank types (i.e. Islamic versus conventional banks) and the financial crisis of 2007.

1. Introduction

Resource dependence theorists argue that board of directors monitoring is vital for efficient resource allocation and risk mitigation (Hillman and Dalziel 2003). Bank board of directors' characteristics, skills, and attributes have been receiving considerable attention in the corporate governance literature, as prior studies document that the characteristics of board members influence firm value (e.g., Faleye et al., 2018; Jouida, 2019). Gender diversity has become an important board characteristic which is subject to great contemporary debates (De Masi et al., 2021), with respect to equality, inclusivity, and other demographics.

Gender diversity is commonly defined as the proportion of total directors on the board that are women (Haque and Jones, 2020; Liao et al., 2015). A high representation of women directors on a board can enhance the quality of the governance mechanisms, the firm's financial performance and understanding of complex business issues through their experience, abilities, and attributes (Adams

* Corresponding author.

E-mail address: marwa.elnahas@newcastle.ac.uk (M. Elnahass).

and Ferreira, 2009; Carter et al., 2003, 2010). Prior studies suggest that board gender diversity brings different perspectives, including social and human capital, which enhance corporate governance (Singh, 2007; Adams and Funk, 2012), impact on decision-making processes (Hillman and Dalziel, 2003), lead to innovative solutions to problems (Estéyri and Nisar, 2016) and which can therefore influence stock market values.

Women directors are valuable for the board because they can enhance the firm's market vision and aid in resource acquisition through their special skills, experience, and background knowledge, in addition to their business and social contacts. Furthermore, the representation of women directors in the boardroom brings new inspiration and vision (Bennouri et al., 2018; Haque and Jones, 2020). Indeed, having at least one woman on the board can create a heterogeneous background and qualifications, thus having a different impact on the firm to a board comprising solely of men (Chen et al., 2019a). Women directors also proliferate the competitive environment of the boardroom, which helps to reduce the time spent on decision-making in negotiations, speeding up the process of reaching full agreement (Chen et al., 2017).

Over the past decade, the increasing number of women in leadership and directorship roles on boards (mandated or not), has caught the attention of bank policymakers, regarding the significance of their role and the relationship to strong bank governance (Owen and Temesvary, 2018). It is suggested that women are associated with lower firm risk because they generally tend to avoid taking high-risk decisions and challenging investments (Loukil and Yousfi, 2016). For example, women directors promote less aggressive policies and also reduce the impacts of agency and financial distress costs in their firms (Chen et al., 2019a).

A number of studies have investigated the impact of women directors on firm risk and performance within financial and non-financial firms, although prior research examining stock market valuations within the banking sector and the associations with women directors is still limited. The majority of the stock market valuation studies have focused mainly on non-financial firms, indicating that woman directors are positively associated with a firm's market value (e.g. Carter et al., 2003; Campbell and Mínguez-Vera, 2008; Larkin et al., 2012; Ntim, 2015; Gyapong et al., 2016).

Banking studies have ultimately focused on financial performance and bank risk in relation to board gender diversity, documenting mixed and limited evidence (see Owen and Temesvary, 2018; Arnaboldi et al., 2020; Cardillo et al., 2020; Kinatader et al., 2021). Other banking studies have been restricted to the impact of corporate governance mechanisms, ownership structure, shareholder protection laws, board size, and CEO duality (see Caprio et al., 2007; Belkhir, 2009; Zulkafli et al., 2010). Moreover, prior studies commonly employed a single-country analysis (Berger et al., 2014; Dong et al., 2017; Owen and Temesvary, 2018) or a regional analysis such as the European context (De Cabo et al., 2012; Palvia et al., 2020); hence, evidence for market valuations pertaining to women directors' representation within the banking setting is still lacking from an international perspective.

The value and advantage of having women directors on the board not only pertains to the differences in gender, but additionally to how their attributes may serve to enhance the decision-making process in the boardroom. Women directors' functional attributes such as independence and leadership, along with professional attributes relating to education, financial expertise and nationality, may promote effective monitoring and reduce agency conflicts, bolstering the bank's reputation, widening resources and increasing investor confidence and market valuation. Studying women directors' functional and professional attributes is essential (Nekhili and Gatfaoui, 2013), however, very few studies have brought significant analysis, with the exception of Bennouri et al. (2018), who linked the presence of women on the board with French firms' performance, and Gull et al. (2018), who associated gender diversity with earnings management in listed French firms.

None of the prior studies in banking have investigated stock market valuations of banks and the association with various attributes of women directors. Accordingly, relatively little is known about whether the presence of women directors on boards, jointly with their unique attributes, can be positively or negatively associated with bank value. We address this gap by following Bennouri et al. (2018) and Gull et al. (2018) through considering five proxies for women directors' attributes: (i) functional attributes of (a) independence and (b) leadership; and (ii) professional attributes pertaining to (a) nationality, (b) education and (c) financial expertise.¹

Our premise is that women directors' attributes may be associated with stock market valuation, either positively or negatively, but that these associations could be affected by national culture, bank institutional characteristics and exogenous economy shocks. We utilize alternative measures for board gender diversity, which reflect the representation of women directors through: (i) a dummy variable that is equal to 1 if the board has at least one woman and 0 otherwise; and (ii) the percentage of women directors compared to the total number of board members. The study draws on several theoretical perspectives including agency theory, resource dependence theory, and signaling theory in order to build three main testable hypotheses.

This study also offers new insights regarding the plausible culture orientations toward diversity of our sampled countries. We empirically assess and compare findings in countries that are open to diversity versus those which are less so. Moreover, we extend the scope of this study to capture the systematic differences in stock market valuations for women directors across alternative bank types (i.e. Islamic and conventional banks) which have not been investigated in prior studies. The business models, natures, qualities, and commitments of the board of directors in the two bank types are dissimilar (Farag et al., 2018; Trinh et al., 2020; Elnahass et al., 2022), which is likely to affect investors' valuations of women's directorship on boards. In addition, prior studies of gender diversity (Pathan and Faff, 2013; Palvia et al., 2015) offer conflicting evidence on market valuations during episodes of financial distress such as the financial crisis of 2007. We extend our analyses to investigate the crisis effect on women directors' attributes, which has also not been

¹ We refer to financial expertise as women directors with experience as an executive officer (e.g. CEO, CFO, or CRO) in a bank or insurance company, or experience as an academic (e.g. professor in finance, accounting, economics, or business) (Güner et al., 2008). Nationality may be regarded as a personal attribute, but for this study nationality is determined in relation to the home country of the bank, so it is categorised as a professional attribute.

tested in previous studies.

We employ financial and corporate governance data for a unique sample of 114 listed banks from 2007 to 2017 for 12 emerging countries in the Middle East and South-East Asia. The rationale for selecting this sample is that women in these areas tend to face greater discrimination than in developed countries due to the conservative culture and norms based on religion. According to the Arab Human Development Report (2016), among women in the Middle East there tends to be low participation in political, economic, and social life, limited access to employment opportunities, high illiteracy, and wage discrimination. There have, however, been recent changes implemented to address discrimination and empower women - for example, through amendments made to many corporate laws and the adoption of political reforms in countries such as Saudi Arabia, the United Arab Emirates (UAE), Lebanon, Jordan, and Qatar, enabling more women to attain senior positions within organizations (Salloum et al., 2019).

The study utilizes a three-stage least squares estimation method to mitigate the potential endogeneity issue. The main finding shows that, on average, the presence of women directors on boards is significantly and positively associated with stock market valuations. The positive association of women directors remains unchanged across the measures of gender diversity (i.e. percentages and dummy indicators) and also after introducing differing and additional attributes. Our results for the functional attributes show that independent women directors are positively associated with market value, whilst leadership, measured by the role of chairperson, does not have a significant effect.

When examining women directors' professional attributes, we find that financial expertise and foreign nationality attributes for our sampled banks are negatively associated with bank value. In contrast, women directors with a high level of education and those with accounting and finance qualifications are positively associated with bank market value. We find strong evidence that banks with a high proportion of women members who graduated from international universities are negatively associated with market value. We conclude that the key board's 'wonder woman' attributes, which can enhance bank value, are: independent directorships, higher levels of education, specialized qualifications and local knowledge.

For additional analyses, we examine the mediating effect of national culture orientations (i.e. openness to diversity). We find that women directors are significantly and positively associated with bank market value in countries which are more open to diversity. Functional and leadership attributes are associated with lower bank market value in these countries, whereas professional attributes (financial expertise, postgraduate qualifications, graduated from international universities and accounting and finance qualification) are associated with higher market value in countries culturally less open to diversity.

Through separate analyses, we clustered our full sample into different bank types (i.e. Islamic and conventional banks). We find that a high representation of women on the board is negatively associated with market value for Islamic banks, but the opposite holds true for conventional banks. The presence of independent women directors on the boards of both Islamic and conventional banks is significantly positively associated with market value. In both bank types, the presence of women directors with postgraduate degrees and accounting and finance qualifications is significantly positively associated with bank market valuation. The results for educational background are consistent across both bank types: women directors who studied at foreign universities are negatively associated with bank values.

Moreover, we assess the impact for the financial crisis and post-crisis periods and we find that women directors are positively associated with bank value only during non-financial crisis years (i.e. 2007–2009). Furthermore, we use propensity score matching to identify a matched sample of banks without women directors to control for self-selection bias. The findings for the matched sample support the main findings. We run several other sensitivity checks and overall results are robust and consistent with the main findings.

This paper makes a number of contributions to the global banking literature on board gender diversity and corporate governance. To the best of our knowledge, this is the first study to utilize a unique dataset for emerging countries operating under a dual banking system. Through systematic analyses of comprehensive gender diversity indicators, this study enhances the results from prior banking studies that have focused on examining the usual measures of gender (i.e. percentage and dummy indicators) but which have not studied women's representative associations within stock market valuations in either a global or emerging economy context (Pathan and Faff, 2013; García-Meca et al., 2015; Nguyen et al., 2015; Arnaboldi et al., 2020). Our study goes beyond identifying the association of women directors with market valuation by capturing key functional and professional attributes which may affect investors' perceptions of bank value and which have not been jointly examined in the literature to date. Moreover, for our unique sample setting, we extend prior evidence to emphasize the importance of cultural value orientations. As a result, we present the first study to examine the association of market value with women directors and their attributes across countries that are either more or less open to diversity. Further to this, we recognize the importance of addressing institutional characteristics for banks and, hence, we study differences between alternative banking business models, broadening the existing comparative literature on corporate governance across Islamic and conventional banks, which does not specifically examine board gender diversity (e.g. Abdelsalam et al., 2016; Shibani and Fuentes, 2017; Elnahass et al., 2020, 2022; Mohammad et al., 2020; Trinh et al., 2021). Evidence regarding the effect of the financial crisis of 2007 on board gender diversity is inconclusive and we offer updated evidence to prior studies (e.g. Palvia et al. 2015; Duppati et al. 2019) from unique regions like the Middle East and South-East Asia.

This study offers important insights and policy implications for several sets of stakeholders engaging with the global banking system. At present, more women directors' quotas are being identified worldwide, showing a steadily increasing trend of equality and inclusive representation of women in board member roles for our sampled countries. It can therefore be concluded that this study offers new and key implications for policymakers, clarifying *why* as well as *how* banks should appoint women directors based on their attributes rather than on a blind gender quota. The evidence presented in this study also provides support for the global movement in a society geared towards recognizing the value of empowering women in banking.

Regarding nationality and financial expertise, legislators within the banking sector should publish clearer guidelines regarding the percentage of foreign women directors and those with financial expertise. Another important implication is linked to findings

highlighting the substantial mediating effect of cultural openness to diversity on the relationship between board gender diversity and bank market value. This study may accordingly help to change some of societies' perceptions in emerging economies towards the importance of empowering women in the banking industry. Promoting bank value in global banking cannot be fulfilled without a renewed socio-cultural perspective to allow more diversity in board members. Furthermore, the evidence shown in this study could influence policymakers/regulators and guide them to structure the board of directors differently across alternative banking systems, particularly in emerging countries operating on dual banking systems. Although the presence of women directors is positively associated with market value within conventional banks, our results suggest that this is not the case for Islamic banks. This result can be justified by the complex agency environments and constrained business models of Islamic banking. Finally, regulators may find it useful to reflect on the differential findings between the association women directors and market valuation during episodes of exogenous shocks compared to periods of economic stability.

The remainder of this paper is structured as follows: the next section discusses the study's cultural context and norms for the regions under investigation; the background and theoretical framework are presented in section 3; the hypothesis development is discussed in section 4; the sample and data are described in section 5 and the methodology in section 6; section 7 articulates the empirical results; section 8 provides an extended analysis; section 9 provides additional testing and robustness checks; finally, section 10 concludes.

2. Regional culture orientations and norms

The role of women directors has been the topic of heated debate in prior literature, particularly in terms of whether and how women enhance corporate performance (Song et al., 2017). From a business and ethical perspective, gender diversity is considered an important attribute in board structure (De Cabo et al., 2012). Despite this, there are still many developing countries that offer limited opportunities for the representation of women leaders in firms today - this can be commonly observed within Middle Eastern and some Asian countries.

In the countries identified for our study, women leaders in Middle Eastern regions are more likely to be discriminated against and abused than in developed countries, which is tied to the cultural norms arising from the conservative culture, ideologies, social norms, and morals constructed on religion (Kim and Sandler, 2020). In the Middle East, women have a tendency to have less participation in political, economic, and social life, and fewer employment and other opportunities than men (The Arab Human Development Report, 2016). Alongside Middle Eastern countries, Asian countries' institutional and socio-cultural standards are resistant to hiring women directors (Low et al., 2015). Women's representation on boards in most Asian countries is higher than in the Middle Eastern region but the selection of women directors is still small in most Asian countries in comparison to Western nations, as a result of Asian institutional and socio-cultural standards (Low et al., 2015). However, having more women in decision-making positions in different developed countries can lead to increasing women's opportunities for better education and training, helping to empower them and improving decision-making efficiency. For example, Belaounia et al. (2020) found that, for countries open to gender equality, women directors can enhance a firm's performance and mitigate risk. Lewellyn and Muller-Kahle (2020) have also confirmed the importance of national culture and institutional forces in explaining cross-national variation in board gender diversity. Moreover, Post and Byron (2015) find that, within countries that provide access for women to receive a good education and allow for economic participation, employment, and political empowerment of women, women directors can promote high financial performance.

Despite women's high educational backgrounds and qualifications, the gender gap in board positions and leadership as senior executives still exists across many emerging economies located in the Islamic and Middle Eastern countries. For example, McKinsey and Company's (2014) survey of Gulf countries examining the proportions of women in the labor force observed that women comprised 32 % of the labor force overall, in comparison with 51 % in Europe and other OECD countries, with the lowest level in Saudi Arabia (18 %) and the highest levels in Qatar, the UAE and Kuwait (51 %, 47 %, and 43 %), respectively. Moreover, despite female graduates outnumbering male graduates in these countries, they only hold 1 % of board and executive committee positions in these Islamic and Middle Eastern regions (McKinsey and Company, 2014).

In this study, the majority of the countries under investigation have no specific and/or mandatory gender quotas. An exception is the United Arab Emirates (UAE) which states a gender quota of at least one woman board member for listed companies—although this specification is not yet mandatory—however, it has recently encouraged firms to hire women members (Terjesen et al., 2015). For example, the UAE movements are stated in Bloomberg as “The UAE's central bank has already signed a memorandum of understanding with Aurora50, a firm focused on gender-balanced boardrooms, to work toward raising the number of women on the boards of both public and private companies in the country” (Elbahrawy et al., 2021, np). Moreover, in Turkey there is no established quota as yet, but the Capital Markets Board of Turkey (CMBT) recommended that the board of directors of listed companies should have at least one women director on the board of listed firms in 2012, reaching the target of 25 % of women directors by 2019 (Deloitte Report, 2019).

Within the context of our sample, we need to take into consideration the deeply-rooted cultural and social norms, as well as views that board membership should be male.² These psychological and ideological mechanisms may lead to women directors being perceived as unequal board members, providing a threat to stereotypes and thus reducing the potential positive impact of women. When approaching conservative cultures, like the Islamic and Middle Eastern countries sampled in our study, empowering women is sometimes very challenging. Women directors may find themselves need to put in additional work, as compared to male colleagues, in order to contribute successfully to a boardroom's decisions. Reaching this senior position is not easy and would need specific

² Leadership positions in these societies are traditionally considered as masculine work.

qualifications, skills and connections in order to effectively monitor their organization and enhance decision-making in the boardroom. Hence, in line with [Nielsen and Huse \(2010\)](#), we argue that one of the key factors for making women directors a valuable resource for the work of boards is to select women with appropriate characteristics and create the necessary conditions for women to be able to make distinctive contributions.

3. Background and theoretical framework

The banking sector presents a crucial mediator to promote economic and financial stability, which continuously remains under intensified regulatory and market inquiry. Unlike the non-financial sector, the banking industry has passed through considerable and severe turmoil across several decades, surviving serious financial instability and complex regulatory reforms related to stability and governance. The banking business model is commonly complex, vague, and subject to stringent regulatory and governance rules ([John et al., 2016](#)). Banks encounter several agency conflicts caused by the separation of ownership and control, and this issue is affecting bank stability and stock market valuations when compared to non-financial firms. Regulators and investors in capital markets have long emphasized the critical role of the board of directors in banking ([De Andres and Vallelado, 2008](#); [Adams and Mehran, 2003](#)), as a core/internal corporate governance mechanism. Indeed, the main role of directors in terms of banking functions is monitoring, as this can increase market acceptance and gain the trust of shareholders, bank regulators, and other stakeholders ([García-Meca et al., 2015](#)).

Boards of directors in the banking sector and in non-financial firms have the same legal obligations and duties, but, as [De Andres and Vallelado \(2008\)](#) pointed out, the banking industry is subject to a stricter regulatory structure and has a high potential for contagion. This is illustrated by [Adams and Mehran \(2003\)](#), who outline the responsibilities and aspects of accountability of bank directors, namely that directors evaluate the decisions submitted to the board for confirmation. The banking industry is becoming increasingly opaque ([Fosu et al., 2017, 2018](#)) and yet gender diversity is marked as a key attribute to consider and evaluate, as it has implications for the success of the banks' monitoring function ([Song et al., 2017](#); [Arnaboldi et al., 2020](#); [Cardillo et al., 2020](#); [Kinateder et al., 2021](#)).

Evidence regarding stock market valuations in relation to board gender diversity in banking is still emerging. Studying stock market valuations in conjunction with the representation of women directors on boards has become essential for the banking industry under the renewed debates relating to gender diversity, new quotas, and raising international awareness about women's empowerment. Women directors can bring heterogeneous and new visions to the board in banking, with their market connections, resources, and contrasting skills and backgrounds. Moreover, women are known to have better monitoring abilities that may help to mitigate excessive risk activity ([Adams and Ferreira, 2004](#); [Bear et al., 2010](#)) and hence, they can enhance bank performance and stability in banking.

In line with previous studies ([Carter et al., 2010](#); [Hillman and Dalziel, 2003](#); [Terjesen et al., 2016](#); [Yang et al., 2019](#)), there is no one single theory that is applicable for examining the effectiveness of gender diversity on the boards of banks and the relationship to market value; hence, our study draws on dominant theoretical perspectives, integrating them to provide a framework for this study.

According to agency theory, the greater the diversity of the board in terms of directors' backgrounds, the greater the efficiency of board monitoring and independence ([Ingle and Van der Walt, 2003](#)). For example, the importance of women directors' diversity has thus been explained in relation to the effectiveness of the monitoring function ([De Masi et al., 2021](#)). In other words, gender diversity can improve the monitoring of managers through the independence channel ([Adams et al., 2015](#)). From the resource dependence perspective, a greater board diversity can provide more valuable resources, quick access to resources, and better financial performance ([Carter et al., 2010](#)), as well as support for improved problem-solving, which enhances board efficiency.

Based on the signaling theory, a considerable body of literature has examined board composition as a signal to obtain a good reputation in the business community and society ([Bear et al., 2010](#); [Certo et al., 2001](#); [Miller and Triana, 2009](#); [Musteen et al., 2010](#)). [Wellalage and Locke \(2013\)](#) have suggested that, from the signaling perspective, diversity within the board can be considered a positive signal of a well-governed firm and the degree of its quality to investors. [Miller and Triana \(2009\)](#) find a positive relationship between board gender diversity and firm innovation. The study suggests that the reputation of a firm, mediated through signaling, is enhanced by the board's diversity in three respects. First, signaling can increase a firm's global operations and meet market driver needs by demonstrating understanding of the business environment. Thus, board members are able to advise the firm's managers in an effective manner. Second, signaling is a reflection of the obligations of cultural norms, thereby supporting the reputation of the firm. Third, signaling indicates that the firm is meeting public representation standards. [Bear et al. \(2010\)](#) found a positive relationship between corporate social responsibility (CSR) rating and firm reputation, mediated by women members on the board and corporate reputation. Diversity in terms of the board members' backgrounds (e.g. gender, education, nationality) can enhance firm reputation and image, providing greater opportunities to improve firm value by increasing links to stakeholders and the community ([Mahadeo et al., 2012](#); [Ntim, 2015](#); [Wellalage and Locke, 2013](#)).

4. Hypothesis development

With the lack of evidence relating to the possible effect of women's representation and their attributes on stock market valuations in international banking, the majority of prior studies on firm market valuation and women directors focuses on non-financial firms, documenting a positive association ([Carter et al., 2003](#); [Campbell and Mínguez-Vera, 2008](#); [Gyapong et al., 2016](#); [Larkin et al., 2012](#); [Ntim, 2015](#)). For example, for United States (US) non-financial institutions, [Carter et al. \(2003\)](#) investigated the relationship between board diversity and firm value using Tobin's Q and found a positive association. This study encouraged more research investigating the influence of women directors on firm value. [Campbell and Mínguez-Vera \(2008\)](#) examined Spanish listed firms using panel data,

finding that gender diversity is associated positively with firm value. Furthermore, a study of 2010 Fortune 500 companies found that the presence of women directors was related to higher overall returns on the common stock prices of corporations (Larkin et al., 2012). Examining a sample of South African firms, Ntim (2015) found a significant positive relationship between women directors and market valuation. Likewise, in South Africa over the period 2008–2013, Gyapong et al. (2016) found a positive association between women directors and firm market value and this value increased if the board included three or more women directors.

Prior banking studies show evidence for the effect of gender diversity only on bank performance, bank risk, and/or market reactions. For example, Nguyen et al. (2015) provided evidence for US banks studying the association between executive directors' characteristics and stock market reactions by which gender diversity was tested alongside other board characteristics like age, education, and prior work by executive. The results indicated that gender had no significant association with market reactions. Pathan and Faff (2013) assessed the implications of gender diversity on bank performance, finding that women directors had a positive impact on bank performance in the period before the Sarbanes–Oxley (SOX) Act (1997–2002), but that this was reversed during both the post-SOX (2004–2006) and crisis (2007–2011) periods. García-Meca et al. (2015) found that bank performance was positively associated with gender diversity in some European banks.

A high representation of women on a board is expected to enhance firm reputation and image, providing greater opportunities to improve firm value by increasing links to market resources for stakeholders, in line with the resource dependency theory (Mahadeo et al., 2012; Wellalage and Locke, 2013; Ntim, 2015). Gender diversity affects the board's critical role in monitoring management, provides different demographics and enhances decision-making (Bear et al., 2010). In this context, the effectiveness and independence of boards of directors improve with the presence of more women directors, and this also leads to higher firm value as measured by Tobin's Q (Ntim, 2015; Terjesen et al., 2016). Women's representation on a board provides different perspectives and experiences, which can help the board fulfil its role (Fan et al., 2019) and improve firm valuations. Gul et al. (2011) found that, the more women directors there were in large firms, the more information was enhanced through increased public disclosure. Women have been found to be more likely to hold their organizations to higher ethical standards (Pan and Sparks, 2012). Agyemang-Mintah and Schadewitz (2019) show that women directors improve the decision-making process when it comes to monitoring through their fresh viewpoints and expertise, which in turn leads to an increase in the firm's financial valuation. Adams and Ferreira (2004) found that firms with fewer women on their boards have higher stock return variability. In the same vein, a board with more women will exhibit higher monitoring efficiency than a board comprised solely of men (Adams and Ferreira, 2009), which is likely to be perceived by investors.

A bank with sound governance mechanisms is likely to signal its good reputation to investors and stakeholders and this may increase its market value (Elnahass, et al., 2020). Accordingly, sophisticated investors are likely to positively perceive and price women's representation and address the impact of their presence on promoting effective governance mechanisms and, hence, an increase in bank valuation is expected. The above discussions lead to the following hypothesis, stated in the alternative form:

H₁: Gender diversity on the board of directors is significantly and positively associated with market value.

4.1. Women directors' functional attributes

Based on agency theory, Adams et al. (2015) show that increasing board diversity may lead to an increase in the monitoring of managers due to greater board independence. The presence of women directors is used as a new indicator of independence (Ferreira, 2015) as many studies have concluded that women directors can be expected to be more independent (Dang et al., 2014; Bøhren and Staubo, 2014) and provide better monitoring (Adams and Ferreira, 2009) than their male counterparts. Although the main objective of independent directors, who do not have a relationship with managers and firms, is to ensure the firm benefits from better management monitoring to improve firm performance (Bennouri et al., 2018), most prior studies have found that independent directors have a negative association with bank performance and a positive association with insolvency risk (Pathan and Faff, 2013; García-Sánchez et al., 2017).

In US bank holding companies, Pathan and Faff (2013) found a negative relationship between independent directors and bank performance (Tobin's Q). However, Duchin et al. (2010) reported that the presence of independent directors is positively associated with performance in non-financial firms with low information asymmetry between managers and shareholders, but there is a negative association in firms with high information asymmetry. Banking firms with high information asymmetry should not rely on independent directors for monitoring (Adams and Ferreira, 2007). Directors may find their access to special firm information limited by managers to reduce their ability to monitor, but the benefits of counselling from these directors will also be diminished (Adams and Ferreira, 2007). In addition, there are negative results associated with independent directors and corporate governance due to their reduced knowledge of firm information and business strategies (Bennouri et al., 2018). Karavitis et al. (2021) find that women independent (i.e. non-executive) directors are associated with high transparent financial reporting that adds to bank checking and monitoring. The monitoring function does not only rely on independent directors but also depends on other leadership indicators such as whether they are a chairperson (Bennouri et al., 2018). The board chairperson's main responsibility is leading the board to function effectively to ensure that all board members are involved in monitoring managers and also creating a collaborative environment to obtain better communication between board members, in order to bring board coherency (Machold et al., 2011). Thus, board effectiveness depends on the chairperson (Gabrielsson et al., 2007; Palvia et al., 2015; Kanadli et al., 2018).

According to Nekhili et al. (2018), women chairpersons promote good listening, better problem-solving, and social support, which helps to create a cooperative leadership environment, enhancing boardroom function. By comparing women versus men chairpersons, Eagly and Carli (2003) found that women are expected to be more democratic and interactive in leadership style than their male peers, who are more job-oriented and adopt a more autocratic style. Therefore, women may be more suitable in this position than men because they show more transformational leadership, which increases board efficiency (Nekhili et al., 2018). In addition, women

chairpersons improve the quality of boardroom decision-making, which impacts positively on firm performance (Peni, 2014). In contrast, Bennouri et al. (2018) reported that a woman chairperson is negatively associated with the firm's Tobin's Q.

In banking industry studies, there are a few studies that investigate chairwomen (Palvia et al., 2015; Andrieş et al., 2020; Palvia et al., 2020). Palvia et al. (2015) test US banks that lead with women CEOs and chairs and the association with bank capital ratios and default risk. They find that women CEOs are more conservative and hold higher levels of capital. Moreover, they find that small banks with women CEOs and chairs were less likely to fail during the financial crisis (2007–2009). Andrieş et al. (2020) find that women chairs and high board gender diversity are associated with high profitability in Central and Eastern European banks. Palvia et al. (2020) tested women's leadership in US banks, and they find that banks with women CEOs and chairs are associated with better lending performance and lower default risk. They also indicate that banks lead by women have a lower default risk in high real estate exposure.

On the basis of the above argument, we expect that the presence of independent women directors on the board as well as women chairs will therefore be positively associated with bank value. Independent women directors are likely to mitigate high information asymmetry, which is dominant in the banking business environment (Pathan and Faff, 2013). Therefore, the second hypothesis is formulated into two main sub-hypotheses to address women directors' independence and leadership attributes separately, as follows:

H_{2a}: Independent women directors on the board are significantly and positively associated with bank value.

H_{2b}: Women Chairpersons are significantly and positively associated with bank value.

4.2. Women directors' professional attributes

Regarding women directors' professional experience and the influence on decision-making within the boardroom, Nielsen and Huse (2010) found that women directors significantly affect a boardroom when they have different professional experience than their men counterparts. They also argue that, if women with similar (traditional) professional experiences but different values are selected to join a board, they may be able to enrich board decision-making.

We follow Bennouri et al. (2018), measuring professional characteristics such as directors' education, foreign nationality, and business education (i.e. in finance and accounting) while extending the analyses to women directors' financial expertise. The ability to solve problems and understand complex business issues increases with the level of education of directors (Johnson et al., 2013). The attributes of board members, i.e. qualifications, skills and experience and can improve the decision-making process and enhance firm performance. Education is considered as one of the cognitive ability measures and affects the level of intelligence and decision-making. According to King et al. (2016), "Higher cognitive ability is positively associated with mental capacity, length of life, speed of reactions and lifetime income" (p.289). Women directors are likely to have invested in their education to overcome the phenomenon of the "glass ceiling" so that they will be accepted for their experience in their field in the business environment (Hillman et al., 2002). A high level of education also enhances a director's confidence in expressing an opinion, and Singh et al. (2015) found that highly educated women directors have greater influence in boardroom discussions as did another study that investigates women's access to boards (Kirsch, 2018). Also, women directors with financial expertise and finance and accounting qualifications are expected to enhance the decision-making process in the boardroom similar to those who are highly educated, given their different resources and abilities, particularly within a bank's complex environment. According to Gull et al. (2018), in French firms, women are hired onto the boards of directors if they have specific demographic characteristics (e.g. educational level and financial expertise) that are higher than those of their male peers. Therefore, we expect that women directors with high education and/or accounting and finance qualifications may have the cognitive ability for suitable decision-making and problem-solving.

Directors with high academic qualifications (e.g. MSc and/or PhD) can use their academic knowledge to assist in the management of the firm's resources/assets, enhancing the decision-making strategy (Audretsch and Lehmann, 2006). The presence of senior team members with a range of higher educational backgrounds and levels increases firms' innovation and creativity (Audretsch and Lehmann, 2006; Francis et al., 2015). Furthermore, an increase in educational level as well as specialized qualifications, e.g. in finance, can enhance the board of directors' skills and experience and this leads to improvements in the quality of decisions (Papadakis and Barwise, 2002). Nekhili and Gatfaoui (2013) found that women directors were better educated and more had business degrees than their male counterparts. According to Berger et al. (2014), increasing the number of board members with higher education levels has a positive impact on decision-making processes. Drawing on resource dependence theory, such directors can also facilitate access to resources for the boardroom offered by alumni relations and link their banks with university academic networks (Chahine and Goergen, 2013). In a study based in China, Chen et al. (2019b) reported that the monitoring behavior of directors with PhDs has a positive influence on firm performance. Kim and Lim (2010) found that different educational backgrounds and majors among directors had a positive association with valuation in Korea.

Financial expertise is defined as women directors with experience (present or past) as an executive officer (Chief Executive Officer [CEO], Chief Financial Officer [CFO], Chief Risk Officer [CRO]) in a bank or insurance company or as an academic in a university (e.g. professor in finance, accounting, economics, or business) (Güner et al., 2008). Regarding financial expertise and the effectiveness of the board, there are a limited number of studies which have provided important results. For example, the higher the number of financial experts on the board, the more positive the relationship with bank risk (Minton et al., 2014) because of bank shareholders' preference for "excessive risk", but this is still under the moral hazard assumption, which means that the more directors there are with a financial background, the greater the understanding of complex banking investments (Fernandes and Fich, 2013). Greater financial expertise in banks may increase risk-taking behaviour if there is a high probability that these actions will increase bank value (García-Sánchez et al., 2017). Moreover, Fernandes and Fich (2013) reported that increasing the number of financial experts as outsider directors leads to a reduction in bank risk due to their rich knowledge and abilities, which help them provide better monitoring of and

advice to managers and reduces conflicts of interest between insider directors and shareholders. Therefore, they improve firm communications, which in turn enhances access to the sort of information that helps reduce uncertainty and improves bank value. They also have a high level of knowledge in the fields of finance, law, accounting, and risk management, which increases the probability of better decision-making and problem-solving abilities.

Nationality is a further professional attribute that may enhance the board's perspective, as directors of different nationalities bring new ideas and solutions to problems and the challenges of globalization. Moreover, such directors, with their diverse capabilities and cultures, bring new investment concepts and connections to international markets (Masulis et al., 2012). From the resource dependence perspective, national diversity is important in providing cultural knowledge and information about various markets that differs from knowledge only of the domestic market, serving to enhance the firm's reputation (Ruigrok et al., 2007; Estélyi and Nisar, 2016). Estélyi and Nisar (2016) find that foreign directors are appointed to boards due to their good monitoring reputation. From the agency perspective, the reason for hiring foreigners is that they do not have a relationship with management (Estélyi and Nisar, 2016). Thus, they can play a monitoring role in the boardroom and in other committees efficiently and without bias. Accordingly, and consistent with Singh et al. (2008) and in line with resource dependence theory, women directors can be considered a potential source of international experience, especially if they are foreign (Gull et al., 2018). A prior study found that foreign directors have a positive effect on firm performance (Choi et al., 2007). For Norwegian and Swedish firms, Oxelheim and Randøy (2003) report that having independent foreign directors is positively associated with firm value. Ben-Amar et al. (2013) point out that foreign directors can bring fresh points of view and ideas, different skills, wide networking contacts, and information and experience from international markets. Consistent with this evidence, Oxelheim et al. (2013) note that foreigners may understand international financial markets in advance of others and have vested knowledge of international clients, investors, and employees. The only study in banking, by Choi and Hassan (2005), found a positive association between foreign directors and bank financial performance.

Accordingly, hiring women with different professional attributes is expected to offer the bank a range of resources, particularly in terms of connecting with the external environment through previous colleagues and social networks. Consequently, having board members with the highest level of education, financial expertise and of different nationalities is likely to bring extended consultative and valuable resources to the bank. Women directors' professional attributes are hence represented in this study by educational background (i.e. subject studied, higher education such as MSc/PhD and international qualifications from global universities, financial expertise and foreign nationality) and are expected to be positively perceived by investors of the bank and hence positively associated with bank value. Thus, the third hypothesis is stated as follows:

H₃: Women directors' professional attributes (i.e. educational background and level, financial expertise, nationality) are positively associated with stock market valuations.

Each of these attributes is tested separately to assess the individual with bank market value.

5. Data and sample

The financial data for the study were collected from Thomson DataStream, Orbis (in US dollars). The country-level data were collected from the World Bank's World Development Indicators database. For corporate governance variables, data on women directors and their specific attributes and other board characteristics, such as board size, independence and CEO information, were hand collected from the annual reports provided on the banks' official websites.

Our initial sample represented 1,328 bank-year observations from 153 banks, including Islamic and conventional banks. The sample period covers 2007–2017 for 14 countries from the Middle East and Southern Asia. We followed prior banking studies (e.g. Mollah et al., 2017; Elnahass et al., 2022; Trinh et al., 2021) to filter the initial sample. The inclusion criteria comprised: (i) only listed banks were kept in order to assess stock market valuations. Hence, we dropped banks from two countries (i.e. Lebanon and Malaysia) which do not have Islamic listed banks; (ii) at least one Islamic bank and one conventional bank in each country; (iii) full annual reports were posted on the banks' official websites, published by 31 December; and (iv) data were available for at least three consecutive years for each bank.

The final sample represents unbalanced panel data for 114 listed banks (1,019 observations), for 12 countries over the period 2007–2017. The sample comprised 27 Islamic banks (232 bank-year observations), 58 conventional banks (532 bank-year observations) and 29 conventional banks with Islamic windows (i.e. conventional banks with financial products in compliance with Shariah law) (255 bank-year observations).³ The selection of this period makes it possible to examine whether women's representation on boards is associated with market valuation in banks, especially during the period of financial distress (i.e. the financial crisis in 2007–2009), by controlling for these years. Moreover, in order to support additional analyses for the two bank types, the Basel II requirements became mandatory for Islamic banks in 2007 (see IFSB, 2020; Elnahass et al., 2018).

Table 1 shows the distribution of the sample by country and bank type. The sample contains 23 % Islamic banks, 52 % conventional banks, and 25 % conventional banks with Islamic windows. Regarding the bank-year observations for Islamic banks, Bahrain has the highest number, followed by Kuwait. Turkey has the highest number of conventional bank-year observations, followed by Indonesia. For conventional banks with Islamic windows, Saudi Arabia has the greatest number.

³ In selecting the sample, including conventional banks with an Islamic window following Beck et al. (2013), we added WINDOW as a dummy variable to control for fully conventional and Islamic banks (Abedifar et al., 2013). Also, we ran several sensitivity analyses to identify the impact of this bank type in our sample and market value indicators and the results remain the same.

Table 1
Sample Distributions.

Country	Islamic banks		Conventional banks		Conventional Banks with Islamic windows		Full Sample	
	Observations	Percentage %	Observations	Percentage %	Observations	Percentage %	Observations	Percentage %
Bahrain	55	24 %	20	4 %	11	4 %	86	8 %
Bangladesh	11	5 %	53	10 %	31	12 %	95	9 %
Egypt	6	2 %	23	4 %	0	0 %	29	3 %
Indonesia	8	3 %	99	19 %	47	18 %	154	15 %
Jordan	16	6 %	98	18 %	0	0 %	114	11 %
Kuwait	41	18 %	46	9 %	0	0 %	87	9 %
Oman	11	5 %	0	0 %	20	9 %	31	3 %
Pakistan	11	5 %	43	8 %	36	14 %	90	9 %
Qatar	17	7 %	36	7 %	0	0 %	53	5 %
Saudi Arabia	29	13 %	0	0 %	66	26 %	95	10 %
Turkey	7	3 %	105	20 %	0	0 %	112	11 %
UAE	20	9 %	9	1 %	44	17 %	73	7 %
Bank-year observations	232	100 %	532	100 %	255	100 %	1019	100 %
Number of Banks	27	-	58	-	29	-	114	-

Note: The final sample contains unbalanced panel data of 114 banks (1,019 observations) with 27 Islamic commercial banks (232 observations), 58 conventional commercial banks (532 observations), and 29 conventional commercial banks with Islamic windows (255 observations) in 12 countries over the period (2007–2017). See Appendix A for variable definitions.

6. Model and measures

6.1. Measures of bank market value

To examine the relationship between board gender diversity and bank market value, we employ *Tobin's Q*, which is also used as a proxy for firm valuation (Ntim, 2015; Agyemang-Mintah and Schadewitz, 2019; Elnahass et al., 2020). This variable is calculated as the sum of a bank's year-end book value of debt and market value of equity, divided by its year-end book value of total assets, following previous studies (Marinova et al., 2016; Terjesen et al., 2016; Yang et al., 2019; Elnahass et al., 2020). We take the natural logarithm of *Tobin's Q* to reduce the impact of high-*Q* outlier banks (Black et al., 2012; Elnahass et al., 2020).

In general, *Tobin's Q* is identified as a measure of firm value and is a common variable in corporate governance research (Black et al., 2014). It reflects how a firm invests in human and technological capital and thus describes the intangible value of such capital that does not show in ordinary accounting indicators (Kaczmarek et al., 2014; Elnahass et al., 2020). According to Yang et al. (2019), *Tobin's Q* provides a more comprehensive picture of firm value than the stock price or any capital market indicators, as the ratio considers a firm's assets in its calculation; therefore, it is helpful for samples with different firm systematic risk, leverage, or size (Wernerfelt and Montgomery, 1988; Lang and Stulz, 1994). Jubilee et al. (2018) find that both leverage and profitability of banks are positively related to firm value as measured by *Tobin's Q*. Moreover, *Tobin's Q* gives an indication of the present firm value according to stock (market)-based valuations and it also shows the expected present value of future cash flows (Devers et al., 2007). It reflects the corporate governance mechanism through the financial evaluation of the firm and captures the wealth of investors in the firm (Mintah, 2015; Agyemang-Mintah and Schadewitz, 2019). Managers can manipulate direct earnings (Gyapong et al., 2016), which will affect accounting measures (return on assets [ROA], return on equity [ROE]). In contrast, it is difficult for management to manipulate *Tobin's Q* (Hambrick and Finkelstein, 1995). It is also considered as a long-term bank market valuation measure when compared to other, short-term, bank value indicators, e.g. ROA and ROE (Elnahass et al., 2020). Finally, according to Khatib et al. (2021), prior studies commonly proxy for firm performance in association with gender diversity using a variety of accounting-based indicators. Only two studies employ *Tobin's Q* as a bank performance measure to proxy for market-based performance (Pathan and Faff, 2013; Garcia-Meca et al., 2015).

6.2. Measures of board gender diversity

We follow Bennouri et al. (2018) to measure women directors' representation and women directors' attributes. First, the main gender diversity indicator is the ratio of the number of women on the board to the total number of board members (*WOMEN*), as widely applied in gender-related studies (Adams and Ferreira, 2009; Berger et al., 2014; Bennouri et al., 2018; Chen et al., 2019a, Fan et al., 2019). Moreover, we use a dummy indicator (*Women Dummy*) to proxy for the presence of women on the board for the full sample analyses. This dummy variable is equal to 1 if the board has at least one woman and 0 otherwise (Campbell and Vera, 2010; Gyapong et al., 2016; Marinova et al., 2016). We predict a positive association between the two alternative measures of women directors and bank market value, in line with prior studies (e.g. Campbell and Vera, 2010; Ntim, 2015).

To investigate women directors' attributes, we split these attributes into two main categories: i) functional and leadership; and ii) professional. To examine the functional attribute, we use the number of independent women directors to total women directors on the board (*Indep Women*) (Bennouri et al., 2018; Gull et al., 2018). Furthermore, we use woman chairperson as a further functional attribute (Bennouri et al., 2018). We define (*Chair Women*) as a dummy variable which is equal to 1 if the chairperson is a woman and

0 otherwise (Bennouri et al., 2018; Gull et al., 2018; Nekhili et al. 2018). Furthermore, with respect to professional attributes, we follow prior studies (Bennouri et al., 2018; Gull et al., 2018), as well as resource dependence, to define board directors with extensive professional experience and different backgrounds, such as those members who hold the highest level of academic qualification, a PhD (Berger et al., 2014). To capture the professional attributes of women on the board, we control for nationality, education, and financial expertise. We define financial expertise (*Expertise Women*) as the proportion of women directors with experience (present or past) as an executive officer in a bank or insurance company (i.e. CEO, CFO or CRO), or as academic (e.g. professor in finance, accounting, economics, or business) (Güner et al., 2008; Aebi et al., 2012; Minton et al., 2014). Then, we control for nationality by using the number foreign women directors to the total number of women members on the board (*Foreign Women*) (Bennouri et al., 2018; Gull et al., 2018). The other demographic characteristic is educational level, measured by the number of women directors holding a postgraduate degree such as a PhD or Master's degree (e.g. MA, MSc, or an MBA) (*PostGrad Women*) to the total number of women members on the board (Bennouri et al., 2018; Gull et al., 2018). Moreover, we capture for women directors' educational background and culture by using the number of women directors who graduated from foreign universities (*Inter_Univ Women*). In this, we follow Chen et al. (2019b), who found a significant positive market reaction to the appointment of academic alumni from foreign universities to the board, as they bring foreign academic experience to the boardroom in terms of management codes and practices. For educational specialization, we use the number of women with an academic qualification in finance and/or accounting and/or Islamic finance (*Acc&Fin Women*) to the total number of women members on the board. We consider this indicator to be an alternative measure of financial expertise as women's expertise is an essential attribute of women directors (Nekhili and Gatfaoui, 2013). Moreover, women have fewer opportunities to attain executive positions than men (Nekhili and Gatfaoui, 2013; Bergner et al., 2014).

6.3. Controls

Our control variables include corporate governance characteristics, the first of which is board size (*BODSIZE*). This variable is calculated as the natural logarithm of the total number of board members in line with prior studies (e.g. Mollah and Zaman, 2015; Gull et al., 2018; Elnahass et al., 2022). To capture the role of the board, we control for board independence (*Indep*), which is measured using the percentage of independent (non-executive) directors on the board (García-Meca et al., 2015; Chen et al., 2019a; Fan et al., 2019). We also control for CEO gender using a dummy variable (*CEO Women*), which is equal to 1 if the CEO is a woman and 0 otherwise (Bennouri et al., 2018; Gull et al., 2018). According to Nielsen and Huse (2010), the gender of the CEO can influence women directors' contributions in board decision-making. Therefore, we control for women CEOs to mitigate such bias for the respondent's gender in line with prior literature. Furthermore, we follow most of the corporate governance literature by controlling for CEO power using a dummy variable (*CEODUAL*) taking the value of 1 if the CEO is the chairperson of the board and 0 otherwise (Pathan, 2009; Mollah and Zaman, 2015).

To control for bank-level variables, we compute the bank size (*LogTA*) using the natural logarithm of total assets measured in thousands of US dollars for a bank at the end of the fiscal year (Elnahass et al., 2020, 2022; Trinh et al., 2020). We also include bank age (*LogAGE*), computing the difference between the sample year and the year in which the bank was established (Pathan and Skully, 2010; Wellalage and Locke, 2013; Marinova et al., 2016). We expect a negative association between bank age and Tobin's Q (Marinova et al., 2016). Furthermore, bank leverage (*LEVERAGE*) is calculated using total liabilities divided by total equity (Agyemang-Mintah and Schadewitz, 2019; Trinh et al., 2019). High leverage can affect market valuation negatively (Terjesen et al., 2016) or positively (Ntim, 2013; Agyemang-Mintah and Schadewitz, 2019). We also control for capital expenditure (*LOG(CAPEX/TA)*) (Ntim, 2015; Terjesen et al., 2016; Elnahass et al., 2020).

We additionally control for different bank types (i.e. Islamic vs conventional) in our sample using a dummy variable (*IB*), which takes the value of 1 if the bank is Islamic and 0 otherwise. Moreover, we control for the Islamic window to distinguish between fully conventional banks and those conventional banks with some Islamic functions. We use the Islamic window dummy variable (*WINDOW*), which is defined as a dummy variable taking the value of 1 if the conventional bank has an Islamic window and 0 otherwise (Abedifar et al., 2013). A dummy variable is also used to capture the effect of the financial crisis on our sample (*CRISIS*), taking the value of 1 for the sample years 2007–2009 and 0 otherwise (Elnahass et al., 2018; Fan et al., 2019). We control for auditing of the banks by one of the four major auditing institutions (*BIG4*) using a dummy variable that is equal to 1 if a firm is audited by a Big4 firm and 0 otherwise (Agyemang-Mintah and Schadewitz, 2019; Elnahass et al., 2022).

To address environmental institutional control, we enter country-level variables. First, the annual gross domestic product (*GPD*) is used to control for macroeconomic development in the cross-country data (Berger et al., 2014; Terjesen et al., 2016; Mollah et al., 2017). Furthermore, we control for the banking sector affecting value using the Herfindahl-Hirschman Index (*HHI*) (Abedifar et al., 2013; Mollah et al., 2017). To capture the quality of national governance, we use the six Worldwide Governance Indicators (World Bank, 2016), to measure the level of the governance index (*Governance Index*). This index is calculated by the average of six governance measures (regulatory quality, rule of law, control of corruption, political stability, governance effectiveness, voice and accountability) (Čihák and Hesse, 2010; Elnahass et al., 2020, 2022). Each governance measure index ranges from -2.5 (weak) to 2.5 (strong) for performance; higher values imply better governance. Therefore, we use the index to capture the quality of national governance and how it affects market valuation. The variable definitions and notations in our models are presented in Appendix A.

6.4. Empirical model

In general, the prior corporate governance literature considers that endogeneity affects the relationship between board characteristics and firm value (Wintoki et al., 2012; Bennouri et al., 2018; Ferrari et al., 2018). The appointment of women directors to the

board is caused by an endogenous variation based on the firm and self-selection rather than an exogenous effect (Adams, 2016). Moreover, the board composition is chosen and constructed by firms to increase their benefits and hence the variables tend to be endogenous and random (Sila et al., 2016). Endogeneity causes inconsistency in coefficients and various biases that are expected to increase the complexity in determining relationships. The relationship between board attributes and market value may be influenced by unobservable variables that are unknown or cannot be controlled. According to Wintoki et al. (2012), the impact of unobservable factors can give rise to problems in determining results and thus, careful consideration has to be given to the estimation of the parameters in light of the study objectives. The objective of this study was to test the association of women directors with banks' value (measured by Tobin's Q) and so using ordinary least squares (OLS) estimation would yield biased results because of endogeneity problems (Benuouri et al., 2018). Moreover, unobservable heterogeneity and simultaneity issues would be ignored by this estimation method (Wintoki et al., 2012; Benuouri et al., 2018).

To solve the endogeneity issue, much of the prior literature on board diversity (e.g. Adams and Ferreira, 2009; Agyemang-Mintah and Schadewitz, 2019; Yang et al., 2019; Fan et al., 2019) has tested and employed several estimation models to assess the association of gender diversity within the board on bank market value.⁴ Our analyses utilize three-stage least-squares (3SLS) estimation and instrumental variables (IVs), following Ntim (2015), Trinh et al. (2020), and Elnahass et al. (2020), in studying the relation between board characteristics, governance mechanisms, and bank value. We employ country fixed-effects to control for unobserved country attributes for all models.

Furthermore, to control for additional endogeneity concerns, we employ several additional procedures. First, we use specific bank and governance control variables to mitigate omitted variable bias that might cause endogeneity. We use propensity score matching to control for sample selection bias. Then, to account for reverse causality causing endogeneity, we use lagged values of the IVs. Finally, we estimate alternative indicators for gender diversity and market valuation to demonstrate that there is no error in our main estimations.

In this study, two IVs for board gender diversity are applied. The first is the women's labor force participation rate divided by the men's labor force participation rate in each country for each given year (source: World Bank). According to Chen et al. (2017), the higher the ratio, the greater the likelihood of a higher number of women participating on the board of directors. Furthermore, increasing the empowerment of women in the labor force leads to an increase in qualified women (Shriver, 2009). The economy will be promoted and enhanced by having greater numbers of women in the workforce (Silverstein and Sayre, 2009). The additional IV is the country's income level (source: World Bank), defined as a dummy variable equal to 1 if the country is classified as middle to high income and 0 otherwise (Elnahass et al., 2020). In middle- to high-income countries, the directors have high knowledge and reputation and professional abilities and thus it is easier to find employment through access to the open labor market (Trinh et al., 2020). Therefore, directors of banks with headquarters in high-income countries, with high job skills and opportunities, are expected to find more directorship positions in other companies and this might increase the employment rate of directors.

There is low expectation of an endogenous impact of the country-level variables on individual banks' market value, but the IVs might indirectly affect bank market value. The two IVs seem to be correlated with the endogenous variable for the proportion of women on the board (WOMEN) and should indirectly predict bank market value, over and above their influence on the endogenous variables (see Black et al., 2006).

To test the hypotheses identifying the possible impact of gender diversity on bank market value, we follow Ntim (2015) and Elnahass et al. (2020) and build simultaneous models, Eq. (1) and Eq. (2), treating the proportion of women directors and Tobin's Q as the endogenous variables, respectively. The first equation, Eq. (1), estimates the effect of gender diversity on Tobin's Q, while the second equation, Eq. (2), estimates the effect of Tobin's Q on gender diversity. The simultaneous models estimated for banks are as follows:

$$Tobin'sQ_{it} = \beta_0 + \beta_1 WOMEN_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it} \quad (1)$$

$$WOMEN_{it} = \beta_0 + \beta_1 Tobin'sQ_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it} \quad (2)$$

where $Tobin'sQ_{it}$ is the bank market value for bank i in year t . $WOMEN_{it}$ is the ratio of women directors to the total number of board members. $CONTROLS_{it}$ denotes the vector of control variables in bank i in year t and ε_{it} represents the remaining disturbance term.

7. Results

7.1. Descriptive statistics

Table 2 shows the summary statistics for the full sample and sub-samples of fully Islamic and conventional banks in addition to conventional banks with Islamic windows. For the full sample, the results show that the sample banks on average have a positive mean for the log Tobin's Q ratio of 0.152. Regarding the sub-samples, among the board gender diversity indicators, the average representation for women directors (*Women Dummy*) is 0.40 which is slightly lower than the average reported by (Gyapong et al., 2016) of 0.54 in south Africa while the percentage of women on board (*WOMEN*) is 6.9 % for the full sample, which is lower than the average values

⁴ We performed the Wu-Hausman endogeneity test across all our models to examine whether endogeneity exists. The test statistics suggest the presence of endogeneity bias.

Table 2
Descriptive Statistics.

Variables	Full Sample			Islamic banks (Mean)	Conventional banks (Mean)	Two-sample <i>t</i> -test (two-tailed)	Conventional banks with Islamic windows (Mean)
	N	Mean	Standard deviation				
Log Tobin's Q	863	0.152	0.093	0.176	0.145	-3.271***	0.143
WOMEN	1015	0.069	0.109	0.037	0.085	6.618***	0.067
Women_Dummy	1015	0.403	0.491	0.258	0.513	6.955***	0.445
Indep_Women	1015	0.062	0.234	0.108	0.060	-2.713***	0.028
Chair_Women	1009	0.032	0.175	0.061	0.023	-2.270**	0.035
Foreign_Women	1016	0.042	0.188	0.104	0.048	-1.477*	0.014
Expertise_Women	1018	0.198	0.373	0.017	0.295	5.054 ***	0.093
PostGrad_Women	1015	0.720	2.325	0.792	0.938	-0.480	0.236
Inter_Univ_Women	1015	0.142	0.321	0.136	0.149	0.342	0.140
Acc&Fin_Women	1015	0.114	0.300	0.116	0.154	-0.089	0.038
BODSIZE	1015	2.336	0.238	2.333	2.349	0.325	2.321
Indep	1019	0.336	0.166	0.394	0.298	-5.567***	0.356
CEODUAL	991	0.201	0.401	0.085	0.255	6.170***	0.201
CEO_Women	1015	0.051	0.221	0.039	0.081	1.017	0.004
LOG(CAPEX/TA)	936	0.335	0.637	0.347	0.364	-0.300	0.268
BIG4	966	0.720	0.449	0.828	0.632	-4.492***	0.794
LogAGE	897	3.391	0.724	3.043	3.541	7.342***	3.382
LEVERAGE	1011	7.800	3.151	7.792	8.053	0.031	7.340
LogTA	1008	14.041	3.441	13.829	13.904	1.109	14.566
IB	1018	0.228	0.420				
WINDOW	997	0.256	0.437				
GDP	1018	1.320	3.614				
Governance_Index	941	-0.378	0.780				
HHI	1018	0.244	0.167	0.255	0.226	1.138	0.268

Note: The table presents descriptive statistics for all variables used in the models for the full sample and sub-samples for each bank type. The sample period is between 2007 and 2017. N is the number of bank-year observations. Mean is the mean value. The paired sample means test (*t*-test) results are also reported. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively and *p*-values are shown in parentheses. See Appendix A for variable definitions.

reported by García-Meca et al. (2015) and Bennouri et al. (2018) of 10.22 % and 10.72 % for European/US and French banks, respectively. In terms of women directors' attributes, for example, in the full sample the ratio of independent women directors to total women directors is 6.2 % with 3.2 % of women holding a chair position, in line with Nekhili and Gatfaoui (2013) and Bennouri et al. (2018), who found that most women directors are not independent, but are recruited to the board from inside the banks. Of the demographic characteristics, the highest values are for *PostGrad_Women* (women with a PhD and/or a master's degree) at 72 % of the total number of women directors. In terms of financial expertise, the average proportion of women directors with financial expertise is 19.8 %. Regarding educational specialization and qualifications, 14 % of women directors graduated from foreign universities and 11 % had an accounting or finance qualification. The lowest figure is for foreign women directors (4.2 %).

Clustering the full sample into different bank types, we compare fully Islamic banks and fully conventional banks. The mean values and the two-sample *t*-test indicate that Islamic banks have a significantly higher average logarithmic *Tobin's Q* than fully conventional banks, in line with Elnahass et al. (2020). Concerning the gender diversity indicators, Islamic banks report a lower representation of women directors at 3.7 %, compared to 8.5 % for conventional banks. In terms of women directors' attributes, Islamic banks have higher proportions of *Indep_Women* (10.8 %) and *Foreign_Women* (10.4 %) than conventional banks (6 % and 4.8 %, respectively). With regard to women directors' education, Islamic banks (conventional banks) report relatively similar means of 14 % (15 %) for women who graduated from foreign universities. However, the proportion of women directors in Islamic banks with a postgraduate degree (PhD or Master's) is 80 % and with an accounting or finance qualification it is 12 %, lower than the values for conventional banks (94 % and 15.4 %, respectively). Regarding other control variables (governance, financial), *CEODUAL* and *CEO_Women* show lower mean values for Islamic banks than conventional banks. In contrast, *Indep* has a higher mean value for Islamic banks than conventional banks. Consistent with previous studies (e.g. Beck et al., 2013; Elnahass et al., 2018), Islamic banks are smaller in size, younger in age, and have lower leverage than conventional banks. Moreover, the results indicate that conventional banks with Islamic windows generally show lower averages for market value ratios compared to both Islamic banks and fully conventional banks. They also have lower means of 6.7 % for *WOMEN* and other attributes.

Table 3 presents the Pearson pair-wise correlation coefficients matrix for all variables for the full sample. The table shows no multicollinearity problems as the correlation coefficients for all variables are smaller than 0.8 (Elnahass et al., 2020).⁵

Table 4 shows the average values for the proportions and characteristics for women directors in each of the years from 2007 to 2017. Overall, the summary shows a significant increase in the average proportion of women from 2007 to 2011, dropping off slightly

⁵ The variance inflation factor (VIF) values (not reported) indicate that the VIF for each variable is lower than 10%, and the mean of the VIFs is lower than 6%, which indicates that there is no concern about multicollinearity.

Table 3
Full Sample Pearson Pair-wise Correlation Matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)				
(1)	1.000														
(2)	-0.020	1.000													
(3)	-0.061	0.745*	1.000												
(4)	-0.022	0.967*	0.847*	1.000											
(5)	-0.081*	0.131*	0.312*	0.188*	1.000										
(6)	0.011	0.187*	0.222*	0.218*	0.132*	1.000									
(7)	0.027	0.465*	0.629*	0.555*	0.130*	0.229*	1.000								
(8)	-0.051	0.122*	0.276*	0.169*	0.299*	-0.041	0.132*	1.000							
(9)	-0.059	0.250*	0.370*	0.302*	0.411*	0.050	0.151*	0.350*	1.000						
(10)	0.078*	0.393*	0.507*	0.454*	0.342*	0.296*	0.353*	0.060	0.136*	1.000					
(11)	0.055	0.233*	0.423*	0.311*	0.186*	0.315*	0.473*	0.124*	0.031	0.546*	1.000				
(12)	-0.211*	0.012	0.215*	0.041	0.061	-0.089*	0.030	0.095*	0.111*	0.056	0.083*				
(13)	0.064	-0.168*	-0.150*	-0.169*	0.263*	0.179*	-0.092*	0.031	0.080*	0.023	-0.025				
(14)	-0.015	0.224*	0.219*	0.253*	0.072*	0.342*	0.315*	0.129*	0.064*	0.061	0.179*				
(15)	0.138*	0.348*	0.208*	0.339*	-0.123*	0.112*	0.176*	-0.063*	-0.040	0.095*	0.135*				
(16)	0.156*	-0.041	-0.069*	-0.061	-0.023	-0.044	-0.049	0.075*	-0.000	-0.076*	-0.034				
(17)	-0.123*	0.099*	0.159*	0.137*	-0.015	0.163*	0.185*	0.080*	0.108*	0.098*	0.154*				
(18)	-0.428*	0.026	0.080*	0.031	0.065*	-0.120*	-0.039	-0.010	0.182*	-0.026	-0.029				
(19)	-0.137*	-0.011	0.036	0.006	-0.010	0.040	0.066*	-0.033	0.036	0.048	0.055				
(20)	0.099*	-0.239*	-0.207*	-0.247*	-0.055	-0.016	-0.016	0.091*	-0.186*	0.045	0.147*				
(21)	0.132*	-0.159*	-0.159*	-0.167*	0.105*	0.091*	-0.137*	0.054	0.017	-0.011	0.003				
(22)	-0.049	-0.006	-0.100*	-0.047	-0.090*	-0.108*	-0.165*	-0.088*	-0.123*	-0.005	-0.152*				
(23)	0.097*	-0.058	-0.084*	-0.076*	-0.017	-0.038	-0.046	0.032	-0.016	-0.038	-0.024				
(24)	-0.073*	0.302*	0.291*	0.315*	-0.039	0.098*	0.115*	-0.041	0.082*	0.095*	0.015				
(25)	0.213*	-0.288*	-0.302*	-0.292*	-0.049	0.024	-0.027	0.067*	-0.152*	-0.031	0.078*				
(26)	0.119*	-0.184*	-0.173*	-0.192*	0.137*	-0.059	-0.112*	0.037	0.033	-0.061	-0.047				
	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(11)	1.000														
(12)	-0.262*	1.000													
(13)	-0.084*	0.026	1.000												
(14)	-0.413*	-0.104*	0.069*	1.000											
(15)	-0.009	-0.044	-0.044	0.055	1.000										
(16)	-0.043	-0.204*	0.108*	0.143*	-0.049	1.000									
(17)	0.134*	-0.203*	-0.109*	-0.048	0.056	-0.024	1.000								
(18)	0.126*	-0.008	-0.036	-0.090*	-0.821*	0.147*	-0.027	1.000							
(19)	-0.067*	0.179*	0.032	-0.047	0.013	0.114*	-0.320*	0.094*	1.000						
(20)	-0.010	0.190*	-0.029	-0.156*	0.010	-0.255*	-0.001	-0.034	0.128*	1.000					
(21)	-0.044	0.072*	-0.128*	-0.002	-0.057	-0.011	-0.071*	0.082*	0.091*	-0.312*	1.000				
(22)	-0.044	0.010	-0.012	0.038	0.698*	-0.059	-0.004	-0.694*	0.046	-0.019	-0.017	1.000			
(23)	0.018	-0.231*	-0.051	0.260*	-0.139*	0.035	0.217*	0.141*	-0.358*	-0.211*	0.055	-0.218*	1.000		
(24)	-0.212*	0.224*	0.063	0.027	0.096*	0.096*	-0.471*	0.013	0.652*	0.113*	-0.044	0.098*	-0.403*	1.000	
(25)	-0.082*	0.357*	0.002	-0.093*	0.293*	-0.125*	-0.147*	-0.359*	0.134*	0.034	0.090*	0.325*	-0.348*	0.204*	1.000

Notes: The table presents the Pearson pair-wise correlation matrix for the full sample (2007–2017). This table shows no multicollinearity problems between variables. * Indicates significance at the 0.05 level. (1) Log Tobin's Q, (2) WOMEN, (3) Women_Dummy, (4) Blau's index, (5) Indep_Women, (6) Chair_Women (7) Expertise_Women, (8) Foreign_Women, (9) PostGrad_Women, (11) Inter_Univ-Women, (12) Acc&Fin_Women, (13) BODSIZE, (14) Indep, (15) CEO_Women, (16) CEODUAL, (17) LOG(CAPEX/TA), (18) LogAGE, (19) LEVERAGE, (20) LogTA, (21) BIG4, (20) IB, (22) WINDOW, (23) CRISIS, (24) GDP, (25) Governance_Index, (26) HHI.

in 2012, then increasing. The results show a steady increase in women's representation on boards over this period. According to [Pathan and Faff \(2013\)](#), the crisis had a notable impact on banking as it attracted more public attention to the quality of corporate governance mechanisms. The increase in the number of women directors is a response to stakeholders' demands, in order to promote women's representation on the board and promote inclusivity, as a global phenomenon ([Bennouri et al. \(2018\)](#)).

The average proportion of independent women directors falls from 2008 to 2011, then increases over the later years. Women's leadership (i.e. *Chair_Women*) shows a relative variations during the sample period. The proportion of foreign women directors declines sharply over the sample period until 2012, then fluctuates in later years. The other demographic attributes (e.g. financial expertise) also fluctuate over the years. The column for women holding a postgraduate qualification (i.e. *PostGrad_Women*) shows that the average value decreased over the first six years of the sample period, then fluctuated over the later years. In contrast, the average number of women directors who graduated from foreign universities increases over time and the number of women with finance or accounting qualifications is relatively unchanged over the sample period.

7.2. Empirical results

7.2.1. Gender diversity and stock market valuations

[Table 5](#) shows the results of the 3SLS estimations for the association of women directors with market valuation for the full sample (*Model 1* and *Model 2*), to test the first study hypothesis, H_1 . For the full sample, the coefficients for *WOMEN* and *Women_Dummy* are both positively and significantly associated with *LogTobin's Q*, indicating that a higher proportion of women directors as well as a strong representation of women on board are significantly positively associated with bank value. These results are in line with [Agyemang-Mintah and Schadewitz \(2019\)](#), who find similar evidence for UK non-financial firms.

In terms of control variables, for example, *BOARDSIZE* presents a negative coefficient, which confirms prior studies' evidence ([Gyapong et al., 2016](#), [Elnahass et al., 2020](#)) indicating that a smaller board size is more positively associated with market value than a large board size. *CEO_Women* also reports a negative association with market value (consistent with [Bennouri et al., 2018](#)). We also find a negative association between bank size and market value. Larger banks have a negative association with market valuation, suggesting that investors reduce the valuation of large banks ([Elnahass et al., 2020](#)). Large banks have a greater propensity to engage in risk-taking in order to meet personal compensation/earnings targets, and/or to meet credit ratings/deposit insurance (see [Leventis et al., 2011](#)). The *Big4* also exhibits a negative relationship with market valuation, consistent with [Elnahass et al. \(2020, 2022\)](#). We find that Islamic banks (*IB*) generally report a higher market value on average than conventional banks, which can be explained by the high financial reporting quality, strict governance mechanisms, and conservatism accounting aspects (see [Elnahass et al., 2014](#); [Abdelsalam et al., 2016, 2020](#)). Conventional banks with an Islamic window have a negative association with *LogTobin's Q*, which could be justified by the peculiar nature of the regulations, business, and trades for those windows which are not purely Islamic in their finance model.

Together, our findings suggest that gender diversity, on average, is positively associated with banks' stock market valuations. This is consistent with the agency and signaling theories, indicating that women directors are positively perceived by investors through the provision of access to new resources/skills, innovation, and good reputation, all of which improve the decision-making process in the boardroom. Overall results are in line with our predictions of a positive association between women directors and bank value for the full sample and hence, our first hypothesis, H_1 , is supported.

7.2.2. The effect of women directors' attributes (functional and professional)

To examine the other two hypotheses related to directors' attributes (H_2 and H_3), [Table 5](#) also reports our analyses across four models. *Model 3* tests the functional hypotheses (i.e. independence and leadership; H_2), while the other three models present the results from examining the professional attributes hypothesis, H_3 (i.e. *Model 4*, *Model 5*, and *Model 6*; financial expertise, foreign nationality, high education qualifications).

For the functional attribute, *Model 3* shows a significant and positive association between bank value (*LogTobin's Q*) and women directors' independence (*Indep_Women*). This indicates that independent women directors are positively associated with stock market valuations. This result is in line with [Bennouri et al. \(2018\)](#), who found that the greater the number of independent women directors, the higher the market value in French firms. However, women chairpersons (*Chair_Women*) have no significant positive or negative association with market value. Our finding is consistent with [Nielsen and Huse \(2010\)](#), who show that women directors on boards have different effects than women in leadership. The study also suggests that there are no differences between chairwomen and chairmen, which mean women behave similarly to men when they are chairpersons.

Regarding how women directors' demographic attributes affect market valuations, *Model 4* shows that women's financial expertise (*Expertise_Women*) has a negative and significant association with bank value, meaning that a higher proportion of women with expertise on the board is negatively associated with the market value. This finding can be justified through prior evidence by [Minton et al. \(2014\)](#) and [García-Sánchez et al. \(2017\)](#), who state that financial expertise is associated with more risk-taking. Accordingly, investors seem to negatively perceive financial expertise among women directors and hence, assign low bank valuations. Furthermore, in French firms, [Bennouri et al. \(2018\)](#) found a negative impact on Tobin's Q in relation to women's business expertise. Moreover, *Models 4 and 5* show that the proportion of foreign women members (*Foreign_Women*) has a marginally significant and negative association with market value. [García-Meca et al. \(2015\)](#) also found that foreign directors are negatively associated with firm value. Moreover, [Bennouri et al. \(2018\)](#) showed that the presence of foreign women directors was negatively related to French firms' performance (Tobin's Q). In contrast, we find in *Models 5 and 6* that there is a significant and positive association between women directors with postgraduate qualifications (PhD and/or master's degree; *PostGrad_Women*) and bank value. Business education (*Acc&Fin_Women*) also shows marginal evidence for increasing bank value. These results suggest that highly educated women directors

Table 4
Average Board Diversity Values by Year.

Year	N	WOMEN	N	Indep_	N	Chair_	N	Foreign_	N	Expertise_	N	PostGrad_	N	Inter_Univ_Women	N	Acc&Fin_
				Women		Women		Women		Women		Women				Women
2007	47	0.051	47	0.054	47	0.021	47	0.085	47	0.183	47	0.762	47	0.096	47	0.128
2008	58	0.054	58	0.060	58	0.017	58	0.055	58	0.151	58	0.609	58	0.144	58	0.092
2009	71	0.059	71	0.049	71	0.014	71	0.035	71	0.154	71	0.580	71	0.106	71	0.086
2010	81	0.069	81	0.042	81	0.025	81	0.030	81	0.179	81	0.614	81	0.109	81	0.110
2011	93	0.074	93	0.048	93	0.032	93	0.027	93	0.199	93	0.572	93	0.121	93	0.126
2012	106	0.058	106	0.050	106	0.038	106	0.028	106	0.181	106	0.543	106	0.097	106	0.109
2013	110	0.066	110	0.059	110	0.037	110	0.042	110	0.213	110	0.606	110	0.127	110	0.120
2014	113	0.071	148	0.065	113	0.036	113	0.055	113	0.225	113	0.714	113	0.132	113	0.125
2015	114	0.077	114	0.073	114	0.035	114	0.053	114	0.235	114	0.921	114	0.174	114	0.121
2016	114	0.084	114	0.083	114	0.044	114	0.035	114	0.219	114	0.950	114	0.202	114	0.120
2017	108	0.075	108	0.083	108	0.028	108	0.037	108	0.184	108	0.906	108	0.207	108	0.111

Notes: This table presents the number of observations (N) and the average value for each of the women directorships attribute measures for the years 2007 to 2017.

Table 5
The Effect(s) of the Proportion/Presence of Women's Directorship (and their Attributes) on Bank Value (Full Sample).

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
VARIABLE	Market value	Market value	Market value	Market value	Market value	Market value
	LogTobin's Q	LogTobin's Q	LogTobin's Q	LogTobin's Q	LogTobin's Q	LogTobin's Q
WOMEN	2.596*** (0.001)		3.506*** (0.000)	5.019*** (0.000)	3.191*** (0.000)	1.987*** (0.000)
Women_Dummy		0.545*** (0.004)				
Indep_Women			0.617*** (0.000)			
Chair_Women			-0.045 (0.398)			
Expertise_Women				-0.048*** (0.002)		
Foreign_Women				-0.089* (0.095)	-0.042*** (0.000)	
PostGrad_Women					0.061*** (0.000)	0.079*** (0.000)
Inter_Univ_Women						-0.320*** (0.000)
Acc&Fin_Women						0.054* (0.074)
BODSIZE	-0.115** (0.012)	-0.286*** (0.007)	-0.098* (0.055)	-0.082 (0.239)	-0.194*** (0.001)	-0.199*** (0.001)
Indep	-0.022 (0.725)	-0.148 (0.105)	-0.153** (0.041)	-0.101 (0.200)	-0.166* (0.075)	-0.029 (0.723)
CEO_Women	-0.295*** (0.001)	-0.298*** (0.003)	-0.404*** (0.000)	-0.284* (0.084)	-0.271*** (0.000)	-0.324*** (0.000)
CEODUAL	-0.006 (0.813)	-0.003 (0.880)	-0.046 (0.145)	-0.042 (0.306)	-0.005 (0.900)	-0.035 (0.292)
LOG(CAPEX/TA)	0.011 (0.880)	0.007 (0.533)	0.014 (0.705)	0.020 (0.990)	0.031 (0.862)	0.025** (0.023)
BIG4	-0.019** (0.049)	-0.013 (0.193)	-0.033*** (0.001)	-0.059 (0.127)	-0.009 (0.706)	-0.108*** (0.005)
LogAGE	-0.005 (0.289)	-0.063*** (0.007)	-0.016 (0.105)	-0.037 (0.150)	-0.005 (0.531)	-0.008 (0.210)
LEVERAGE	-0.005 (0.942)	-0.009*** (0.000)	-0.013 (0.526)	-0.020 (0.552)	-0.011 (0.497)	-0.085*** (0.008)
LogTA	-0.013*** (0.000)	-0.014*** (0.001)	-0.016*** (0.000)	-0.013*** (0.001)	-0.017*** (0.000)	-0.006** (0.010)
IB	0.036** (0.016)	0.048*** (0.004)	0.027* (0.058)	0.015 (0.625)	0.007 (0.575)	0.019 (0.336)
WINDOW	-0.022** (0.044)	-0.016* (0.075)	-0.039*** (0.001)	-0.045 (0.123)	-0.015 (0.223)	-0.005 (0.812)
CRISIS	0.029 (0.284)	0.007 (0.781)	0.057* (0.067)	0.013 (0.626)	0.019 (0.355)	0.015 (0.299)
GDP	0.002* (0.099)	0.002 (0.707)	0.004*** (0.006)	0.003 (0.169)	0.002 (0.236)	0.001 (0.512)
Governance_Index	0.028 (0.352)	0.071 (0.127)	0.051 (0.106)	0.024 (0.510)	0.028 (0.338)	0.042 (0.184)
HHI	-0.004 (0.869)	-0.033 (0.253)	-0.037 (0.448)	-0.007 (0.919)	-0.002 (0.941)	-0.030 (0.970)
Constant	0.622*** (0.000)	1.246*** (0.000)	0.726*** (0.000)	0.670*** (0.008)	0.884*** (0.000)	1.987*** (0.000)
Wald chi ²	253***	201***	201***	245***	400***	168***
LM statistic (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Hansen-Sargan overidentification (p-value)	0.451	0.653	0.336	0.150	0.180	0.612
Observations	614	614	608	614	647	614
Country FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table presents the 3SLS results for the full sample (i.e. Islamic and conventional banks). The estimated models are defined as follows:
 $Tobin'sQ_{it} = \beta_0 + \beta_1 WOMEN_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (1) $WOMEN_{it} = \beta_0 + \beta_1 Tobin'sQ_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (2).

where $CONTROLS_{it}$ is the vector of control variables in bank i in year t , including women directors' attributes, bank-level indicators, country-level indicators, and country governance indicators. Model 2, presents alternative measure for women representation on board using a dummy indicator. Model 3–6 reports findings for the Women directors' attributes (i.e. functional and professional attributes). All Models are tested for the period 2007–2017. The diagnostic tests show that the LM statistic (p-value) is less than 1% and the Hansen–Sargan test for over-identification p-value is greater than 10% across all models, indicating that the chosen IVs for women's directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively and p-values are shown in parentheses.

are positively perceived by investors and hence, those investors assign higher market valuations for their banks.⁶ This finding is consistent with Kim and Lim (2010), who found a positive correlation between educational level and firm value measured by Tobin's Q. Also, Nguyen et al. (2015) found a positive association between market returns and directors with a business qualification in US banks.

Our results for the international education attribute are quite unique (i.e. none of the prior studies in banking examined this attribute) and report a significant negative association between women directors who graduated from foreign universities (*Inter-Unvi Women*) and market value. The finding is in line with Chotiyaputta and Yoon (2018) in non-financial firms who show a negative association between women directors who have international education and the financial performance for listed companies on the Thailand Stock Exchange. Directors who graduated from international universities may have different beliefs and cognitive settings than those who graduated from local universities. In line with prior literature, directors holding an international qualification may monitor and behave (similar to foreign women directors) leading to high communication/societal prices and low boardroom quality of negotiations (see Garcia-Meca et al., 2015). Furthermore, when studying in a country outside a bank headquarters, women directors are expected to have a more established understanding (e.g. to critically assess the key principles, codes, and governance of legislation/regulations) related to this country than other countries. Therefore, during and/or after studying their international degree, women directors may encounter a relatively weaker knowledge of local norms, codes, and legislations related to the local country of the affiliated firm under their supervision (Masulis et al., 2012). Such poor specialization/understanding for the affiliated country's laws and governance code could raise some firm monitoring costs e.g. weak internal control and agency costs alongside regulatory costs. Consequently, this perception about the costs of international education for women directors are likely to be less well regarded by sophisticated investors and become reflected on bank market valuations. This result also supports the negative direction for the association related to foreign women directors.

Together, our findings consistently suggest that gender diversity on the board has a significant positive association with bank value. However, in terms of women directors' attributes, we find a differential effect on stock market valuations. In relation to functional attributes, the presence of independent women directors is positively associated with market valuation, which is in line with predictions, while women's leadership tends not to be associated with bank value. Our results imply that foreign women board members are negatively associated bank value. We attribute the negative association to the high cost of communication, reducing the opportunity for those members to express their views and deleteriously affecting the quality of boardroom discussions (García-Meca et al., 2015). However, high educational level and business education for women directors is positively associated with bank value. These findings are supported by Audretsch and Lehmann (2006) and Francis et al. (2015), who indicate that academic directors offer higher responsibility toward society and commit to higher ethical behavior than other professionals who work in different fields. Moreover, due to their critical thinking skills, women directors with high academic and/or business qualifications can have a monitoring and advisory role while providing new ideas and innovative points of view. Moreover, women directors with financial expertise and those with international qualifications have a negative association with value. Overall, our findings support the second hypothesis, H_{2a} , but do not support H_{2b} . Conversely, our results do not propose a specific direction for the predicted associations under the third hypothesis, H_3 .

8. Extended analysis

In this section, we present additional analyses to identify the mediating effects of: (i) national cultural openness for our sample; (ii) different bank types; and (iii) the financial crisis of 2007.

8.1. Openness to diversity

For the expected mediating effect of national culture dominating our sampled countries, as discussed in Section 2, the direction of the cultural values and the norms of behaviour is represented by the consideration of the ethical, acceptable and legitimate norms taken by society (Hofstede 2001). Therefore, we use the six culture dimensions reported by Hofstede et al. (2010) and Hofstede (2011) to test the possible influence of national culture attributes on board gender diversity (Frag and Mallin, 2017; Arnaboldi et al., 2020). The six cultural dimensions are *power distance*, *individualism*, *masculinity*, *uncertainty avoidance*, *long-term orientation*, and *indulgence*.⁷ To capture the differences across countries; whether or not their culture is open to diversity, we use the average of six culture dimensions (i.e. *Hof index* = average (100- six culture dimensions)).⁸ Accordingly, a high *Hof index* indicates more openness to diversity (Arnaboldi et al., 2020). We define a *Hofstede dummy* (i.e. a dummy variable that is equal to 1 if countries are more open to diversity and

⁶ As a sensitivity check, we examined directors who hold a PhD degree, and our results are consistent with that for directors holding all post-graduate qualifications.

⁷ We collect data from <https://www.hofstede-insights.com/>. Bahrain and Oman are not reported in the Hofstede index and we find some missing information for long-term orientation and indulgence for Qatar, UAE, and Kuwait. Therefore, we use the Arab countries cluster index for these countries because the countries are part of the six GCC states and are influenced by the dominant Arabian culture in the region.

⁸ This *Hof index* ranges from 0 to 100, which indicates the higher value of *Hof index* is, the more the country is open to diversity. When we computed *Hof index*, we subtracted 100 from each dimension for each country. Then, we calculated the average of six dimensions for each country because the higher the power distance, masculinity, and uncertainty avoidance, the lower openness to diversity; however, the higher the individualism, long term orientation, and indulgence the higher openness to diversity (Arnaboldi et al., 2020).

0 otherwise) and we interact this dummy with each testable variable (i.e. *WOMEN* and different attributes).⁹

Table 6 reports our results which show that the percentage of women directors is positively associated with bank market value in countries more open to diversity. These results are in line with expectations and indicate that investors in these countries tend to positively perceive a high proportion of women on the board. Our finding is supported by [Belaounia et al. \(2020\)](#) who found that for countries open to women's equality, women directors can enhance the firm's performance and mitigate risk. Our findings are also consistent with [Lewellyn and Muller-Kahle \(2020\)](#) who indicate the importance of national culture and institutional forces in explaining cross-national variations in board gender diversity. When we extend our analyses to study different attributes, we find that the functional attributes (i.e. independence and leadership) are associated with lower bank value in countries more open to diversity. These findings are interesting and could be justified through the argument of [Nekhili et al. \(2018\)](#) who refer to the importance of considering the contingency theory of leadership, which states that the effectiveness of leadership style varies according to the dominant culture and social norms as well as the requirements of the leader's position. Moreover, our results are also comparable to prior studies addressing countries opened to diversity (such as the US or France). Regarding women directors' professional attributes, we find that all these attributes are positively and significantly associated with bank value however, this is observed only for countries culturally less open to diversity. For nationality attribute we find insignificant evidence. These results imply that professional qualifications and expertise for women directors are consistently important for banks located in these countries and such attributes may be highly perceived by investors. Our findings are also supported by [Post and Byron \(2015\)](#) who find that firms located in countries which offer good education for women as well as permit their participation/engagement in economic and political positions tend to exhibit high financial performance and market valuation.

8.2. The effect of different bank types

We extend prior studies on bank valuations which have not assessed possible institutional differences across different bank types that tend to affect firm valuations for women directors (e.g. [Pathan and Faff, 2013](#); [García-Meca et al., 2015](#); [Agyemang-Mintah and Schadewitz, 2019](#)). Several studies that examine board gender diversity have mainly focused on conventional banks in terms of bank risk and performance ([De Cabo et al., 2012](#); [Pathan and Faff, 2013](#); [Farg and Mallin, 2017](#); [Owen and Temesvary, 2018](#); [Arnaboldi et al., 2020](#); [Cardillo et al., 2020](#); [Kinatader et al., 2021](#)). However, to date, no study has investigated board gender diversity alongside women directors' attributes within the Islamic banking domain. The comparative literature between Islamic and conventional banks commonly investigates board characteristics like board size, independence, and multiple directorships ([Mollah and Zaman, 2015](#); [Mollah et al., 2017](#); [Trinh et al., 2020](#); [Elnahass et al., 2020, 2022](#)).

Studying women's representation on boards for alternative banking systems became essential particularly when considering the global banking systems and countries operating dual banking systems, given the fast growth of Islamic banking and its resilience during the financial crisis of 2007 ([Elnahass et al., 2022](#)). According to an Islamic Financial Services Board (IFSB, 2020) stability report, the total assets of Islamic banks increased by 12.7 % from 2018 to 2019, i.e. from \$1.57 trillion to \$1.77 trillion. In the last 30 years, Islamic banking has grown quickly in both Muslim and non-Muslim countries, but most Islamic banks are concentrated in the Middle East and Asia ([Khediri et al., 2015](#)).

Within the context of the banking business model and governance mechanisms, systematic differences in governance, investment, and finance models do exist between Islamic and conventional banks (see [Abdelsalam et al., 2021](#); [Elnahass et al., 2022](#)).¹⁰ The board of directors is accountable for the strategic direction, implementation of decision-making, protecting the shareholders' interests, and increasing bank value. However, Islamic banks follow a constrained banking model, based on non-interest operation, in compliance with Shari'ah law. This model aims to enhance profit sharing between depositors and the bank and to minimize uncertainty and eliminate trading in or allocation of funds to areas forbidden in Islam. Moreover, Islamic banks have more complex governance structures than their conventional counterparts ([Shibani and Fuentes, 2017](#); [Elnahass et al., 2020](#)). This banking sector operates on a complicated and double-layer governance structure including both board of directors and a Shari'ah supervisory board comprising specialist scholars who monitor the bank's operations and ensure they conform to Islamic standards ([Abdelsalam et al., 2020](#)).

Accordingly, when compared to conventional counterparts, we expect that women directors will have a differential impact on the stock market valuations of Islamic banks given the extended Shari'ah governance, distinct business and investment models, and strict monitoring by investors and depositors due to the excessive agency costs emerging. This is due to a peculiar institutional environment in Islamic banks including the special bank-depositors' relationship.¹¹

We examine the association identified between women directors and bank market valuation by clustering the full sample into different bank types (i.e. Islamic banks and conventional banks, and after controlling for Islamic windows). We re-estimate our models

⁹ Given the consistency of our main findings in Table 5 across different measures of board gender diversity (i.e. women directors' proportion and dummy measures) and for the sake of brevity we employ-one measure of board gender diversity which proportion of women on board (*WOMEN*) alongside different women attributes. Unreported tests using *Women_dummy* variable show consistent and similar findings.

¹⁰ The operations of Islamic banks are principally driven by a constrained banking model, which inherits both moral accountability values and legal responsibilities ([Abdelsalam et al., 2016](#)). Islamic banks operate on a business model that prohibits interests, complex derivatives, short-selling, aggressive risk-taking, and speculation while they encourage risk-profit sharing between the firms and their depositors. Meanwhile, conventional banks provide their services on an interest basis.

¹¹ With the absence of representation on the board of directors for depositors, Islamic bank managers have full control of the investment process of depositors' funds, which suggests high agency problems.

Table 6
Test for the Hofstede Countries' Openness to Diversity (full sample).

VARIABLE	Model 1	Model 2	Model 3	Model 4
	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q
WOMEN	-8.267*** (0.000)	-7.413*** (0.000)	-10.034*** (0.000)	-3.319** (0.032)
WOMEN* Hofstede dummy	8.441*** (0.000)	7.623*** (0.000)	9.948*** (0.000)	3.194** (0.042)
Indep_Women		0.445*** (0.001)		
Indep_Women* Hofstede dummy		-0.460*** (0.001)		
Chair_Women		0.326*** (0.000)		
Chair_Women * Hofstede dummy		-1.118*** (0.000)		
Expertise_Women			0.149*** (0.000)	
Expertise_Women* Hofstede dummy			-0.146*** (0.000)	
Foreign_Women			-0.017 (0.198)	
Foreign_Women* Hofstede dummy			0.028 (0.111)	
PostGrad_Women				0.095*** (0.000)
PostGrad_Women* Hofstede dummy				-0.106*** (0.000)
Inter_Univ_Women				0.155* (0.053)
Inter_Unvi_Women* Hofstede dummy				-0.079 (0.304)
Acc&Fin_Women				0.236*** (0.005)
Acc&Fin_Women* Hofstede dummy				-0.195*** (0.003)
BODSIZE	0.255*** (0.005)	0.214*** (0.003)	-0.001 (0.985)	-0.084* (0.098)
Indep	0.018 (0.621)	-0.004 (0.896)	0.166** (0.015)	-0.315*** (0.001)
CEO_Women	0.518*** (0.001)	0.496*** (0.000)	-0.317*** (0.009)	0.180* (0.064)
CEODUAL	0.012 (0.522)	0.015 (0.405)	-0.035 (0.146)	0.017 (0.521)
LOG(CAPEX/TA)	-0.004 (0.761)	0.024* (0.067)	-0.021* (0.094)	0.042*** (0.006)
Hofstede dummy	-0.434*** (0.008)	-0.010 (0.461)	-0.566** (0.019)	0.093 (0.382)
BIG4	-0.369*** (0.000)	-0.342*** (0.002)	0.143** (0.047)	-0.019 (0.818)
LogAGE	0.110*** (0.001)	-0.356*** (0.000)	0.019 (0.366)	-0.007 (0.608)
LEVERAGE	-0.007* (0.055)	0.097*** (0.000)	0.090* (0.082)	-0.188*** (0.000)
LogTA	-0.001 (0.879)	-0.008** (0.027)	-0.019*** (0.001)	-0.000 (0.955)
IB	0.022 (0.365)	-0.001 (0.685)	0.079*** (0.001)	0.005 (0.692)
WINDOW	-0.004 (0.655)	0.015 (0.505)	-0.003 (0.759)	-0.021* (0.069)
CRISIS	-0.010 (0.551)	-0.006 (0.510)	-0.069*** (0.001)	-0.044*** (0.009)
GDP	0.001 (0.360)	-0.002 (0.882)	0.006*** (0.001)	0.002 (0.109)
Governance_Index	-0.063 (0.320)	0.001 (0.512)	-0.090* (0.078)	0.097** (0.030)
HHI	-0.032 (0.351)	-0.032 (0.471)	-0.109*** (0.003)	-0.015 (0.674)
Constant	0.152 (0.301)	-0.020 (0.495)	0.172 (0.228)	0.871*** (0.000)

(continued on next page)

Table 6 (continued)

VARIABLE	Model 1	Model 2	Model 3	Model 4
	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q
Wald chi ²	71.96***	99.23***	133.17***	226.90***
LM statistic (p-value)	0.000	0.000	0.000	0.000
Hansen–Sargan overidentification (p-value)	0.762	0.392	0.119	0.251
Observations	647	641	639	647
Country FE	Yes	Yes	Yes	Yes

Notes: The table presents the results for examining Hofstede Countries' Openness to Diversity using 3SLS estimation for the full sample (Islamic and conventional banks). The diagnostic tests show that the LM statistic (p-value) is less than 1 % and the Hansen–Sargan test for over-identification p-value is greater than 10 % across all models, indicating that the chosen IVs for board women's directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1 %, 5 %, and 10 % levels respectively and p-values are shown in parentheses.

using the two sub-samples, as shown in Table 7, extending the analysis related to the hypotheses previously tested. The results for Islamic banks are reported in Panel A and the findings for conventional banks are presented in Panel B.

For Islamic banks, Panel A – Model 1, we observe a negative relationship between the proportion of women directors and the Islamic bank market value while conventional banks (i.e. Panel B, Model 5) show significantly positive association with bank valuations. The negative association for Islamic banks can be justified by the greater complexity of the Islamic banking business model, which requires complex and high monitoring and is associated with low efficiency and high operating costs (Abdelsalam et al., 2020). A few male Shari'ah advisors seem to dominate the Islamic banking industry, (see Elnahass et al., 2020; Trinh et al., 2020), suggesting that women are less likely to be Shari'ah experts. This is also confirmed through our descriptive statistics (see Table 2), which show a lower representation of women directors in Islamic banks than in conventional banks.

In terms of women directors' attributes, in both bank types, the main results for women directors' association with bank value remain consistent after controlling for directors' attributes.¹² We additionally find that, within the two banking sectors, having independent women directors is significantly positively associated with bank value. However, the presence of foreign women directors on boards is negatively perceived by investors of both bank types. Moreover, we do not observe significant associations among the two bank types with respect to women directors' education. In both the Islamic and conventional banks women directors who have a high level of education (i.e. postgraduate) and accounting and finance qualification are positively associated with market valuation women directors with international qualifications show a negative association with bank value.

Concerning the control variables, the Shari'ah supervisory board has a positive association with bank value, in line with Mollah and Zaman (2015). Also, we find that CEO Women tend to increase the bank value within Islamic banks, with a negative association in conventional banks, which is in line with Elnahass et al. (2020). In contrast, independent directors are negatively associated with stock market valuations in Islamic banks, but positively associated with conventional banks' market value. In Islamic banks, the ratio of capital expenditure to total assets, LOG(CAPEX/TA), is associated negatively with market valuation, but positively in conventional banks. This may relate to low efficiency and the complex business model of Islamic banks.

Altogether, the results in this section present further supporting evidence for the effect of board gender diversity on stock market valuations, demonstrating the differential results for alternative banking systems. Overall, it seems that, on average, the presence of women directors on the board is negatively associated with the bank valuations for Islamic banks when compared to conventional banks. However, the results show a similar association of women directors' attributes among the two bank types, which offers new evidence on alternative banking systems and governance (e.g. Mollah and Zaman, 2017; Elnahass et al., 2020; Trinh et al., 2020).

8.3. The effect of the global financial crisis of 2007

As previously discussed, women directors are more risk averse and more conservative in making decisions (De Cabo et al., 2012). However, this might change and/or be influenced by several attributes of women directors during episodes of financial distress, and hence, we extend our analyses to identify the impact on bank value during and after the financial crisis. The financial crisis period (defined as 2007–2009) is considered to have had an exogenous and systematic impact on banks and investment decisions (Fan et al., 2019). Therefore, an investigation of the quality of governance and women board members' attributes during or following the crisis period is essential in order to mitigate any endogeneity issues arising from board gender diversity (Pathan and Faff, 2013). According to Palvia et al. (2015), it is important for board members to be more conservative during the crisis period in order to mitigate bank failure. This empirical examination also offers additional evidence to prior studies on how the examined association between bank value and gender diversity could possibly change over periods of financial distress (e.g. the financial crisis of 2007).

We cluster the full sample into two sub-samples (crisis 2007–2008 and post crisis; 2009–2017). Table 8 reports the results from clustering the full sample into the crisis (Panel A) and post-crisis (Panel B) periods.

During the crisis period, results consistently indicate across all models an insignificant association between women directors and bank value. This result is in line with Engelen et al. (2012) and our findings can be justified by the overall lower representation of

¹² We drop the chair and financial expertise indicators from the models due to limited data and the low number of observations for Islamic banks.

Table 7
The Effect(s) of Different Bank Types (Islamic versus Conventional Banks).

VARIABLE	Panel A: Islamic banks				Panel B: Conventional Banks			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q
WOMEN	-2.499* (0.060)	-9.133*** (0.004)	-4.362** (0.024)	-0.929 (0.410)	1.614*** (0.001)	1.851*** (0.000)	1.565*** (0.000)	1.079*** (0.000)
Indep_Women		0.508*** (0.008)				0.572*** (0.000)		
Expertise_Women			0.435* (0.057)				-0.090** (0.013)	
Foreign_Women			0.298* (0.069)				-0.043** (0.011)	
PostGrad_Women				0.048*** (0.001)				0.060* (0.082)
Inter_Univ_Women				-0.285** (0.012)				-0.174*** (0.001)
Acc&Fin_Women				0.334** (0.037)				0.043** (0.044)
SSB	0.032* (0.059)	0.052* (0.075)	0.109 (0.555)	0.010 (0.541)				
BODSIZE	0.134 (0.525)	0.732* (0.076)	-0.835 (0.115)	0.298* (0.067)	-0.082** (0.017)	-0.003 (0.936)	-0.012 (0.750)	-0.138** (0.045)
Indep	-0.269** (0.039)	-0.342 (0.113)	-1.270* (0.065)	-0.443*** (0.000)	0.107** (0.035)	0.027 (0.643)	0.154*** (0.009)	0.038 (0.532)
CEO_Women	0.057 (0.670)	0.521** (0.041)	0.429 (0.193)	0.050 (0.573)	-0.183*** (0.000)	-0.224*** (0.000)	-0.011 (0.985)	-0.184*** (0.002)
CEODUAL	-0.047 (0.409)	-0.203* (0.058)	-0.056 (0.470)	-0.019 (0.574)	-0.004 (0.865)	-0.033 (0.243)	-0.021 (0.992)	-0.010 (0.478)
LOG(CAPEX/TA)	-0.219** (0.018)	-0.333 (0.108)	-0.013 (0.910)	-0.080* (0.089)	0.005 (0.498)	0.027** (0.015)	0.006 (0.510)	0.032 (0.168)
BIG4	-0.193** (0.048)	-0.531*** (0.010)	-0.047 (0.708)	-0.098 (0.123)	0.005 (0.423)	0.023 (0.970)	-0.003 (0.631)	0.029 (0.646)
LogAGE	-0.051 (0.284)	-0.236** (0.035)	-0.194* (0.099)	-0.036* (0.095)	0.005 (0.278)	0.023** (0.028)	0.019 (0.136)	0.005 (0.333)
LEVERAGE	-0.010 (0.113)	-0.007 (0.438)	-0.071 (0.168)	-0.011* (0.059)	-0.002 (0.824)	-0.003 (0.494)	-0.001 (0.710)	-0.003 (0.394)
LogTA	-0.037** (0.016)	-0.058* (0.096)	0.038 (0.787)	-0.008 (0.392)	-0.012*** (0.000)	-0.020*** (0.000)	-0.011*** (0.000)	-0.009*** (0.008)
WINDOW					-0.008 (0.216)	-0.009 (0.427)	-0.007 (0.267)	-0.005 (0.423)
CRISIS	0.002 (0.908)	0.011 (0.814)	0.241 (0.284)	0.023 (0.601)	-0.002 (0.905)	-0.054* (0.100)	0.021 (0.997)	-0.010 (0.396)
GDP	0.002 (0.598)	0.005 (0.443)	0.005 (0.393)	0.002 (0.417)	0.006 (0.183)	0.002 (0.151)	0.021 (0.409)	0.004** (0.035)
Governance_Index	-0.029 (0.690)	-0.060 (0.391)	0.399 (0.178)	-0.109** (0.050)	0.014 (0.532)	0.038 (0.166)	0.030 (0.929)	0.005 (0.738)
HHI	0.011 (0.911)	0.031 (0.715)	0.406 (0.275)	0.060 (0.419)	-0.014 (0.448)	-0.032 (0.525)	-0.016 (0.722)	-0.021 (0.959)
Constant	0.475 (0.238)	-0.559 (0.321)	2.851** (0.049)	1.268*** (0.000)	0.456*** (0.000)	0.325*** (0.002)	0.240** (0.050)	0.607*** (0.000)
Wald chi ²	164***	76***	36***	166***	297***	203***	271***	218***
LM statistic (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen-Sargan overidentification (p-value)	0.678	0.110	0.263	0.114	0.638	0.248	0.925	0.111
Observations	111	111	111	111	492	492	510	512
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table presents the 3SLS results for the sub-samples Islamic and conventional banks. The estimated models are defined as follows: $Tobin's Q_{it} = \beta_0 + \beta_1 WOMEN_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (1) $WOMEN_{it} = \beta_0 + \beta_1 Tobin's Q_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (2).

$CONTROLS_{it}$ is the vector of control variables in bank i in year t , including women directors' attributes, bank-level indicators, country-level indicators, and country governance indicators. Panel A reports results for Islamic banking (Model 1–4) while Panel B presents the results for conventional banks (Model 5–8). The Models are tested for the period 2007–2017. The diagnostic tests show that the LM statistic (p-value) is less than 1% and the Hansen–Sargan test for over-identification p-value is greater than 10% across all models, indicating that the chosen IVs for board women's directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively and p-values are shown in parentheses.

Table 8
The Effect of the Financial Crisis of 2007 (Crisis vs Post Crisis).

VARIABLE	Panel A: Crisis					Panel B: Post Crisis				
	(1) Market value LogTobin's Q	(2) Market value LogTobin's Q	(3) Market value LogTobin's Q	(4) Market value LogTobin's Q	(5) Market value LogTobin's Q	(6) Market value LogTobin's Q	(7) Market value LogTobin's Q	(8) Market value LogTobin's Q	(9) Market value LogTobin's Q	(10) Market value LogTobin's Q
WOMEN	-1.029 (0.235)	-0.263 (0.791)	-2.547** (0.047)	-1.253 (0.298)	-0.268 (0.760)	2.077*** (0.003)	4.938** (0.012)	12.410** (0.010)	6.043** (0.037)	3.389*** (0.000)
Indep_Women		-1.267* (0.010)					0.415** (0.017)			
Chair_Women		0.083 (0.312)					-0.057 (0.504)			
Expertise_Women			2.412* (0.072)					-0.064** (0.014)		
Foreign_Women			0.028* (0.059)	0.050*** (0.006)				-0.075** (0.043)	-0.086*** (0.001)	
PostGrad_Women				0.008 (0.472)	0.062* (0.621)				0.072*** (0.002)	0.091*** (0.000)
Inter_Univ_Women					0.061 (0.469)					-0.559*** (0.000)
AccandFin_Women					-0.037 (0.437)					0.110** (0.016)
BODSIZE	-0.157 (0.343)	-0.032 (0.858)	-0.024 (0.859)	-0.129 (0.451)	-0.109 (0.465)	-0.048 (0.243)	-0.091 (0.240)	-0.126 (0.191)	-0.218** (0.028)	-0.184** (0.014)
Indep	-0.001 (0.990)	-0.102 (0.388)	-0.134 (0.552)	-0.093 (0.392)	-0.391 (0.103)	-0.029 (0.682)	-0.169 (0.217)	-0.122 (0.400)	-0.151 (0.364)	-0.024 (0.831)
CEO_Women	-0.124 (0.201)	-0.059 (0.573)	-0.228*** (0.002)	-0.158 (0.107)	-0.111 (0.279)	-0.248*** (0.004)	-0.579*** (0.009)	-0.430 (0.217)	-0.484** (0.041)	-0.507*** (0.000)
CEODUAL	-0.070 (0.101)	-0.104* (0.059)	-0.044 (0.287)	-0.034 (0.442)	-0.014 (0.771)	0.025 (0.480)	0.110* (0.084)	0.053 (0.414)	0.068 (0.387)	0.033 (0.536)
LOG(CAPEX/TA)	0.025* (0.054)	0.027 (0.120)	0.040** (0.036)	0.037* (0.099)	0.060* (0.066)	0.002 (0.932)	0.004 (0.951)	0.051 (0.195)	0.017 (0.486)	-0.009 (0.517)
BIG4	-0.015 (0.650)	-0.023 (0.501)	-0.059* (0.097)	-0.093** (0.023)	-0.151 (0.164)	-0.015 (0.227)	-0.056** (0.046)	-0.342*** (0.006)	-0.055 (0.400)	-0.033 (0.282)
LogAGE	-0.003 (0.808)	-0.003 (0.857)	-0.007 (0.537)	-0.016 (0.526)	-0.039 (0.208)	-0.003 (0.644)	-0.028 (0.159)	-0.053 (0.119)	-0.018 (0.431)	-0.006 (0.357)
LEVERAGE	-0.008 (0.380)	-0.006 (0.491)	-0.013 (0.102)	-0.009 (0.423)	-0.021* (0.078)	-0.002 (0.663)	-0.009 (0.390)	-0.028 (0.293)	-0.019 (0.299)	-0.017 (0.451)
LogTA	-0.017	-0.003	0.005	-0.009	-0.049**	-0.008**	-0.010**	-0.004	-0.011	-0.003

(continued on next page)

Table 8 (continued)

VARIABLE	Panel A: Crisis					Panel B: Post Crisis				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q	Market value LogTobin's Q
IB	(0.241) 0.067* (0.099)	(0.844) 0.041 (0.314)	(0.730) 0.036 (0.402)	(0.435) 0.080* (0.098)	(0.043) 0.012 (0.809)	(0.017) 0.045*** (0.007)	(0.049) 0.022 (0.335)	(0.539) 0.036 (0.281)	(0.102) 0.011 (0.704)	(0.226) 0.005 (0.639)
WINDOW	−0.003 (0.939)	−0.006 (0.875)	−0.066 (0.372)	−0.002 (0.957)	−0.010 (0.791)	−0.019 (0.133)	−0.060** (0.048)	−0.145 (0.116)	−0.050 (0.311)	−0.001 (0.855)
GDP	0.008** (0.021)	0.008** (0.042)	0.003 (0.499)	0.004 (0.624)	0.014** (0.041)	0.007 (0.250)	0.004** (0.032)	0.003 (0.251)	0.005 (0.617)	0.002 (0.227)
Governance_Index	−0.327 (0.128)	−0.025 (0.941)	−0.730 (0.243)	−0.041 (0.929)	−0.690* (0.057)	0.015 (0.642)	0.083 (0.240)	0.232 (0.191)	0.109 (0.292)	0.039 (0.312)
HHI	0.035 (0.519)	0.083 (0.293)	0.056 (0.289)	0.016 (0.817)	0.021 (0.811)	−0.007 (0.805)	0.044 (0.600)	0.100 (0.246)	0.035 (0.729)	0.010 (0.679)
Constant	0.915** (0.023)	0.409 (0.422)	0.018 (0.971)	0.671* (0.099)	1.383*** (0.002)	0.388*** (0.001)	0.565*** (0.006)	0.552** (0.013)	0.745*** (0.004)	0.658*** (0.002)
Wald chi ²	92***	46***	58***	57***	64***	223***	91***	303***	339***	197***
LM statistic (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen–Sargan overidentification (p-value)	0.217	0.895	0.678	0.894	0.110	0.151	0.5036	0.126	0.110	0.9437
Observations	85	85	85	85	85	529	523	529	529	529
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table presents 3SLS results for the full sample (Islamic and conventional banks). The estimated models are defined as follows: $Tobin's Q_{it} = \beta_0 + \beta_1 WOMEN_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (1) $WOMEN_{it} = \beta_0 + \beta_1 Tobin's Q_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (2) $CONTROLS_{it}$ is the vector of control variables in bank i in year t , including women directors' attributes, bank-level indicators, country-level indicators, and country governance indicators. Panel A reports results for crisis period during 2007–2009 (Model 1–5) while Panel B presents the results for post crisis period of 2010–2017 (Model 6–10). These models also control for Islamic windows using a dummy variable (WINDOW) which takes the value 1 if the conventional bank has an Islamic window and zero otherwise. The diagnostic tests show that the LM statistic (p-value) is less than 1 % and the Hansen–Sargan test for over-identification p-value is greater than 10 % across all models, indicating that the chosen IVs for board women's directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1 %, 5 %, and 10 % levels respectively and p-values are shown in parentheses.

Table 9
(Robustness Test): Propensity Score Matching (PSM).

VARIABLE	Model 1 Market value LogTobin's Q	Model 2 Market value LogTobin's Q	Model 3 Market value LogTobin's Q	Model 4 Market value LogTobin's Q	Model 5 Market value LogTobin's Q
WOMEN	0.963* (0.089)	1.601*** (0.002)	7.905*** (0.001)	1.150** (0.015)	1.152** (0.029)
Indep_Women		0.284** (0.011)			
Chair_Women		0.028 (0.395)			
Expertise_Women			-0.501*** (0.000)		
Foreign_Women			-0.127*** (0.009)	-0.019*** (0.005)	
PostGrad_Women				0.030** (0.045)	0.054* (0.071)
Inter_Univ_Women					-0.177** (0.029)
Acc&Fin_Women					0.060** (0.040)
BODSIZE	-0.013 (0.649)	-0.072* (0.075)	-0.233** (0.033)	-0.059 (0.201)	-0.132 (0.166)
Indep	-0.091** (0.013)	-0.083** (0.044)	-0.266*** (0.007)	-0.017 (0.767)	-0.020 (0.845)
CEO_Women	-0.032 (0.418)	-0.031 (0.444)	-0.193** (0.044)	-0.084** (0.017)	-0.217** (0.023)
CEODUAL	-0.009 (0.601)	-0.010 (0.711)	-0.043 (0.162)	-0.011 (0.501)	-0.015 (0.422)
LOG(CAPEX/TA)	0.054*** (0.000)	0.024* (0.067)	0.024 (0.225)	0.037** (0.016)	0.031* (0.063)
BIG4	-0.030* (0.054)	-0.028** (0.012)	-0.127** (0.029)	-0.017 (0.555)	-0.024 (0.654)
LogAGE	-0.041 (0.980)	-0.015 (0.237)	-0.049* (0.064)	-0.007 (0.523)	-0.005 (0.749)
LEVERAGE	-0.004 (0.398)	-0.011 (0.824)	-0.075 (0.217)	-0.076** (0.032)	-0.093* (0.092)
LogTA	-0.021 (0.693)	-0.004 (0.340)	-0.021 (0.918)	-0.014 (0.275)	-0.004 (0.370)
IB	0.018* (0.068)	0.032** (0.024)	0.034 (0.252)	0.029** (0.040)	0.014 (0.570)
WINDOW	-0.025** (0.028)	-0.042*** (0.000)	-0.104*** (0.012)	-0.047*** (0.000)	-0.031** (0.037)
CRISIS	0.010 (0.698)	0.102*** (0.006)	0.093 (0.159)	0.101*** (0.007)	0.069** (0.041)
GDP	0.022 (0.422)	0.033 (0.371)	0.023 (0.281)	0.014 (0.840)	0.030 (0.918)
Governance_Index	0.006 (0.800)	0.039 (0.114)	0.055 (0.194)	0.016 (0.477)	0.019 (0.574)
HHI	0.130* (0.050)	0.081* (0.093)	0.199** (0.023)	0.081** (0.039)	0.062 (0.121)
Constant	0.152 (0.185)	-0.157 (0.265)	-0.240 (0.462)	0.254 (0.114)	0.570* (0.061)
Wald chi ²	188***	200***	191***	201***	181***
LM statistic (p-value)	0.000	0.000	0.000	0.000	0.000
Hansen-Sargan overidentification (p-value)	0.457	0.972	0.330	0.411	0.350
Observations	348	349	454	460	460
Country FE	Yes	Yes	Yes	Yes	Yes

Notes: The table presents the 3SLS results for the matched sample (Islamic and conventional banks). Matched sample analysis is carried out using the PSM procedure, with a treatment group (banks with at least one female director) and control group (banks with only male directors). PSM yields a matched sample includes 522 observations: 261 treatment observations (banks with at least one female director) and 261 control observations (banks with only male directors). Models are tested for the period 2007–2017. The diagnostic tests show that the LM statistic (p-value) is less than 1% and the Hansen-Sargan test for over-identification p-value is greater than 10% across all models, indicating that the chosen IVs for women's directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively and p-values are shown in parentheses.

women directors for our sampled countries during the crisis period (see Table 4). In fact, the crisis period had an exogenous impact on economies, especially the banking sector, when women's quotas were very limited/less dominant compared to more recent years. An exception is Model 3, which shows a significant negative coefficient for bank value, which suggests that higher representation of

Table 10
(Blau Index) 3SLS Regression Results for Alternative Measures of Gender Diversity.

VARIABLE	Model 1 Market value LogTobin's Q	Model 2 Market value LogTobin's Q
Blau index	3.109*** (0.001)	
L. Blau index		1.768*** (0.001)
BODSIZE	-0.232*** (0.006)	-0.154** (0.027)
Indep	-0.095 (0.307)	-0.005 (0.881)
CEO_Women	-0.494*** (0.001)	-0.279*** (0.003)
CEODUAL	0.008 (0.815)	0.009 (0.846)
LOG(CAPEX/TA)	0.022 (0.993)	0.004 (0.659)
BIG4	-0.009 (0.401)	-0.003 (0.643)
LogAGE	-0.025* (0.089)	-0.002 (0.840)
LEVERAGE	0.009 (0.204)	0.011 (0.710)
LogTA	-0.016*** (0.000)	-0.014*** (0.000)
IB	0.041** (0.048)	0.052** (0.039)
WINDOW	-0.028** (0.038)	-0.005 (0.638)
CRISIS	0.038 (0.260)	0.006 (0.686)
GDP	0.003* (0.073)	0.021 (0.632)
Governance_Index	0.092 (0.143)	0.004 (0.868)
HHI	0.017 (0.651)	0.005 (0.713)
Constant	0.886*** (0.000)	0.662*** (0.000)
Wald chi ²	175***	409***
LM statistic (p-value)	0.000	0.000
Hansen-Sargan overidentification (p-value)	0.528	0.752
Observations	614	559
Country FE	Yes	Yes

Note: The table presents the 3SLS results of Blau's index and one year lagged values of Blau's index "the alternative measures of gender diversity" for the full sample (Islamic and conventional banks). The estimated models are defined as follows: $Tobin'sQ_{it} = \beta_0 + \beta_1 Blau_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}(3)$ and $Blau_{it} = \beta_0 + \beta_1 Tobin'sQ_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}(4)$.

In these models, $CONTROLS_{it}$ is the vector of control in bank i in year t , including bank-level indicators, country-level indicators, and country governance indicators. IB is a dummy variable controlling for the bank type, taking the value 1 if the bank is Islamic and zero for a conventional bank. These models also controlled for Islamic windows using a dummy variable (WINDOW) which takes the value 1 if the conventional bank has an Islamic window and zero otherwise. Models are tested for the period 2007–2017. The diagnostic tests show that the LM statistic (p-value) is less than 1% and the Hansen-Sargan test for over-identification p-value is greater than 10% across all models, indicating that the chosen IVs for women's directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively and p-values are shown in parentheses.

women directors during the crisis is negatively associated with market value when controlling for financial expertise and foreign nationality. This finding is consistent with Duppatti et al. (2019), who found that gender diversity on the board was negatively associated with Irish firms' value in the crisis. The crisis period represented an exogenous shock that affected trading and investments in the banking industry, which led to a substantial economic downturn; hence, low bank valuation under the emerging opportunities of earnings management in addition to the procyclical effect on leading is expected for our sampled banks (see Elnahass et al., 2018; Abdelsalam et al., 2020). Moreover, in Model 4, we find that foreign nationality is significantly and positively associated with bank value, suggesting that, as expected, there may be reputational benefits associated with foreign women directors (see Ruigrok et al., 2007; Estélyi and Nisar, 2016). Also, women directors with high levels of education continue to be positively associated with stock market value during this period. The financial expertise attribute has a marginal effect. However, Fernandes and Fich (2013) stated that directors who are financial experts enhance the monitoring and reduce conflicts of interest between directors and shareholders due to their rich knowledge and abilities. Moreover, a high level of abilities in the fields of finance, law, accounting, and risk

Table 11
(Robustness Test): Using Market Capitalization as an alternative Measure (Full Sample).

VARIABLE	Model 1 Market Cap	Model 2 Market Cap
WOMEN	0.280*** (0.000)	
Blau's index		12.847*** (0.004)
BODSIZE	-0.288 (0.536)	-0.429 (0.319)
Indep	-0.002 (0.995)	-0.193 (0.668)
CEO_Women	-3.772*** (0.000)	-2.434*** (0.001)
CEODUAL	-0.507 (0.105)	-0.078 (0.704)
LOG(CAPEX/TA)	0.620*** (0.001)	0.679*** (0.000)
LogAGE	-0.078 (0.242)	-0.164* (0.097)
LEVERAGE	0.112** (0.028)	-0.040 (0.861)
LogTA	0.210*** (0.000)	0.578*** (0.000)
BIG4	0.092 (0.490)	0.105 (0.500)
IB	0.459** (0.018)	0.065 (0.627)
WINDOW	-0.072 (0.741)	-0.028 (0.844)
CRISIS	0.335 (0.164)	3.691*** (0.000)
GDP	0.005 (0.720)	0.008 (0.614)
Governance_Index	2.275*** (0.000)	0.831** (0.018)
HHI	1.417** (0.024)	0.371 (0.412)
Constant	2.438* (0.069)	-0.990 (0.491)
Wald chi ²	555***	461***
LM statistic (p-value)	0.000	0.000
Hansen-Sargan overidentification (p-value)	0.225	0.113
Observations	699	651
Country FE	Yes	Yes

Notes: The table presents the 3SLS results for the full sample (Islamic and conventional banks). Market capitalization is an *alternative measure for market value*. The estimated models are defined as follows: $MarkeCap_{it} = \beta_0 + \beta_1 WOMEN_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (5) $WOMEN_{it} = \beta_0 + \beta_1 MarkeCap_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (6) $MarkeCap_{it} = \beta_0 + \beta_1 Blue_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (7) $Blue_{it} = \beta_0 + \beta_1 MarkeCap_{it} + \beta_2 CONTROLS_{it} + \varepsilon_{it}$ (8). where $CONTROLS_{it}$ is the vector of control in bank i in year t , including bank-level indicators, country-level indicators and country governance indicators. IB is a dummy variable controlling for the bank type, taking the value 1 if the bank is Islamic and zero for a conventional bank. These models also controlled for Islamic windows using a dummy variable (WINDOW) which takes the value 1 if the conventional bank has an Islamic window and zero otherwise. Models are tested for the period 2007–2017. The diagnostic tests show that the LM statistic (p-value) is less than 1% and the Hansen-Sargan test for over-identification p-value is greater than 10% across all models, indicating that the chosen IVs indicating that the chosen IVs for board women directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively and p-values are shown in parentheses.

management increases the probability of better decision-making and problem-solving skills that help reduce uncertainty and improve bank value during a critical time such as a financial crisis. In line with their good reputation during the crisis, boards of directors who have expertise and network contacts have managed to improve their monitoring effectiveness (Johnson et al., 2013). Hence, this women directors' attribute seems to promote investors' confidence during periods of financial distress like the crisis.

By examining post-crisis years, we find a significant and positive association between women directors and bank value across all models, in Panel B, which suggests that investors do value women's representation on boards only outside the period of financial distress. One explanation is that, in general, the global financial crisis was characterized by poor banking practices, weak monitoring addressing low quality of disclosure/transparency, and fair global competition across the majority of global banks (Fosu et al., 2018). This is in addition to the high credit risk and low banking stability which have reduced stock market valuations for many banks

Table 12

(Robustness Test): Using One Year Lagged Variables - The Women's Directorship and Women Directors' Attributes.

VARIABLE	Model 1 Market value LogTobin's Q	Model 2 Market value LogTobin's Q	Model 3 Market value LogTobin's Q	Model 4 Market value LogTobin's Q	Model 5 Market value LogTobin's Q
L.WOMEN	1.197*** (0.000)	1.233*** (0.001)	1.797*** (0.000)	2.297*** (0.000)	1.694*** (0.000)
L.Indep_Women		0.454** (0.017)			
L.Chair_Women		-0.011 (0.741)			
L.Expertise_Women			-0.101** (0.031)		
L.Foreign_Women			-0.032** (0.016)	-0.042*** (0.003)	
L.PostGrad_Women				0.066** (0.033)	0.081** (0.023)
L.Inter_Univ_Women					-0.274*** (0.000)
L.Acc&Fin_Women					0.051* (0.073)
BODSIZE	-0.065** (0.019)	-0.022 (0.458)	-0.059* (0.052)	-0.210** (0.013)	-0.204** (0.016)
Indep	-0.015 (0.703)	-0.014 (0.777)	-0.040 (0.378)	-0.193 (0.118)	-0.007 (0.923)
CEO_Women	-0.143*** (0.000)	-0.148*** (0.001)	-0.022 (0.676)	-0.139*** (0.005)	-0.277*** (0.000)
CEODUAL	-0.010 (0.590)	-0.018 (0.458)	-0.016 (0.267)	-0.013 (0.952)	-0.018 (0.154)
LOG(CAPEX/TA)	0.006 (0.572)	0.005 (0.745)	0.019 (0.125)	0.005 (0.734)	0.019 (0.161)
BIG4	-0.014* (0.078)	-0.019** (0.049)	-0.024* (0.067)	-0.011 (0.980)	0.127** (0.045)
LogAGE	-0.004 (0.799)	-0.005 (0.470)	-0.008 (0.339)	-0.002 (0.820)	-0.012 (0.263)
LEVERAGE	-0.004 (0.128)	-0.011*** (0.004)	-0.070*** (0.007)	-0.021 (0.860)	-0.088*** (0.001)
LogTA	-0.010*** (0.000)	-0.009*** (0.004)	-0.008*** (0.005)	-0.016*** (0.000)	-0.008*** (0.001)
IB	0.036*** (0.000)	0.030*** (0.004)	0.023* (0.076)	0.005 (0.608)	0.020 (0.101)
WINDOW	-0.017** (0.021)	-0.024** (0.011)	-0.036*** (0.008)	-0.005 (0.576)	-0.019** (0.045)
CRISIS	0.010 (0.712)	0.014 (0.783)	0.021 (0.200)	0.050 (0.982)	0.014 (0.504)
GDP	0.012 (0.109)	0.002* (0.091)	0.003** (0.039)	0.011 (0.612)	0.003*** (0.010)
Governance_Index	0.020 (0.281)	0.035 (0.100)	0.016 (0.419)	0.003 (0.873)	0.009 (0.647)
HHI	-0.023 (0.260)	-0.064* (0.087)	-0.033 (0.235)	-0.008 (0.750)	-0.026 (0.345)
Constant	0.489*** (0.000)	0.428*** (0.000)	0.591*** (0.000)	0.952*** (0.000)	0.855*** (0.000)
Wald chi ²	166***	254***	227***	349***	166***
LM statistic (p-value)	0.000	0.000	0.000	0.000	0.000
Hansen-Sargan overidentification (p-value)	0.214	0.147	0.227	0.468	0.392
Observations	559	554	559	559	581
Country FE	Yes	Yes	Yes	Yes	Yes

Notes: The table presents the 3SLS results of the one year lagged values for women's directorship and women directors' attributes for the full sample (Islamic and conventional banks). The Models are tested for the period 2007–2017. The diagnostic tests show that the LM statistic (p-value) is less than 1% and the Hansen–Sargan test for over-identification p-value is greater than 10% across all models, indicating that the chosen Ivs for women's directorship are valid and the models are not over-identified. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively and p-values are shown in parentheses.

worldwide (Abdelsalam et al., 2020; Elnahass et al., 2022). Hence, investors might have perceived the bank value as being reduced (i.e. given the poor disclosure and monitoring) during this exogenous shock, irrespective of the presence of women directors. Another explanation can be attributed to the emergence of women's representation on boards in recent years (i.e. after the crisis), given the increase in quotas. Hence, it is likely that such positive association became significant only post the crisis years.

Moreover, in *Model 8* the number of independent women on the board is positively associated with market value. Women in the role

of chairperson exhibit an insignificant association both during and after the crisis period. Both financial expertise and foreign women are negatively associated with value in the post-crisis period. With regard to education, women with postgraduate and business degrees show positive associations with market valuation in the post-crisis period, a finding that is consistent with the main results.

Therefore, the comparative assessments between the crisis and post-crisis periods further explain the main results and show distinct implications for the presence of women directors across different time periods. The findings for the post-crisis period support the main findings in Table 5. The crisis period offers new insights on board gender diversity for banking and stock markets, during which time the presence of women directors and their characteristics are negatively, or not significantly, associated with market value. A possible explanation for our result is that, during the crisis period, all board members had to become more risk averse in order for the banks to survive, and lower risk may lead to lower returns. The negative association observed may not be related to gender (i.e. the same result may be observed for male board members).

9. Robustness checks

In this section, we undertake further robustness tests addressing issues related to possible endogeneity that may arise due to omitted variable bias and/or reverse causality in our models. These tests are performed through various sensitivity checks and alternative specifications for our main models.

9.1. Propensity score matching

To control for endogeneity arising from self-selection bias, Propensity Score Matching (PSM) is used to perform a matched-sample analysis based on gender diversity. We followed the same PSM approach employed in prior literature (e.g. Bennouri et al., 2018; Cardillo et al., 2020; Elnahass et al., 2020; Kinateter et al., 2021). We utilize a treatment group (banks with at least one woman director) and a control group (banks with only male directors), following Bennouri et al. (2018) and Kinateter et al. (2021). PSM yields a matched sample of 522 observations: 261 treatment observations (banks with at least one woman director) and 261 control observations (banks with only male directors). The propensity score is the predicted value from a logit regression using the same controls (i.e. bank-specific controls and country-specific controls and country fixed effects) as included in our main models. Then, we use the nearest-neighbor matching approach, taking the unit chosen from the banks with no gender diversity as a match for the banks having board gender diversity as the one closest in terms of the propensity score.¹³ Finally, we use the 3SLS estimation for the matched sample in Table 9.

The findings support our main results and are consistent with the findings in both tables 5 and 6, but the matched samples analysis shows slightly more significant results. These findings offer further supportive evidence for our main conclusion that women directors, independent women directors, those with a high educational level (PhD and postgraduate education), and women directors with accounting and finance qualifications are positively associated with bank valuation. Conversely, those with foreign and financial expertise demonstrate a negative association.¹⁴

9.2. Alternative measures of gender diversity

We extend our sensitivity and robustness checks by using an alternative measure of women directors' representation, which is the Blau index, commonly used in previous studies (e.g. Campbell and Mínguez-Vera, 2008; Fan et al., 2019). This index can be used as an alternative indicator of diversity and is built on the level of heterogeneity among different board members in terms of gender (Blau, 1977). According to Engelen et al. (2012), the greater the diversity within the board, the higher the Blau index. Many gender diversity studies have used this measure as a good proxy of board gender diversity (see Campbell and Mínguez-Vera, 2008; Aggarwal et al., 2019; Fan et al., 2019). The calculation of Blau's index is as follows:

$$Blauindex = 1 - \sum_{i=1}^2 b_i^2$$

where, b_i is the proportion of men and women on bank boards and i denotes the gender index (1 = women, 2 = men).

The Blau index ranges in value from zero (when all board members are of the same gender) to 0.5 (when the board has an equal

¹³ The logistic regressions for all models and further explanation of the matched samples, including the number of observations for the matched sample and other comparison tests between the treatment and control groups, as well as graphs for all the variables in the models, are available upon request.

¹⁴ We carried out a separate (unreported) sensitivity check for PSM following Cardillo et al. (2020) in order to cluster the sample into two groups of banks with high women's representation and banks with low women's representation based on the mean value for women directors (0.069). We developed a matched sample analysis carried out using the PSM procedure treatment group (i.e. if the board has women's representation that is higher than or equal to the sample mean of the women directors) and control group (i.e. if the board has women's representation that is lower than the sample mean of the women directors or zero). PSM yields a matched sample of 832 observations: 416 treatment observations (banks with high women's representation) and 416 control observations (banks with low women's representation/or zero). The propensity score is the predicted value from a logit regression using the same controls (i.e. bank-specific controls and country-specific controls and country fixed effects) as included in our main models. The findings support our main results and are consistent with the findings in Table 5.

representation of men and women) (Campbell and Mínguez-Vera, 2008). The results for *Model 1* in Table 10 show a positive association between the Blau index and *LogTobin's Q*, indicating that a higher representation of women directors is positively associated with market value. To provide an additional control for the possibility of reverse causality giving rise to endogeneity concerns in current financial data affected by past board members' appointments, we employ a one-year lag for the Blau index (*Model 2*). The results remain the same, showing a positive association between the Blau index (higher representation of women directors) and bank valuations. This indicates that our main results are not driven by possible measurement errors in testing the association between gender diversity and market value.

9.3. Market capitalization as an alternative measure for market value

We use an alternative measure for bank value which is the market capitalization (*Market Cap*) (Kaczmarek et al., 2014; Elnahass et al., 2020) because both *Tobin's Q* and market capitalization incorporate the value of intangible assets that are not reflected in accounting measures. We undertake our analyses using the natural logarithm of the market capitalization (i.e. the natural log of the stock price per share multiplied by the number of common shares outstanding).

Table 11 shows that the proportion of women directors is positively associated with the market capitalization for the full sample. These findings are generally the same as our main findings. Therefore, the findings of this study are not affected by endogeneity bias, or model misspecification.

9.4. Lagged value of board gender diversity

As a robustness test for our governance measures, we follow Mollah et al. (2017) and re-estimate our models employing a lagged approach for the full sample. The lagged approach helps to alleviate the possibility of reverse causality, thus mitigating the endogeneity issue that current financial data may be affected by past board members' appointments. The estimation includes the one-year lagged value for the proportion of women directors and other attributes. The results shown in Table 12 provide strong evidence that women directors have a positive association with bank value. Women directors with a high educational level and those with accounting and finance qualifications have a positive association with market valuation. In contrast, foreign women directors and those with financial expertise are negatively associated with bank market valuation. Overall, the findings are consistent with the main results and indicate that the findings in this study are not driven by an endogeneity bias.

10. Conclusion

Over the last few years, there has been a growing and substantial interest in issues surrounding the empowerment of women and equality in the workplace, given the increasing recognition of women's importance in the market, together with the prevalence of regulatory debates emphasizing financial and business ethics. Earlier studies presented evidence of the effect of board gender diversity on firm market value within non-financial institutions, but this study is the first to examine board gender diversity in the banking sector with a unique data set which incorporates comprehensive measures for different attributes of women directors. In this regard, our empirical assessments considered two categories of women directors' attributes: functional attributes (*independence and leadership*) and professional attributes (*financial expertise, nationality, educational*).

The study's findings are extended to offer new insights on several cultural value aspects and orientations for our sampled countries in which women leaders (i.e. in Middle Eastern and Asian regions) are more likely to be discriminated against and abused than in developed countries because of the conservative culture, ideologies, social norms, and morals constructed from religion. Accordingly, using the Hofstede index, we examine the mediating effect of cultural openness to diversity among these countries. We also present new evidence on the impact of institutional structures to show differential associations with market value among alternative banking business models (i.e. Islamic versus conventional banks). We additionally investigate the effect of the financial crisis in 2007 to offer a comparative assessment between the crisis and non-crisis years and to extend inclusive evidence addressing the crisis effect on board gender diversity.

We find strong evidence that women directors (i.e. their representation and proportion on the board) is positively associated with market valuation for banks. These findings remain unchanged after incorporating different women directors' attributes to the testable models. We also find that independent women directors have a positive association with market value, while leadership shows no significant association. The findings demonstrate the proportions of women directors with postgraduate degrees and those with accounting and finance qualifications are significantly and positively associated with market value. Conversely, women who are alumni of foreign universities are negatively associated with market value, as are women directors with financial expertise and women directors of foreign nationality who show negative association with bank valuation.

Furthermore, we find that women directors are significantly and positively associated with market value in countries which are more open to diversity. Functional attributes tend to show a negative association with market value within these countries while professional attributes are associated with higher market value. Analyses conditioned on the different bank types show differential effects and indicate that a high proportion of women on the board is negatively associated with market valuation in Islamic banks but has a positive association with valuation in conventional banks. The association between independent women directors and market valuation shows a significant positive association across the two alternative banking systems. However, women who act as board chairs show no association with market value. For both Islamic and conventional banks, a higher proportion of foreign women directors is negatively associated with bank value. The findings across the two alternative banking systems suggest that women board

members with a high educational level and accounting and finance degrees are positively associated with market value, but women alumni from foreign universities are negatively associated with market value in both bank types.

By clustering the sample by crisis and post-crisis periods, we find that women directors have no association with bank value during the crisis years, yet there is a positive association for women directors and independent directors with bank value in the post-crisis period. During the crisis, both financial expertise and foreign nationality attributes are associated positively with bank value. In addition, women board members with postgraduate-level education have a consistent positive association in both the crisis and post-crisis periods. Women who are alumni from foreign universities and those with finance and accounting qualifications have no significant association with bank value during the crisis, but for post-crisis period we find a negative association for the former and a positive association for the latter.

Our main findings suggest that “wonder woman” attributes in banks are mainly represented by independent directorships, higher levels of education, the study of accounting and finance, and local knowledge through studying in the home country. The study’s findings present new insights for the corporate governance literature and the global banking industry, presenting important implications for policymakers, regulators, investors, and several sets of stakeholders. The findings may offer primary indications for the optimal composition of bank boards, especially regarding the inclusion of women who are characterized by independence and who hold high education and qualifications in accounting and finance-related fields, it is suggested that a high level of education may enhance a director’s confidence in expressing an opinion. Increasing the number of qualified and educated directors on the board can also help to avoid misunderstandings concerning complex business problems, and in analyzing and resolving issues in periods of financial distress and on overage.

The findings presented in this study call for regulators and policymakers within Islamic and Middle Eastern countries to develop more detailed guidelines regarding gender quotas, taking varying characteristics of women into consideration when considering board appointments. Increasing quotas for women has become essential, enabling them to attain critical mass. With the conservative ideology dominating these emerging economies concerning women’s leadership, a change should begin from the elite strata of society which leads the economy and media, encouraging society to empower women and believe in their efficacy in leadership positions.

The attributes of women directors highlighted in this study should serve as a model for structuring membership for board of directors across these societies. Increasing the number of women on boards needs government legitimization, which potentially encompasses opening up governance training courses to increase the human capital infrastructure and ensure appointments of directors are based on their qualifications, without gender bias. The study additionally emphasizes the importance of considering a different level of openness to diversity at a country level which seems to have a strong impact on promoting differential valuations of women directors’ attributes. Our findings also point out the impact of women directors’ attributes on the valuation of different bank types for countries operating a dual banking system. We observed distinct market valuation for women’s representation and their attributes during periods of financial crisis. The results addressing the financial crisis effect could help regulators and researchers continuing to assess board gender diversity during the Covid-19 pandemic and/or future economic banking crises. However, the lack of data availability for the sample banks, particularly Islamic banks, meant it was not possible to extend analyses to incorporate more markers of women directors, such as their age, leadership, and busyness.

It is recommended that future studies extend this research by analyzing the effect of these additional board attributes while capturing the existence of a critical mass and cultural openness. Moreover, future work might examine socio-cultural differences among foreign directors based on their specific nationalities. Variations in the relationships between diversity measures and bank market valuations between countries could also be a fruitful avenue for future research.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The co-authors thank the editor and the two anonymous referees for their valuable comments and directions which have helped to improve the overall exposition of the study.

Appendix A. . Variable definitions

Variable Names	Abbreviations	Definitions
Tobin’s Q	LogTobin’s Q	Natural logarithm of Tobin’s Q ratio, which is measured by the sum of a bank total debt and market value of equity, divided by its book value of total assets. The market value of equity is computed as the number of outstanding shares multiplied by the stock prices.
Market capitalization	Market Cap	Natural logarithm of the bank’s market capitalization which is calculated by stock price per share multiplied by the number of shares outstanding.
Women directorship	WOMEN	Proportion of women directors on the board to total board members (%).
Women dummy	Women_Dummy	A dummy variable that is equal to 1 if the board has at least one woman and 0 otherwise

(continued on next page)

(continued)

Variable Names	Abbreviations	Definitions
Blau's index	Blau's index	$Blau\ index = 1 - \sum_{i=1}^2 b_i^2$ Where b_i is the fraction of men and women on bank boards, and i indexes gender.
Women independence	Indep_Women	Proportion of independent non-executive women directors to total women directors.
Chairperson Women	Chair_Women	A dummy variable that is equal to one if the Chairperson is a woman and 0 otherwise.
Financial expertise women	Expertise_Women	Proportion of women directors with experience (present or past) as an executive officer (i.e., CEO, CFO and CRO) in a bank or insurance company or academic institution (e.g. Professor in finance, accounting, economics, or business) to total women directors (%).
Women Foreigners	Foreign_Women	Proportion of foreign women directors to total women directors (%).
Women higher education	PostGrad_Women	Proportion of women directors with a master (MSc/MBA) degree or higher (PhD included) to total women directors (%)
Women international graduate	Inter_Univ_Women	Proportion of women directors who graduated from a foreign university to total women directors (%).
Women with finance and accounting qualification	Acc&Fin_Women	Proportion of women directors with financial/accounting qualification (undergraduate or postgraduate degree in finance, accounting, or Islamic finance) to total women directors (%)
Board size	BODSIZE	Natural logarithm of the total number of board members.
Board independence	Indep	Percentage of independent non-executive directors on the board of directors.
CEO duality	CEODUAL	A dummy variable: 1 if the CEO is also the Chairman of the board of directors and 0 otherwise.
CEO Women	CEO_Women	A dummy variable that is equal to one if the CEO is a woman and 0 otherwise.
CAPEX/TA	LOG(CAPEX/TA)	Natural logarithm of the ratio of capital expenditures to assets
Bank leverage	LEVERAGE	Total liabilities divided by book value of equity.
BIG4	BIG4	A dummy variable that is equal 1 the bank is audited by Big4 company, 0 otherwise.
Islamic bank	IB	A dummy variable that is equal 1 if the bank is Islamic and 0 otherwise.
Islamic window	WINDOW	A dummy variable that is equal 1 if the conventional bank has Islamic window and 0 otherwise.
Bank size	LogTA	Natural logarithm of total assets of a bank at the end of the fiscal year.
Bank Age	LogAGE	Natural logarithm of the difference between the sample current year and the establishment bank's year.
Herfindahl–Hirschman index	HHI	The Herfindahl–Hirschman index, calculated by the square of the sum of the ratio of total assets of each bank-year-country to total assets of all banks each year in each country. It takes a value between zero and 1. A higher HHI shows higher bank concentration.
GDP growth rate	GDP	Annual gross domestic product growth rate.
Governance Index	Governance_Index	This index calculated by the average of six governance measures (the regulatory quality, rule of law, control of corruption, political stability, governance effectiveness, and the voice and accountability). Each index of the governance measure ranges from approximately –2.5 (weak) to 2.5 (strong) for governance performance; higher values infer better governance. Used to capture the quality of national governance (Source: World Bank).
Hofstede index	Hof_index	average (100- six culture dimensions)
Hofstede dummy	Hofstede dummy	A dummy variable that is equal to 1 if countries are more open to diversity and zero otherwise
Year crisis dummy	CRISIS	A dummy variable that equal to 1 if the year = 2007–2009 and 0 otherwise.

Note: This table shows definitions and measurements for all variables in our models.

References

- Abdelsalam, O., Dimitropoulos, P., Elnahass, M., Leventis, S., 2016. Earnings management behaviors under different monitoring mechanisms: The case of Islamic and conventional banks. *J. Econ. Behav. Organ.* 132, 155–173.
- Abdelsalam, O., Elnahass, M., Ahmed, H., Williams, J., 2020. Asset securitizations and bank stability: evidence from different banking systems. *Global Finance Journal*. <https://doi.org/10.1016/j.gfj.2020.100551>.
- Abdelsalam, O., Elnahass, M., Batten, J.A., Mollah, S., 2021. New insights into bank asset securitization: The impact of religiosity. *Journal of Financial Stability*. <https://doi.org/10.1016/j.jfs.2021.100854>.
- Abedifar, P., Molyneux, P., Tarazi, A., 2013. Risk in Islamic banking. *Review of Finance* 17 (6), 2035–2096.
- Adams, R., 2016. Women on boards: The superheroes of tomorrow? *The Leadership Quarterly* 27 (3), 371–386.
- Adams, R., Ferreira, D., 2007. A theory of friendly boards. *The Journal of Finance* 62 (1), 217–250.
- Adams, R., de Haan, J., Terjesen, S., van Ees, H., 2015. Board diversity: Moving the field forward. *Corporate Governance: An International Review* 23 (2), 77–82.
- Adams, R., Ferreira, D., 2004. Gender diversity in the boardroom. *European Corporate Governance Institute, Finance Working paper* 57, 30.
- Adams, R., Ferreira, D., 2009. Women in the boardroom and their impact on governance and performance. *J. Financ. Econ.* 94 (2), 291–309.
- Adams, R., Funk, P., 2012. Beyond the glass ceiling: Does gender matter? *Manage. Sci.* 58 (2), 219–235.
- Adams, R., Mehran, H., 2012. Bank board structure and performance: Evidence for large bank holding companies. *Journal of Financial Intermediation* 21 (2), 243–267.
- Aebi, V., Sabato, G., Schmid, M., 2012. Risk management, corporate governance, and bank performance in the financial crisis. *J. Bank. Finance* 36 (12), 3213–3226.
- Aggarwal, R., Jindal, V., Seth, R., 2019. Board diversity and firm performance: The role of business group affiliation. *International Business Review* 28 (6), 101600.
- Agyemang-Mintah, P., Schadewitz, H., 2019. Gender diversity and firm value: evidence from UK financial institutions. *International Journal of Accounting & Information Management*.
- Andrieș, A.M., Mehdiian, S., Stoica, O., 2020. Gender Diversity, Banks' Performance, and Stability across Central and Eastern European Countries. *JEEMS Journal of East European Management Studies* 25 (3), 469–502.
- Arfken, D., Bellar, S., Helms, M., 2004. The ultimate glass ceiling revisited: The presence of women on corporate boards. *J. Bus. Ethics* 50 (2), 177–186.
- Arnaboldi, F., Casu, B., Kalotychou, E., Sarkisyan, A., 2020. The performance effects of board heterogeneity: what works for EU banks? *The European Journal of Finance* 26 (10), 897–924.

- Audretsch, D.B., Lehmann, E., 2006. Entrepreneurial access and absorption of knowledge spillovers: Strategic board and managerial composition for competitive advantage. *J. Small Bus. Manage.* 44 (2), 155–166.
- Bear, S., Rahman, N., Post, C., 2010. The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *J. Bus. Ethics* 97 (2), 207–221.
- Belaounia, S., Tao, R., Zhao, H., 2020. Gender equality's impact on female directors' efficacy: A multi-country study. *International Business Review* 29 (5), 101737.
- Belkhir, M., 2009. Board of directors' size and performance in the banking industry. *International Journal of Managerial Finance*.
- Ben-Amar, W., Francoeur, C., Hafsi, T., Labelle, R., 2013. What makes better boards? A closer look at diversity and ownership. *Br. J. Manag.* 24 (1), 85–101.
- Bennouri, M., Chtioui, T., Nagati, H., Nekhili, M., 2018. Female board directorship and firm performance: What really matters? *J. Bank. Finance* 88, 267–291.
- Berger, A., Kick, T., Schaeck, K., 2014. Executive board composition and bank risk taking. *Journal of Corporate Finance* 28, 48–65.
- Black, B., Jang, H., Kim, W., 2006. Does corporate governance predict firms' market values? Evidence from Korea. *The Journal of Law, Economics, and Organization* 22 (2), 366–413.
- Black, B., De Carvalho, A.G., Gorga, É., 2012. What matters and for which firms for corporate governance in emerging markets? Evidence from Brazil (and other BRIK countries). *Journal of Corporate Finance* 18 (4), 934–952.
- Blau, P.M., 1977. *Inequality and heterogeneity: A primitive theory of social structure*, Vol. 7. Free Press, New York.
- Campbell, K., Mínguez-Vera, A., 2008. Gender diversity in the boardroom and firm financial performance. *J. Bus. Ethics* 83 (3), 435–451.
- Campbell, K., Vera, A., 2010. Female board appointments and firm valuation: Short and long-term effects. *J. Manage. Governance* 14 (1), 37–59.
- Caprio, G., Laeven, L., Levine, R., 2007. Governance and bank valuation. *Journal of Financial Intermediation* 16 (4), 584–617.
- Cardillo, G., Onali, E., Torluccio, G., 2020. Does gender diversity on banks' boards matter? Evidence from public bailouts. *Journal of Corporate Finance* 101560.
- Carter, D., Simkins, B., Simpson, W., 2003. Corporate governance, board diversity, and firm value. *Financial Review* 38 (1), 33–53.
- Carter, D., D'Souza, F., Simkins, B., Simpson, W., 2010. The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review* 18 (5), 396–414.
- Certo, S., Daily, C., Dalton, D., 2001. Signaling firm value through board structure: An investigation of initial public offerings. *Entrepreneurship Theory and Practice* 26 (2), 33–50.
- Chahine, S., Goergen, M., 2013. The effects of management-board ties on IPO performance. *Journal of Corporate Finance* 21, 153–179.
- Chen, J., Leung, W., Goergen, M., 2017. The impact of board gender composition on dividend payouts. *Journal of Corporate Finance* 43, 86–105.
- Chen, J., Leung, W., Song, W., Goergen, M., 2019a. Why female board representation matters: The role of female directors in reducing male CEO overconfidence. *Journal of Empirical Finance* 53, 70–90.
- Chen, J., Garel, A., Tourani-Rad, A., 2019b. The value of academics: Evidence from academic independent director resignations in China. *Journal of Corporate Finance* 58, 393–414.
- Choi, J., Park, S.W., Yoo, S., 2007. The value of outside directors: Evidence from corporate governance reform in Korea. *Journal of Financial and Quantitative Analysis* 941–962.
- Chotiayaputta, V., Yoon, Y., 2018. Women on the Board and Firm Performance of Thai Publicly Listed Companies in the SET100, 2008–2017. *PSAKU International Journal of Interdisciplinary Research* 7 (1).
- Čihák, M., Hesse, H., 2010. Islamic banks and financial stability: An empirical analysis. *Journal of Financial Services Research* 38 (2–3), 95–113.
- Dang, R., Nguyen, D., Vo, L., 2014. Does The Glass Ceiling Exist? A Longitudinal Study Of Womens Progress On French Corporate Boards. *J. Appl. Bus. Res. (JABR)* 30 (3), 909–916.
- De Andres, P., Vallelado, E., 2008. Corporate governance in banking: The role of the board of directors. *J. Bank. Finance* 32 (12), 2570–2580.
- De Cabo, R.M., Gimeno, R., Nieto, M.J., 2012. Gender diversity on European banks' boards of directors. *J. Bus. Ethics* 109 (2), 145–162.
- De Masi, S., Słomka-Golebiowska, A., Paci, A., 2021. Women on boards and monitoring tasks: An empirical application of Kanter's theory. *Manag. Decis.* 59 (33), 56–72.
- Devers, C., Cannella Jr, A., Reilly, G., Yoder, M., 2007. Executive compensation: A multidisciplinary review of recent developments. *Journal of Management* 33 (6), 1016–1072.
- Duchin, R., Matsusaka, J., Ozbas, O., 2010. When are outside directors effective? *J. Financ. Econ.* 96 (2), 195–214.
- Duppati, G., Scrimgeour, F., Sune, A., 2019. Relevance of corporate boards in driving performance in the period that covers financial crisis. *Corporate Governance: The International Journal of Business Society*.
- Eagly, A.H., Carli, L.L., 2003. The female leadership advantage: An evaluation of the evidence. *The Leadership Quarterly* 14 (6), 807–834.
- Elbahravy, F., Pacheco, F. and Abu Omar, A., (2021). UAE asks listed companies to add at least one woman to board: *Bloomberg.com*. Available at: <https://www.bloomberg.com/news/articles/2021-03-14/uae-to-require-listed-firms-to-have-at-least-one-woman-on-board>. (Accessed 6 November 2021).
- Elnahass, M., Izzeldin, M., Abdelsalam, O., 2014. Loan loss provisions, bank valuations and discretion: A comparative study between conventional and Islamic banks. *J. Econ. Behav. Organ.* 103, S160–S173.
- Elnahass, M., Izzeldin, M., Steele, G., 2018. Capital and earnings management: evidence from alternative banking business models. *The International Journal of Accounting* 53 (1), 20–32.
- Elnahass, M., Omoteso, K., Salama, A., Trinh, V., 2020. Differential market valuations of board busyness across alternative banking models. *Rev. Quant. Financ. Acc.* 1–38.
- Elnahass, M., Salama, A., Yusuf, N., 2022. Earnings management and internal governance mechanisms: The role of religiosity. *Research in International Business and Finance*. <https://doi.org/10.1016/j.ribaf.2021.101565>.
- Engelen, P.J., van den Berg, A., van der Laan, G., 2012. In: *Board Diversity as a Shield During the Financial Crisis*. Springer, Berlin, Heidelberg, pp. 259–285.
- Estélyi, K., Nisar, T., 2016. Diverse boards: Why do firms get foreign nationals on their boards? *Journal of Corporate Finance* 39, 174–192.
- Fan, Y., Jiang, Y., Zhang, X., Zhou, Y., 2019. Women on boards and bank earnings management: From zero to hero. *J. Bank. Finance* 107, 105607.
- Farag, H., Mallin, C., 2017. Board diversity and financial fragility: Evidence from European banks. *International Review of Financial Analysis* 49, 98–112.
- Farag, H., Mallin, C., Ow-Yong, K., 2018. Corporate governance in Islamic banks: New insights for dual board structure and agency relationships. *Journal of International Financial Markets, Institutions and Money* 54, 59–77.
- Ferreira, D., 2015. Board diversity: Should we trust research to inform policy? *Corporate Governance: An International Review* 23 (2), 108–111.
- Fosu, S., Ntim, C.G., Coffie, W., Murinde, V., 2017. Bank opacity and risk-taking: Evidence from analysts' forecasts. *Journal of Financial Stability* 33, 81–95.
- Fosu, S., Danso, A., Agyei-Boapeah, H., Ntim, C.G., Murinde, V., 2018. How does banking market power affect bank opacity? Evidence from analysts' forecasts. *International Review of Financial Analysis*. <https://doi.org/10.1016/j.irfa.2018.08.015>.
- Francis, B., Hasan, I., Wu, Q., 2015. Professors in the boardroom and their impact on corporate governance and firm performance. *Financ. Manage.* 44 (3), 547–581.
- Gabriellson, J., Huse, M., Minichilli, A., 2007. Understanding the leadership role of the board chairperson through a team production approach. *International Journal of Leadership Studies* 3 (1), 21–39.
- García-Meca, E., García-Sánchez, I., Martínez-Ferrero, J., 2015. Board diversity and its effects on bank performance: An international analysis. *J. Bank. Finance* 53, 202–214.
- García-Sánchez, I.M., García-Meca, E., Cuadrado-Ballesteros, B., 2017. Do financial experts on audit committees matter for bank insolvency risk-taking? The monitoring role of bank regulation and ethical policy. *Journal of Business Research* 76, 52–66.
- Gul, F., Srinidhi, B., Ng, A., 2011. Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics* 51 (3), 314–338.
- Gull, A., Nekhili, M., Nagati, H., Chtioui, T., 2018. Beyond gender diversity: How specific attributes of female directors affect earnings management. *The British Accounting Review* 50 (3), 255–274.
- Güner, A., Malmendier, U., Tate, G., 2008. Financial expertise of directors. *J. Financ. Econ.* 88 (2), 323–354.
- Gyapong, E., Monem, R., Hu, F., 2016. Do women and ethnic minority directors influence firm value? Evidence from post-apartheid South Africa. *Journal of Business Finance & Accounting* 43 (3–4), 370–413.

- Hambrick, D., Finkelstein, S., 1995. The effects of ownership structure on conditions at the top: The case of CEO pay raises. *Strateg. Manag. J.* 16 (3), 175–193.
- Haque, F., Jones, M. (2020). European firms' corporate biodiversity disclosures and board gender diversity from 2002 to 2016. *The British Accounting Review*, 52.
- Hillman, A., Cannella Jr, A., Harris, I., 2002. Women and racial minorities in the boardroom: How do directors differ? *Journal of Management* 28 (6), 747–763.
- Hillman, A., Dalziel, T., 2003. Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Acad. Manag. Rev.* 28 (3), 383–396.
- Hofstede, G., 2001. *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage publications.
- Hofstede, G., 2011. Dimensionalizing cultures: The Hofstede model in context. *Online readings in psychology and culture* 2 (1), 2307–10919.
- Hofstede, G., Hofstede, G.J., Minkov, M., 2010. *Cultures and organizations: Software of the mind*. McGraw-Hill, New York, NY.
- IFSB (2020). *Islamic financial services industry stability report 2020*. Kuala Lumpur: Islamic Financial Services Board. Available at <http://www.ifsb.org> (Accessed 4 July 2020).
- Ingle, C., Van der Walt, N., 2003. Board configuration: Building better boards. *Corporate Governance: The International Journal of Business in Society* 3 (4), 5–17.
- John, K., De Masi, S., Paci, A., 2016. Corporate governance in banks. *Corporate Governance: An International Review* 24 (3), 303–321.
- Johnson, S., Schnatterly, K., Hill, A., 2013. Board composition beyond independence: Social capital, human capital, and demographics. *Journal of Management* 39 (1), 232–262.
- Jouida, S., 2019. Bank capital structure, capital requirements and SRISK across bank ownership types and financial crisis: panel VAR approach. *Rev. Quant. Financ. Acc.* 53 (1), 295–325.
- Jubilee, R.V.W., Khong, R.W., Hung, W.T., 2018. Would diversified corporate boards add value? The case of banking institutions in Malaysia. *Asia-Pacific Journal of Business Administration*.
- Kaczmarek, S., Kimino, S., Pye, A., 2014. Interlocking directorships and firm performance in highly regulated sectors: the moderating impact of board diversity. *J. Manage. Governance* 18 (2), 347–372.
- Kanadi, S.B., Torchia, M., Gabaldon, P., 2018. Increasing women's contribution on board decision making: The importance of chairperson leadership efficacy and board openness. *European Management Journal* 36 (1), 91–104.
- Karavitis, P., Kokas, S., Tsoukas, S., 2021. Gender board diversity and the cost of bank loans. *Journal of Corporate Finance* 101804.
- Khatib, S.F., Abdullah, D.F., Elamer, A.A., Abueid, R., 2021. Nudging toward diversity in the boardroom: A systematic literature review of board diversity of financial institutions. *Business Strategy and the Environment* 30 (2), 985–1002.
- Khediri, K.B., Charfeddine, L., Youssef, S.B., 2015. Islamic versus conventional banks in the GCC countries: A comparative study using classification techniques. *Research in International Business and Finance* 33, 75–98.
- Kim, H., Lim, C., 2010. Diversity, outside directors and firm valuation: Korean evidence. *Journal of Business Research* 63 (3), 284–291.
- Kim, W., Sandler, T., 2020. Middle East and North Africa: Terrorism and conflicts. *Global Policy* 11 (4), 424–438.
- Kinateder, H., Choudhury, T., Zaman, R., Scagnelli, S., Soheli, N., 2021. Does boardroom gender diversity decrease credit risk in the financial sector? Worldwide evidence. *Journal of International Financial Markets, Institutions and Money* 101347.
- King, T.P., Srivastava, A., Williams, J., 2016. What's in an education? Implications of CEO education for bank performance. *Journal of Corporate Finance* 37, 287–308.
- Kirsch, A., 2018. The gender composition of corporate boards: A review and research agenda. *The Leadership Quarterly* 29 (2), 346–364.
- Lang, L.H., Stulz, R.M., 1994. Tobin's q, corporate diversification, and firm performance. *Journal of Political Economy* 102 (6), 1248–1280.
- Larkin, M., Bernardi, R., Bosco, S., 2012. Board gender diversity, corporate reputation and market performance. *International Journal of Banking and Finance* 9 (1), 1–26.
- Leventis, S., Dimitropoulos, P.E., Anandarajan, A., 2011. Loan loss provisions, earnings management and capital management under IFRS: The case of EU commercial banks. *Journal of Financial Services Research* 40 (1/2), 103–122.
- Lewellyn, K.B., Muller-Kahle, M.I., 2020. The corporate board glass ceiling: The role of empowerment and culture in shaping board gender diversity. *J. Bus. Ethics* 165 (2), 329–346.
- Liao, L., Luo, L., Tang, Q., 2015. Gender diversity, board independence, environmental committee and greenhouse gas disclosure. *The British Accounting Review* 47 (4), 409–424.
- Loukil, N., Yousfi, O., 2016. Does gender diversity on corporate boards increase risk-taking? *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration* 33 (1), 66–81.
- Low, D.C., Roberts, H., Whiting, R.H., 2015. Board gender diversity and firm performance: Empirical evidence from Hong Kong, South Korea, Malaysia and Singapore. *Pacific-Basin Finance Journal* 35, 381–401.
- Machold, S., Huse, M., Minichilli, A., Nordqvist, M., 2011. Board leadership and strategy involvement in small firms: A team production approach. *Corporate Governance: An International Review* 19 (4), 368–383.
- Mahadeo, J.D., Soobaroyen, T., Hanuman, V.O., 2012. Board composition and financial performance: Uncovering the effects of diversity in an emerging economy. *J. Bus. Ethics* 105 (3), 375–388.
- Marinova, J., Plantenga, J., Remery, C., 2016. Gender diversity and firm performance: Evidence from Dutch and Danish boardrooms. *The International Journal of Human Resource Management* 27 (15), 1777–1790.
- Masulis, R., Wang, C., Xie, F., 2012. Globalizing the boardroom: The effects of foreign directors on corporate governance and firm performance. *Journal of Accounting and Economics* 53 (3), 527–554.
- McKinsey and Company, 2014. *GCC women in leadership – From the first to the norm: Unlocking women's potential to enhance organizational effectiveness in the Gulf Cooperation Council (GCC) states*, 204236_DOWNLOAD.pdf (Accessed 4 July 2021 Available at <https://it.uefa.com/MultimediaFiles/Download/uefaorg/CaptainsofChange/02/20/42/36/2>).
- Minton, B., Taillard, J., Williamson, R., 2014. Financial expertise of the board, risk taking, and performance: Evidence from bank holding companies. *Journal of Financial and Quantitative Analysis* 351–380.
- Mohammad, S., Asutay, M., Dixon, R., Platonova, E., 2020. Liquidity risk exposure and its determinants in the banking sector: a comparative analysis between Islamic, conventional and hybrid banks. *Journal of International Financial Markets, Institutions and Money* 66, 101196.
- Mollah, S., Hassan, M., Al Farooque, O., Mobarek, A., 2017. The governance, risk-taking, and performance of Islamic banks. *Journal of Financial Services Research* 51 (2), 195–219.
- Mollah, S., Zaman, M., 2015. Shari'ah supervision, corporate governance and performance: Conventional vs. Islamic banks. *J. Bank. Finance* 58, 418–435.
- Musteen, M., Datta, D., Kemmerer, B., 2010. Corporate reputation: do board characteristics matter? *Br. J. Manag.* 21 (2), 498–510.
- Nekhili, M., Chakroun, H., Chtioui, T., 2018. Women's leadership and firm performance: Family versus nonfamily firms. *J. Bus. Ethics* 153 (2), 291–316.
- Nekhili, M., Gatfaoui, H., 2013. Are demographic attributes and firm characteristics drivers of gender diversity? Investigating women's positions on French boards of directors. *J. Bus. Ethics* 118 (2), 227–249.
- Nguyen, D., Hagendorff, J., Eshraghi, A., 2015. Which executive characteristics create value in banking? Evidence from appointment announcements. *Corporate Governance: An International Review* 23 (2), 112–128.
- Nielsen, S., Huse, M., 2010. Women directors' contribution to board decision-making and strategic involvement: The role of equality perception. *European Management Review* 7 (1), 16–29.
- Ntim, C., 2015. Board diversity and organizational valuation: Unravelling the effects of ethnicity and gender. *J. Manage. Governance* 19 (1), 167–195.
- Owen, A.L., Temesvary, J., 2018. The performance effects of gender diversity on bank boards. *J. Bank. Finance* 90, 50–63.
- Oxelheim, L., Gregorić, A., Randøy, T., Thomsen, S., 2013. On the internationalization of corporate boards: The case of Nordic firms. *Journal of International Business Studies* 44 (3), 173–194.
- Oxelheim, L., Randøy, T., 2003. The impact of foreign board membership on firm value. *J. Bank. Finance* 27 (12), 2369–2392.

- Palvia, A., Vähämaa, E., Vähämaa, S., 2015. Are female CEOs and chairwomen more conservative and risk averse? Evidence from the banking industry during the financial crisis. *J. Bus. Ethics* 131 (3), 577–594.
- Palvia, A., Vähämaa, E., Vähämaa, S., 2020. Female leadership and bank risk-taking: Evidence from the effects of real estate shocks on bank lending performance and default risk. *Journal of Business Research* 117, 897–909.
- Pan, Y., Sparks, J., 2012. Predictors, consequence, and measurement of ethical judgments: Review and meta-analysis. *Journal of Business Research* 65 (1), 84–91.
- Papadakis, V., Barwise, P., 2002. How much do CEOs and top managers matter in strategic decision-making? *Br. J. Manag.* 13 (1), 83–95.
- Pathan, S., 2009. Strong boards, CEO power and bank risk-taking. *J. Bank. Finance* 33 (7), 1340–1350.
- Pathan, S., Faff, R., 2013. Does board structure in banks really affect their performance? *J. Bank. Finance* 37 (5), 1573–1589.
- Pathan, S., Skully, M., 2010. Endogenously structured boards of directors in banks. *J. Bank. Finance* 34 (7), 1590–1606.
- Peni, E., 2014. CEO and chairperson characteristics and firm performance. *J. Manage. Governance* 18 (1), 185–205.
- Post, C., Byron, K., 2015. Women on boards and firm financial performance: A meta-analysis. *Acad. Manag. J.* 58 (5), 1546–1571.
- Arab Human Development Report. (2016). *Youth and the prospects for human development in a changing reality*. New York, NY: UNDP. Available at: <http://hdr.undp.org/en/content/arab-human-development-report-2016-youth-and-prospects-human-development-changing-reality> (Accessed 10 October 2020).
- Ruigrok, W., Peck, S., Tacheva, S., 2007. Nationality and gender diversity on Swiss corporate boards. *Corporate governance: an international review* 15 (4), 546–557.
- Salloum, C., Jabbour, G., Mercier-Suissa, C., 2019. Democracy across gender diversity and ethnicity of Middle Eastern SMEs: how does performance differ? *J. Small Bus. Manage.* 57 (1), 255–267.
- Shriver, M., 2009. The Shriver report: A woman's nation changes everything. Simon and Schuster.
- Sila, V., Gonzalez, A., Hagendorff, J., 2016. Women on board: Does boardroom gender diversity affect firm risk? *Journal of Corporate Finance* 36, 26–53.
- Silverstein, M., Sayre, K., 2009. The female economy. *Harvard Business Review* 87 (9), 46–53.
- Singh, V., 2007. Ethnic diversity on top corporate boards: A resource dependency perspective. *The International Journal of Human Resource Management* 18 (12), 2128–2146.
- Singh, V., Terjesen, S., Vinnicombe, S., 2008. Newly appointed directors in the boardroom: How do women and men differ? *European Management Journal* 26 (1), 48–58.
- Singh, V., Point, S., Moulin, Y., Davila, A., 2015. Legitimacy profiles of women directors on top French company boards. *Journal of Management Development* 34 (7), 803–820. <https://doi.org/10.1108/jmd-10-2013-0129>.
- Song, S., Van Hoof, H.B., Park, S., 2017. The impact of board composition on firm performance in the restaurant industry: A stewardship theory perspective. *International Journal of Contemporary Hospitality Management* 29 (8), 2121–2138.
- Terjesen, S., Aguilera, R.V., Lorenz, R., 2015. Legislating a woman's seat on the board: Institutional factors driving gender quotas for boards of directors. *J. Bus. Ethics* 128 (2), 233–251.
- Terjesen, S., Couto, E., Francisco, P., 2016. Does the presence of independent and female directors impact firm performance? A multi-country study of board diversity. *J. Manage. Governance* 20 (3), 447–483.
- Trinh, V., Elnahas, M., Salama, A., Izzeldin, M., 2020. Board busyness, performance and financial stability: Does bank type matter? *The European Journal of Finance* 26 (7–8), 774–801.
- Trinh, V.Q., Elnahas, M., Cao, N.D., 2021. The Value Relevance of Bank Cash Holdings: The Moderating Effect of Board Busyness. *Journal of International Financial Markets, Institutions and Money* 101359.
- Wellalage, N., Locke, S., 2013. Corporate governance, board diversity and firm financial performance: new evidence from Sri Lanka. *International Journal of Business Governance and Ethics* 8 (2), 116–136.
- Wernerfelt, B., Montgomery, C.A., 1988. Tobin's q and the importance of focus in firm performance. *Am. Econ. Rev.* 246–250.
- Wintoki, M., Linck, J., Netter, J., 2012. Endogeneity and the dynamics of internal corporate governance. *J. Financ. Econ.* 105 (3), 581–606.
- Yang, P., Riepe, J., Moser, K., Pull, K., Terjesen, S., 2019. Women directors, firm performance, and firm risk: A causal perspective. *The Leadership Quarterly* 30 (5), 101297.
- Zulkafli, A.H., Amran, A., Samad, M.F.A., 2010. Board structure and firm value: A study on listed banking firms in the Asian emerging markets. *International Journal of Business Governance and Ethics* 5, 157–177.