

RESEARCH ARTICLE

The impact of competition on environmental and social performance in the MENA banking sector

José Manuel Maside-Sanfiz¹  | Ana Iglesias-Casal² |
Qusay Ayman Sulayman Mazahreh³ | M^a. Celia López-Penabad¹

¹Financial and Accounting Department, ECOBAS Research Center, University of Santiago de Compostela, Santiago de Compostela, Spain

²Department of Quantitative Economics, ECOBAS Research Center, University of Santiago de Compostela, Santiago de Compostela, Spain

³PhD Doctoral Programme in Economics and Business, University of Santiago de Compostela, Santiago de Compostela, Spain

Correspondence

José Manuel Maside-Sanfiz, Financial and Accounting Department, ECOBAS Research Center, Faculty of Economics and Finance, University of Santiago de Compostela, Avda. do Burgo s/n, Santiago de Compostela 15782, Spain.
Email: josemanuel.maside@usc.es

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Abstract

The study analyzes the impact of competition on environmental and social performance. Based on data collected from 82 banks in the banking industry across nine emerging Middle Eastern and North African (MENA) countries from 2015 to 2021, the results indicate that heightened competitive pressure compels banks to enhance their efforts in environmental and social initiatives. Additionally, a positive correlation is observed between greater Board gender diversity (BGD) and improved environmental and social performance. Finally, the results indicate that the negative impact of market power on environmental and social performance is less pronounced in banks with higher BGD, those operating in countries with a better institutional environment, and in state-owned banks. In contrast, the negative impact is more pronounced in Islamic banks. Our research findings provide insights into the current discourse on strategic decision-making in the context of sustainability, shedding light on the benefits associated with competition and gender diversity.

KEYWORDS

competition, corporate governance, corporate social performance, ESG, Islamic banks, market power, MENA region

1 | INTRODUCTION

Environmental, social and governance (ESG) issues pose new and increasingly important strategic opportunities and risks to corporations and have become progressively central to business management and decision-making. Investors, along with stakeholders such as consumers, employees, regulators and the general public, are showing growing concern about climate change and social issues such like rising inequality (Brou et al., 2021). This mounting concern puts pressure on firms to account for the environmental and social consequences of their activities (Raimo et al., 2021). Robust ESG disclosure supports enterprises in maintaining a positive image, reputation, and brand

value (Dkhili, 2024; Helfaya et al., 2023; Liao et al., 2018; Ma et al., 2023), reducing compliance and supply chain risks (Sardanelli et al., 2022), improving financial performance (Esteban-Sánchez et al., 2017; Nizam et al., 2019), and ensuring long-term stability (ECB, 2020). Investors and other relevant stakeholders are increasingly accustomed to utilizing non-financial data to develop a comprehensive perspective of a corporation (Broadstock et al., 2021; Gillan et al., 2021; Helfaya et al., 2023).

Compared to other sectors, sustainability holds particular significance for financial institutions, not only playing a pivotal role in ensuring stable economic growth but also exerting considerable influence on the environment and society via their lending and investment

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practices (Galletta et al., 2022; Lu & Herremans, 2019; Saif-Alyousfi et al., 2023; Scholtens & Van 't Klooster, 2019; UNEP FI, 2022). A stable financial sector can promote the adoption and development of green technologies, leading to enhanced energy efficiency and a diminished carbon footprint. Additionally, it can foster increased focus on social aspects, ensuring both social and environmental quality alongside economic development. According to the report 'The Role of the Board in the Sustainability Era' (Heidrick & Struggles, 2023), financial institutions prioritize ESG issues, placing vulnerabilities in their loan portfolios due to climate change at the top of their concerns. Other significant concerns include financing environmental impacts,¹ addressing social issues such as diversity, equity, and inclusion, and fostering employee engagement.

As highlighted by the G30, establishing a suitable culture and behavior is not solely a regulatory requirement for the banking sector; it has become fundamental to its economic and social sustainability (G30, 2018). ESG factors offer significant financial benefits, prompting financial institutions to increasingly recognize the necessity of integrating environmental and social dimensions into their strategic planning, operational processes, financial instruments, risk management policies, and public reporting procedures (Ahmed et al., 2018; El Khoury et al., 2023a; Esposito & Cecchin, 2022; Galletta et al., 2022; Gangi et al., 2019).² Moreover, the heightened commitment of banks to ESG paradigms serves as a means to mitigate reputational losses stemming from banking irregularities and subsequent crises such as the financial one of 2007 (Esteban-Sánchez et al., 2017; Helfaya et al., 2023). It also functions as a form of indemnity for the privileges granted to banks by way of public guarantees which provide bailouts against default (Aracil et al., 2021).

Recently, ESG concerns have gained global momentum in both developed and developing nations. Compared to their developed counterparts, many developing markets that have primarily prioritized economic growth and associated financial measures, have particularly centered on environmental and social initiatives (Huang & Ji, 2017). Within the emerging market of the MENA region, there is a growing focus on reducing carbon emissions, achieving carbon neutrality, developing green finance, addressing social aspects, and enhancing the quality of non-financial reporting by listed companies (ADL, 2023; Cheng et al., 2024; HSBC, 2020; Kreston Global, 2023; Refinitiv, 2023).

However, prior studies have noted that in emerging markets, including the one under analysis, investor protection is low, institutions and regulations that deal with environmental and social aspects are weak and underdeveloped, business processes tend to lack transparency, markets exhibit lower levels of efficiency, and corporate governance (CG) systems are often weak (Martins, 2022).

Similar to other regions like Europe,³ MENA banks have adopted sustainable financing policies. However, the alignment of financial systems with sustainable development goals varies among nations. According to United Nations Environment Programme Finance Initiative (UNEP FI, 2021, 2023), the United Arab Emirates (UAE) leads sustainable finance in the region, with Morocco in an advanced phase. Egypt has incorporated climate finance into some of its policies and strategies. Bahrain and Jordan are aligning their financial systems with sustainable development agendas, while Saudi Arabia focuses on economic diversification to reduce reliance on oil exports and increase non-oil sectors' share of GDP. Despite these efforts, a significant gap exists in the maturity and effectiveness of climate finance, particularly adaptation finance, which remains largely unaffected by current policies. Additionally, the practice of Corporate Social Responsibility (CSR) in the MENA region is still in its early stages, with guidelines for CSR disclosure being voluntary (ADL, 2023; Farah et al., 2021), while it lags behind other regions in terms of ESG reporting (KPMG, 2022, 2023; Kreston Global, 2023).

To determine which policy measures should be implemented that would enhance the environmental and social performance of the financial sector in developing countries, it is crucial to consider various factors, including an examination of the impact of banking competition on ESG policies. From a neoclassical standpoint (Friedman, 1970), increased market competition compels managers to prioritize initiatives that immediately affect shareholder value, often resulting in a diminished emphasis on CSR activities (Sheikh, 2018). However, according to Stakeholder Theory, as competition intensifies, companies reinforce their CSR commitments to strengthen relationships with stakeholders, to enhance their reputation, and consequently to expand their market share (Flammer, 2015).

In conjunction with market structure, existing literature has underscored the pivotal role of Board Gender Diversity (BGD) for the way it positively influences enhanced environmental and social performance, positioning it as a strategic priority to achieve sustainable change (Adu, 2022; Buallay et al., 2022; Deloitte, 2022; Endrikat et al., 2021; Kamarudin et al., 2022; Majumder et al., 2017; OECD, 2023; Paolone et al., 2023; Wasiuzzaman & Mohammad, 2020). While some MENA⁴ countries have recently initiated reforms, such as quotas for women directors or voluntary measures like CG codes, to increase the number of women in leadership positions in corporations (Deloitte, 2022; Salloum et al., 2017), progress in this domain has been slower compared to other regions (Farah et al., 2021; OECD, 2019; World Economic Forum, 2023). According to the report 'Women in the Boardroom: A Global Perspective' (Deloitte, 2022), there is low gender diversity on corporate

¹Despite having relatively low direct carbon emissions, the financial sector is the predominant financier of the fossil fuel industry, significantly contributing to global warming (Houston & Shan, 2022).

²Wu and Shen (2013) identified three reasons why the banking sector participates in CSR activities: strategic, discretionary, and greenwashing decisions. Their study concluded that the primary driver of CSR engagement was strategic decision-making.

³Banking regulators have acknowledged the concerns of financial institutions regarding the economic and financial impacts of climate change, which could potentially result in the collapse of the banking sector (Basel Committee on Banking Supervision, 2021a). They have emphasized the imperative for banks to thoroughly assess the risks and consequences associated with climate change (Basel Committee on Banking Supervision, 2021b), demanding an improved alignment between their lending and climate objectives and an exploration of a disclosure framework for financial risks related to climate change (Basel Committee on Banking Supervision, 2022, 2023).

⁴Israel, Morocco, Tunisia, Turkey and United Arab Emirates (Deloitte, 2022).



boards globally, with the worldwide mean of women on these standing at 19.7% in 2021 while in the MENA region, it was notably lower, at 10.2%.

Regarding the banking industry specifically, the MENA region have distinct characteristics, as a low level of competition and high barriers to entry (Almarzoqi et al., 2015; Elfeituri & Vergos, 2019; Issa, Girardone, et al., 2022; Polemis, 2015). The region features a dual banking market in which Islamic and conventional banks coexist (Almarzoqi et al., 2015), low gender diversity on corporate boards has also been observed (Deloitte, 2022), and financial markets are dependent on bank financing and public ownership, especially in oil-exporting countries (El-Chaarani et al., 2022; Ghosh, 2017; IMF, 2021). Moreover, beyond political instability, banks in this region operate within a unique economic and legal environment. Analyzing their environmental and social performance enables us to identify specific influencing factors.

Our goal is to address whether competition is a driving force for the environmental and social performance of the banking sector in the MENA region, this question being of significant importance for several reasons. First, understanding the impact of market competition on CSR engagement is an underexplored aspect in the literature, and existing results are inconclusive. Previous studies have predominantly focused on non-financial firms, with each sector facing unique stakeholder pressures. Consequently, the results of these may not be applicable to other sectors. The only study similar to ours, conducted by Forgione and Migliardo (2020), has examined the banking sector in a sample of developed countries within the OECD. In addition, research efforts have mainly concentrated on the Gulf Cooperation Council (GCC) nations due to their economic advancement, while difficulties have been encountered related to limited data accessibility for non-GCC regions (Farah et al., 2021). In our study, we encompass both GCC and non-GCC contexts. Moreover, most prior research has explored the relationship between competition and CSR on a global scale (e.g., Baldini et al., 2018). In our paper, we analyze environmental and social pillars separately with the aim of discerning how selected explanatory variables influence their behavior and whether they exhibit similar patterns. Second, exploring the role of gender diversity in environmental and social performance in the financial sector of the MENA region is a first. Most prior literature has focused on Western developed countries, primarily within the non-financial sector. The empirical evidence remains inconclusive, and the relationship between BGD and ESG factors may vary between developed and developing countries (Alkhawaja et al., 2023; Wasiuzzaman & Subramaniam, 2023). Previous studies specific to the financial sector in the MENA region also have conflicting results, with some indicating a positive relationship (Issa & Zaid, 2021) and others suggesting a negative correlation (Issa, Zaid, et al., 2022). Third, our research acknowledges that the environmental and social performance of the banking sector in this region may be influenced by various economic, social, cultural, legal, and political frameworks in each country (Elamer et al., 2020). According to Sayan (2009), the MENA region has exhibited lagging performance in terms of institutional

quality compared to the global average. The use of institutional theory may allow analyses of the abovementioned factors to be understood more clearly when it comes to the extent to which they act as determinants in CSR. Fourth, we have considered various relevant company characteristics that may influence its environmental or social efforts. Specifically, factors such as the type of bank, ownership structure (state or private), and whether it is an Islamic or conventional bank have been taken into account. Finally, the study not only examines on the direct effect of market forces (competition) on environmental and social performance but also enriches previous literature by exploring whether this effect may be moderated by internal factors such as gender diversity, the state-private ownership structure, the Islamic-conventional nature of banks, and the institutional environment, investigating whether the different mechanisms are complementary or substitutes.

Our research makes a significant contribution to the empirical banking literature. First, we integrate the impact of competition and several internal factors (gender diversity, state-private ownership structure, Islamic-conventional) and institutional environmental on the environmental and social practices of the banking industry. We omitted the governance pillar from the performance measure because the BGD is considered an assessment point in the construction of the governance score. Second, three different models are developed to address the different objectives: (i) the impact of competition on environmental and social practices bank; (ii) the impact is re-estimated with internal factors and institutional framework in the model; (iii) the moderating role of internal factors and institutional framework on competition-CSR is explored.

Our study has emphasized the strategic nature of CSR in the MENA banking sector, competition serves as an external driver of environmental and social outcomes. Moreover, companies with greater gender diversity in top management, state ownership of banks, and operations within a robust institutional environment demonstrate greater capacities to act effectively and align their practices with advanced environmental and social strategies. Furthermore, our findings imply that these mechanisms have a stronger positive impact on environmental and social performance as the level of market competition decreases (reflected by an increase in the Lerner index) compared to banks operating in more competitive environments. However, Islamic banks exhibited a negative influence on ENV and SOC performance compared to conventional ones in the MENA countries. Additionally, this negative impact is more pronounced in less competitive banks.

This study corroborates the view that environmental and social strategy and initiatives are influenced by several factors, including the market competition and the institutional framework as external drivers, as well as internal factors such as BGD, state ownership or the nature of the business model.

The remainder of this paper is structured as follows: the next section reviews the relevant literature and formulates the hypotheses. Section 3 describes the methodological approach. Section 4 presents the empirical results. Finally, Section 5 discusses the conclusions.

2 | LITERATURE REVIEW AND RESEARCH HYPOTHESIS

2.1 | Competition and CSR

In a competitive environment, the pressure to survive can drive companies to either strategically implement sustainability efforts to gain market advantage or neglect sustainable investments to maximize short-term gains. Empirical evidence supports both the strategic and altruistic approaches (Kamarudin et al., 2022). Thus, companies must balance conflicting economic, social, and environmental objectives.

Neoclassical literature defends that competition compels managers to lower costs, enhance efficiency, and foster innovation to improve business performance (Leong & Yang, 2020). Often viewed as an alternative to CG mechanisms (Ammann et al., 2013; Giroud & Mueller, 2011), competition forces firms to design strategies to gain a competitive advantage and survive (Quairel-Lanoizelee, 2016).

Initially, it might be expected that the greater a company's market power, the higher its level of social responsibility. Increased market competition forces managers to prioritize initiatives with an immediate impact on shareholder value, often resulting in less focus on CSR activities (Sheikh, 2018). Khattak and Saiti (2021) found that banks under less competitive pressure benefit more from environmental practices than those under more competitive conditions. From an altruistic perspective, engagement in CSR strategy is seen as an inefficient use of resources under competitive pressures, leading to a reduction in profit (Kamarudin et al., 2022).

Previous studies (Ali et al., 2022; Islam et al., 2023; Jillani et al., 2024; Linh & Anh, 2017) have emphasized the importance of banks considering the needs of their stakeholders to enhance their CSR performance. Among these stakeholders, the government, top management, employees, competitors, and clients have a more significant impact on banks' environmental and social performance. Government pressure through laws, incentives, or regulatory CSR guidelines established by central banks encourages banks to integrate environmental and social risk assessments into their lending and investment decisions. Top management directly influences the bank's environmental and social strategies through its decision-making and goal-setting of long-term strategic goals. Employees contribute by proposing environmental and social improvement proposals, like CSR committees, which provide environmental and social recommendations and participate in decision-making. Pressure from competitors prompts banks to improve their environmental and social performance to avoid reputational damage and loss of market share. Clients exert pressure due to their growing awareness of and demand for sustainable practices, which influences banks to adopt and improve their environmental and social practices to gain customers' trust and loyalty. As a result, these stakeholder pressures drive banks to enhance their environmental and social performance, meet regulatory requirements and managerial preferences, leverage internal expertise, stay competitive, and respond to customer expectations.

Contrary to altruistic approaches, research aligned with Stakeholder Theory, suggests that as competition intensifies, companies

enhance their ESG commitments to strengthen relationships stakeholders, improve their market reputation (Flammer, 2015), and pursue a profit maximization strategy (Martins, 2022). Hawn and Kang (2018) proposed that companies in competitive sectors, even with limited resources, can implement CSR initiatives. Even if these do not yield immediate profit, they allow firms to differentiate their products, generate consumer interest, and attain a competitive edge (Porter & Kramer, 2006). According to Cao et al. (2023), competition among banks can drive innovation in financial products and services focused on ESG factors. Banks can develop customized financial instruments to meet the rising demand for ESG investments, offering companies new ways to finance their ESG projects.

This strategic perspective on CSR implies that in competitive markets, socially responsible initiatives do not only contribute to public welfare but also have positively impact the bottom line. Conversely, in concentrated markets, CSR investments by companies tend to decrease (Forgione & Migliardo, 2020), which, according to Porter and Kramer (2002), is attributed to a lack of incentives.

The existing literature on the relationship between competition and CSR is relatively scarce, primarily focusing on non-financial sectors in developed countries, notably the USA and Europe. While these studies have generally indicated a positive association between competition and CSR, the results remain inconclusive. Fisman et al. (2008) suggested that firms are more likely to invest in CSR activities in product markets with higher the competition, using them as strategies for differentiation. Fernández-Kranz and Santaló (2010), and Flammer (2015) pointed out that companies in industries with high levels of competition tend to exhibit more socially responsible behavior, with strategic-based models better explaining the competition-CSR linkage than altruism-based models.

Dupire and M'Zali (2018) provided empirical evidence supporting a positive association between competitive pressures and certain dimensions of CSR, contingent on the nature of the industry's activity. Leong and Yang (2020), in a multi-industry sample of US companies, have observed that companies operating in highly competitive markets perform better in domains like the environment, the community, the treatment towards employees, and human rights. Ding et al. (2020) have asserted that the influence of competition on CSR performance is more significant in economies grounded in social values and environmental preservation, where CSR strategies can build stronger stakeholders loyalty and trust (Cao et al., 2023).

Nonetheless, other papers have suggested that the greater competition leads to less involvement in CSR due to strategies aimed at reducing non-essential costs as profit margins decrease. Bagnoli and Watts (2003) found an inverse correlation between CSR and competition, and Martins (2022) has concluded that companies' ESG practices decline due to heightened competition.

Regarding studies in the banking sector, Cicchiello et al. (2023) have reported that the Lerner Index (LI), the inverse of competition, positively influences ESG controversies in European banks. Forgione and Migliardo (2020) have found a negative correlation between the LI and the environmental and social scores of OECD-listed banks.

Existing literature highlights the predominantly strategic nature of CSR (Kamarudin et al., 2022). We are not aware of any previous studies of this kind on the banking sector in emerging countries, but following the arguments above, we have hypothesized the following:

Hypothesis 1. Competition positively influences the environmental or social performance of the banking sector in the MENA region.

2.2 | The link between BGD, the institutional environment, the business model (Islamic versus conventional), state versus private ownership, and CSR

Amid the pressure to compete and achieve strong financial performance, it is worth investigating whether these forces lead boards to increase their efforts in corporate sustainability or otherwise. Competition influences corporate decisions, and managerial actions change depending on the level of competition (Moradi et al., 2017). Prior studies have demonstrated that competitive conditions impact social and environmental practices (Albuquerque et al., 2019).

Research has examined board effectiveness in this area, particularly focusing on the presence of women directors, who remain under-represented. This specific focus aims to clarify the strategies companies should adopt to improve their boards (Kamarudin et al., 2022).

The interaction between CG and CSR has been examined through different theoretical perspectives, including those proposed by Frynas and Yamahaki (2016) and Hussain et al. (2018), which complement each other and may enhance the explanatory power of these theories (Adu, 2022; Zampone et al., 2022).

From the standpoint of Agency Theory, if CSR is inseparable from a company's financial objectives, its association with CG implies a reformulation due to traditional agency conflicts. Broadly speaking, CG could be seen as a range of mechanisms designed to ensure responsible behavior towards stakeholders and is not limited to shareholders (Gangi et al., 2019). Gender-balanced boards are more likely to support ESG disclosure (Cumming et al., 2015; Issa & Bensalem, 2023; Li et al., 2018; Shaukat et al., 2016). Corporate executives may seek to increase their sustainable initiatives to reduce conflicts with shareholders, who are often interested in achieving long-term environmental and social benefits (El Gammal et al., 2020).

Additionally, the Resource Dependence Theory argues that BGD enhances firms' access to critical resources by bringing unique skills, competencies, and knowledge that differ from those of male directors, increasing the gamut of insights and points of view for decision-making (Hillman et al., 2007), notably concerning ESG initiatives (Husted & de Sousa-Filho, 2019).

Gender Socialization Theory (Chodorow, 1978) is frequently employed to explain the observed gender variations in environmental and social behaviors. This theory posits that been more altruism, collaborative and communicative are important gender-based

characteristics (Yu & Liu, 2024), facilitating well-informed decision-making within corporate governance structures (Ben-Amar et al., 2013). Women are generally socialized to be more affectionate and compassionate, and female directors tend to be more attuned to the interests of others and consider multiple perspectives (Terjesen et al., 2009). Their unique psychological dispositions can significantly advance a company's social practices (Issa & Fang, 2019).

Most of the previous research has focused on the role of female directors from the Stakeholder Theory perspective (Alkhawaja et al., 2023), where they tend to pay more attention than men to the long-term implications and interests of stakeholders (Galbreath, 2018; Harjoto et al., 2015; Matsa & Miller, 2013; Wasiuzzaman & Mohammad, 2020). This emphasis reinforces the bank's legitimacy and is conducive to its success (Haque, 2017; Platonova et al., 2018).

Empirical evidence regarding the influence of BGD on CSR has suggested that it is country-specific and has an inconclusive nature, with variations between developed and developing nations due to differing CG systems, regulations, and institutional frameworks (Alkhawaja et al., 2023). Specific studies focusing on the MENA region, such as Arayssi et al. (2020), Salloum et al. (2017), and Sarhan et al. (2019), have revealed a positive relationship between BGD and overall ESG performance in non-financial sectors.

Examining the financial sector, Gürol and Lagasio (2023) have highlighted a positive correlation between BGD and overall ESG, as well as environmental and social disclosure scores in a sample of European banks. However, in emerging country environments, findings have been inconclusive. Most studies have reported a positive BGD-CSR relationship, including Rouf and Hossan (2021) in Bangladesh, Nwude and Nwude (2021) in Nigerian banks, Prabowo et al. (2017) in Indonesian banks, Birindelli et al. (2019) in the EMEA (Europe, Middle East, and Africa) region, and Issa and Zaid (2021) in the MENA region. Nevertheless, Issa, Zaid, et al. (2022) have noted a negative link between BGD and the level of voluntary ESG disclosure among a sample of banks from GCC countries.⁵

Agency Theory, Gender Socialization Theory, Resource Dependence Theory and Stakeholder Theory posit that the greater the gender diversity a company has, more effectively advance board sanctioning of CSR investments, he more likely it is to integrate ESG policies and practices into its strategic planning and routine operations. Despite these theoretical foundations, empirical evidence on the impact of female representation on boards remains inconclusive. The variability in regulatory frameworks, market conditions, and societal norms from country to country contributes to the complexity of assessing the influence of gender diversity on corporate ESG initiatives. As a result, the question of how female representation on boards affects ESG outcomes continues to be a subject of exploration and debate. The above arguments point to contradictory results, so we have posed the following hypothesis:

Hypothesis 2. BGD has a significant impact on the

⁵See Laique et al. (2023) for possible explanations for the negative or insignificant influence of BGD on firm performance.

environmental and social performance of banks in the MENA region.

An intriguing question arises: Does competition exert varying influences on environmental or social performance based on the gender diversity of a company's board? The interplay between market competition and CG is well-documented in existing literature, highlighting how these elements jointly influence corporate performance. Studies by Babar and Habib (2021), Sheikh (2018), and Padilla (2000) demonstrate that the positive impact of competition on performance metrics is amplified when robust governance structures are in place. Specifically, effective governance, such as board gender diversity (BGD), continues to influence CSR even in highly competitive markets. However, contrasting evidence exists. Research by Kamarudin et al. (2022) suggests that internal governance mechanisms may lose effectiveness in the face of intense market competition. According to their findings, the positive correlation between BGD and CSP diminishes under such conditions. This suggests that while governance structures can enhance performance and CSR, their influence may be contingent on the level of market competition.

Prior literature indicates that banks in the MENA region operate in markets with low competition and few ESG impacts. In these stable contexts, competition alone is insufficient to maintain or enhance the various dimensions of CSP. Consistent with Kamarudin et al. (2022), we argue that BGD has a more significant positive effect on environmental and social performance as market competition decreases (increase in the Lerner index), compared to banks operating in highly competitive markets.

Consequently, we have hypothesized that the positive impact of BGD moderates the negative effect of market power on environmental and social performance.

Hypothesis 3. The negative effect of market power on environmental and social performance is less pronounced in banks the greater the BGD is.

Literature highlights that firms' socially responsible behavior is influenced not only by governance characteristics but also by the broader institutional and the business environment in which firms function (Gavana et al., 2023). This can be achieved by establishing transparent regulations, ensuring compliance, and cultivating trust among various stakeholders (Sachs, 2012). Effective country governance may function as an external mechanism of CG (Lepore et al., 2018). Conversely, inadequate governance can hinder business' efforts to adhere to sustainability standards, resulting in unfavorable outcomes for society and the environment (Kolk & Perego, 2010).

Institutional Theory posits a connection between corporate practices encompassing ESG initiatives and the prevailing societal norms and values within which these entities operate (Glover et al., 2014; Lepore et al., 2018; Tetteh et al., 2023). Findings from studies by Hartmann and Uhlenbruck (2015), Keser and Gökmen (2018), and Orazalin and Mahmood (2021) have indicated a positive association between high-level governance mechanisms and both environmental

and social performance. Building on institutional theory and the insights gleaned from prior research, we have hypothesized that a robust governance framework exerts a positive influence on a bank's environmental and social performance. Furthermore, the more favorable institutional environments are, the better positioned stakeholders are to assess the outcomes associated with ESG-based strategies. Consequently, companies operating in such environments are more likely to derive advantages from these strategies and be able to compete by investing in ESG.

We incorporate country governance as a moderator factor, addressing the existing gap by providing insights into how the relationship between competition and environmental or social performance varies across different economic and legal environments.

We posit that environmental and social outcomes depend on the institutional framework of the country where a firm is based, influencing the relationship with stakeholders. In banks operating in low competition markets and less concerned with CSR aspects, an improvement in institutional conditions can mitigate the negative effect of market power on banks' environmental and social performance.

Hypothesis 4. The negative effect of market power on environmental and social performance is less pronounced in banks the better the institutional environment of the country in which they operate.

Finally, we incorporate the Islamic nature and state ownership as moderators and address the existing gap by providing insights into how the relationship between competition and environmental or social performance varies across different bank models and ownership types.

State ownership guarantee economic development and financial system stability but is often considered inefficient (Xia & Liu, 2022). We are particularly interested in analyzing the impact of state ownership on CSR in banks from oil-exporting nations, such as the United Arab Emirates, Saudi Arabia and Oman (El-Chaarani et al., 2022; Ghosh, 2017; IMF, 2021). Another unique feature of the MENA banking system is its dual banking market, where Islamic and conventional banks coexist (Almarzoqi et al., 2015). Although some studies analyze the direct effects of these variables on CSR performance, it is crucial to understand how these effects manifest in low-competition environments.

The presence of Islamic banks (IBs) within the MENA region adds a unique dimension to the banking system, as they operate on a different business models and principles compared to conventional banks. IBs have grown significantly in the global financial industry, with assets increasing from \$195 billion in 2000 to \$3.06 trillion in 2021 (IFSB, 2022). However, growth alone is not sufficient, it must be analyzed in terms of its social effects and environmental impact to ensure long-term sustainability (Hartanto et al., 2024).

Despite potential differences in business models, CSR standards and Islamic finance principles share many similarities (Abu Al-Haija & Kolsi, 2021; Amran et al., 2017; CFA Institute, 2019; Hartanto



et al., 2024). Aliyu et al. (2017) and Jan et al. (2021) concluded that sustainability indicators align with Shariah compliance, requiring IBs to balance between economic, social and environmental sustainability.

Operationally, the sustainability of Islamic banks (IBs) is grounded in Shariah principles, which prohibit interest-based services, unethical or speculative activities. These principles encourage transparency and profit-and-loss sharing, ensuring that all profits are tied to real assets in the economy (Hassan et al., 2019; Hussain et al., 2021; ICIEC, 2023).

Islamic banks are expected to behave ethically towards their stakeholders and comply with Sharia prescriptions. Two IBs models exist for conducting business: the Chapra model, which emphasizes socio-economic motives and social welfare, prioritizing religious commitment over economic aspects; and the Ismail model, which focuses more on business dimensions while still considering social aspects. IBs implicitly fulfills its social responsibilities through the programs it implements by the company (Aliyu et al., 2017).

Comparative studies on CSR between conventional and IBs are scarce and inconclusive regarding whether Islamic banks achieve the desired level of sustainability (Hartanto et al., 2024). Kolsi and Al-Hiyari (2023) demonstrated that IBs outperform conventional banks in environmental and social scores in the GCC area for 2009–2019. Conversely, Tasnia et al. (2023) argued that CSR disclosure in Islamic banks is still developing and not a significant concern for most. Alam et al. (2022) found that IBs have lower environmental and social scores compared to conventional banks. Hamidi and Worthington (2018) showed low sustainability implementation in IBs, with insignificant impacts on financial performance (Ellili & Nobanee, 2023). Nobanee and Ellili (2016) suggested that IBs exhibit lower leverage and face fewer financial constraints than conventional counterparts. Additionally, Shari'ah guidelines place less pressure on them regarding disclosure transparency unlike conventional banks, which face more demands from stakeholders and the government to report on ESG issues.

The link between competition and CSR performance may differ in dual banking economies where Islamic and conventional banking coexist. Bollen (2007) and Risfandy et al. (2019) noted that IBs can exercise greater market power because their customers are prepared to pay a premium for banking services that align with their religious values. However, Shari'ah guidelines place less pressure on CSR disclosure (Nobanee & Ellili, 2016). Consequently, the IBs can focus more on financial returns. Only in more competitive markets do they adopt better environmental and social practices. Therefore, the Islamic nature of banks in this region strengthens the negative effect of market power.

Hypothesis 5. The negative effect of market power on environmental and social performance is stronger in Islamic than in conventional banks.

Regarding the ownership structure, state-owned banks are less market-oriented and align with their governments' vision and mission. State shareholders act as extensions of government economic

strategies, assuming more social responsibility than non-state banks due to the heightened scrutiny from society (Er-ming & Rong, 2013). This may be owing to the close connection to public policy making, as these entities are closely aligned with the expectations of society (Bueno-García & Ahmadova, 2023), demonstrating a greater willingness to allocate surplus resources to environmental conservation (Zhang et al., 2023), and reduce greenwashing (Bose et al., 2021).

Compared to private banks, state-owned banks exhibit higher levels of environmental and social performance, consistent with Chi et al. (2022), Dong, Burritt, and Wu (2014), Liu and Anbumozhi (2009), Lopatta et al. (2017) and Xu et al. (2024). Consequently, we expect that state ownership is positively correlated with the CSR performance of companies.

State-owned banks are highly influenced by state macro-policies (Dai & Guo, 2020). They have advantages in terms of scale and debt costs, making it is easier for them to obtain high-quality credit projects and earn monopoly rents (Xia & Liu, 2022). According to Saragih and Achsanta (2022), government banks are less likely to exert their monopoly power because of their motivation to prioritize social or political factors over profit maximization. Xia and Liu (2022) suggest that state-owned banks strengthen the effect of concentration on corporate environmental innovation.

In less competitive markets where banks show less concern for CSR, state-owned banks influenced by state macro-policies can leverage existing resources to improve their environmental and social performance. Thus, state ownership has a greater positive effect on environmental and social performance in banks with more market power than in more competitive banks. As a result, the negative influence of market power on environmental or social aspects should be less pronounced for state-owned banks.

Hypothesis 6. The negative effect of market power on environmental and social performance is less pronounced in state-owned banks than in private banks.

3 | METHODOLOGY

3.1 | Data

For both financial and non-financial (ESG) data pertaining to banks in MENA⁶ countries for the period under study (2015–2021), we utilized data from the London Stock Exchange Group (LSEG) Data & Analytics company database (formerly Thomson Reuters' Refinitiv database). LSEG provides an extensive ESG platform which covers over 90% of worldwide market capitalization, with more than 630 different ESG criteria (LSEG Data and Analytics, 2022), which is widely recognized as a reliable resource in academic literature and is also used for collecting accounting data.

⁶According to the World Bank, the MENA region is made up of the following 21 countries: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, the United Arab Emirates, Gaza and Yemen.

This study encompasses data from banks operating in nine nations (Bahrain, Egypt, Israel, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates) (Table A1 shows sample distribution by country). In order to select the sample, our analysis was confined to banks that were listed and reported their environmental and social scores on the LSEG platform. After eliminating banks with incomplete data, we obtain the final sample of 77 banks and 308 bank-year observations. Details of the sample selection process are provided in Table A2.

Country-level data was sourced from the World Bank, and the globalization index is from the KOF Swiss Economic Institute.

3.2 | Empirical methodology

3.2.1 | Baseline model

This study has examined the impact of competition (the inverse of the Lerner Index) and BGD on environmental and social scores using bank-level data from 2015 to 2021. The definition, expected signs, and key references of the main variables are provided in Table D1 in the Annex.

The econometric model is described as follows, with Equation (1) used to estimate the environmental and social scores:

$$\text{ENV}(\text{SOC})_{it} = \alpha_1 + \gamma_1 \text{LI}_{it} + \delta_1 \text{BGD}_{it} + \tau_1 \text{WGI}_{it} + \rho_1 \text{STA}_i + \theta_1 \text{ISL}_i + \beta_1 Y_{it} + \omega_1 \text{KOF}_{it} + \eta_1 D_t + \varepsilon_{it} \quad (1)$$

where ENV_{it} or SOC_{it} are the dependent variables for each bank i in year t . The environmental (ENV) score was computed by assigning weights to three categories: innovation, emissions, and resource use. The social (SOC) performance score was determined based on four criteria: workforce, community, human rights, and product responsibility. Both scores ranged from 0 to 100 and are presented as percentages, where the higher the value, the better the performance.

Our main explanatory variable in this research was market competition, represented by the Lerner index (LI_{it}), a direct measure of market power, its value being the inverse of competition. The LI was computed by taking the ratio of the markup (the difference between the price and the marginal cost of banking products) to the price itself. Since obtaining the marginal cost directly from financial information was not feasible, this study estimated it by using a trans-log cost function with one output and three inputs. Subsequently, the LI is calculated individually for each bank, irrespective of the specific geographic market in which it operated. The details of the trans-log cost function are provided in Appendix B. The LI is recognized as a reliable measure of market power because it captures the differences in behavior exhibited by banks compared to scenarios of perfect competition and monopoly (Coccorese, 2009). The resulting LI value, ranging between 0 and 1, indicates that the closer it is to 0, the more competitive the market, whereas a value closer to 1 indicates a less competitive market with greater market power. It should be noted that this value can be negative. According to Solis and Maudos (2008), negative values

during these periods are characterized by intense competition and may arise when banks set their prices below the marginal cost.

Regarding the moderating variables, BGD_{it} represents the percentage of females on the board of directors. We investigated how institutional factors in the MENA region may influence the results by incorporating World Governance Indicators (WGI) from the World Bank. The WGI_{it} indicators were scored on a scale from 0 to 100, where the higher the value, the better the governance outcome. To account for potential differences in business models, whether Islamic or conventional, and ownership structures, state or private, we included several dummy variables. Specifically, STA_i equals 1 if the bank is state-owned and 0 otherwise, while ISL_i equals 1 if the bank is Islamic and 0 otherwise.

To ensure the robustness of our results and so that they could be aligned with prior studies investigating environmental and social performance, Y_{it} represents a vector of control variables encompassing significant firm characteristics that might influence the level of environmental and social performance. Following Baraibar-Diez & Odriozola, 2019, Baraibar-Diez et al., 2019, as a governance control variable the CSR committee was selected as it plays an important role in enhancing the environmental and social strengths of a corporation. In addition, according to legitimacy theory, companies constantly require legitimizing their existence in the eyes of their relevant public, so companies with more resources tend to use them in their CSR activities. First, two accounting variables related to technical efficiency (refer to Appendix C, Tables C1 and C2 for details) and liquidity are considered. Previous empirical research in the banking sector (e.g., Buallay et al., 2020; El Khoury et al., 2023a) has indicated that high performance companies shift their attention from immediate financial goals to longer-term environmental and social aspects. Cho and Lee (2019) report a positive correlation between efficiency and CSR initiatives in non-financial firms. In addition, based on Farhan et al. (2023), higher liquidity is expected to increase banks' ability to allocate more resources to environmental and social initiatives, thereby improving their environmental and social performance.

Given the limitations of accounting measures, we have incorporated the effects of capital market reactions on CSR. Like De Villiers et al. (2011), we expect a positive correlation between stock market performance and environmental and social performance. Following Iatridis (2013), we predict the relationship between stock market capitalization and total assets to positively affect environmental and social performance. For market risk the results are inconclusive. Cormier and Magnan (2004) and Roberts (1992) highlighted that banks with lower systematic risk (beta) to have higher environmental and social performance, as they should be less sensitive to external events, such as government measures in this area. Balabanis et al. (1998) demonstrate a positive relationship between beta and CSR performance, indicating that firms with high market risk often engage in CSR initiatives to bolster their reputation and gain stakeholder trust.

We incorporate the free float and ownership concentration variables, representative of the ownership structure of the company. In line with the findings of Gamerschlag et al. (2011) and Mahmood et al. (2023), we believe that a high percentage of free float will likely

positively affect environmental and social outcomes because enterprises characterized by a diverse shareholder base are posited to be more attuned to the informational requirements of their public investors, such as ESG reports (Eng & Mak, 2003; Hope, 2003; Roe, 2003). Following Javeed et al. (2022), García-Sánchez et al. (2022), Viana and Crisóstomo (2020), and Zhou et al. (2020), we expect a positive association between ownership concentration and environmental and social performance, because controlling shareholders place considerable emphasis on maintaining their reputation; as such, sustainable business practices serve as a tool to this end (Javeed & Lefen, 2019).

Another aspect that can influence their social behavior and is often included in studies of this type is the size and age of the companies. Following El Khoury et al. (2023b), we expect a positive correlation between size and CSR, where large banks are subject to greater scrutiny by various stakeholders, and economic factors, such as economies of scale, can positively affect their environmental and social performance (Ho et al., 2019). In line with Hendratama and Huang (2022), a positive association between bank age and environmental and social performance is expected, where older banks enjoy experience, resources, and reputational advantages that enable them to achieve higher sustainability performance than younger banks (Miah et al., 2018).

To control cross-country heterogeneity, the KOF_{it} ⁷ indicator examines how social globalization in the MENA region may affect banks' environmental and social performance. According to Kammerlander and Schulze (2021), Naz (2023), Rudolph and Figge (2017), and Wang et al. (2021), we expect greater social globalization to correlate positively with better environmental and social performance.

D_t represents a vector of year dummies from 2016 to 2021. The parameters to be estimated are denoted by α , γ , δ , τ , ρ , θ , β , ω , and η , while ε_{it} denotes the error term.

To assess potential multicollinearity issues among the independent variables, we calculated the correlation matrix. Following Brooks (2008), the absolute values of the correlation coefficients across all cases remained below 0.8, indicating that collinearity was not a concern for our analyses. Although higher values were detected among the variables constituting the WGI, these were individually included in the models.

3.2.2 | Moderating effects

The moderating effect of BGD with LI on ENV or SOC was analyzed using the following equation:

$$ENV(SOC)_{it} = \alpha_2 + \gamma_2 LI_{it} + \delta_2 BGD_{it} + \omega_2 (LI_{it} \times BGD_{it}) + \beta_2 Y_{it} + \tau_2 KOF_{it} + \eta_2 D_t + \varepsilon_{it} \quad (2)$$

The moderating effect of WGI with LI on ENV or SOC was analyzed using the following equation:

$$ENV(SOC)_{it} = \alpha_3 + \gamma_3 LI_{it} + \tau_3 WGI_{it} + \vartheta_3 (LI_{it} \times WGI_{it}) + \beta_3 Y_{it} + \eta_3 D_t + \varepsilon_{it} \quad (3)$$

The interaction effect of ISL with LI on ENV or SOC was analyzed using the following equation:

$$ENV(SOC)_{it} = \alpha_4 + \gamma_4 LI_{it} + \theta_4 ISL_i + \pi_4 (LI_{it} \times ISL_i) + \beta_4 Y_{it} + \tau_4 KOF_{it} + \eta_4 D_t + \varepsilon_{it} \quad (4)$$

The interaction effect of STA with LI on ENV or SOC was analyzed using the following equation:

$$ENV(SOC)_{it} = \alpha_5 + \gamma_5 LI_{it} + \rho_5 STA_i + \varphi_5 (LI_{it} \times STA_i) + \beta_5 Y_{it} + \tau_5 KOF_{it} + \eta_5 D_t + \varepsilon_{it} \quad (5)$$

The coefficients of the interaction between the variables $LI_{it} \times BGD_{it}$, $LI_{it} \times WGI_{it}$, $LI_{it} \times STA_i$ and $LI_{it} \times ISL_i$ showed that there was an additional change in the effect of LI_{it} on the ENV or SOC score when BGD, WGI, STA, and ISL moderated this effect, respectively.

The study framework can be seen graphically in Figure 1 below.

4 | EMPIRICAL RESULTS

4.1 | Descriptive statistics

Table 1 provides an overview of the study variables. The mean score for SOC performance was 37.90%, while ENV performance was 27.39%. These figures, consistent with El Khoury et al. (2023a) in the Middle East, North Africa, and Turkey (the MENAT countries), were notably lower than studies in developed nations (Bătae et al., 2021; Danişman & Tarazi, 2024).

Examining independent variables, average market power, measured by LI, was 0.18. Although lower than some studies, it aligned with Halim et al. (2023). BGD averaged 6.33%, comparable to other MENA studies (Arayssi et al., 2020; Issa et al., 2021; Salloum et al., 2017).

Control variables revealed MENA banks to have an average CSR Committee score of 38.21%, operating efficiency of 77.09%, liquidity at 34.63%, and an annual return per share of 7.25%. Systematic risk (BETA) was 0.94, slightly below market portfolio beta. Market capitalization to total assets averaged 0.207, free float was 53.77%, and main shareholder ownership was 29.93%.

The average size of banks in the sample was approximately \$50435.47 million, and had an average age of 44.56 years old, covering both young and mature establishments.

Country variables showed a KOFSOC index of 75.10, indicating relatively high social integration. For the institutional framework, the average WGI score was 56.23%, with distinctions between the more advanced economies (Israel, Qatar, and the UAE) and the less developed ones (Egypt). However, the MENA region lagged in institutional quality compared to the global average (Sayan, 2009).

⁷<https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>.

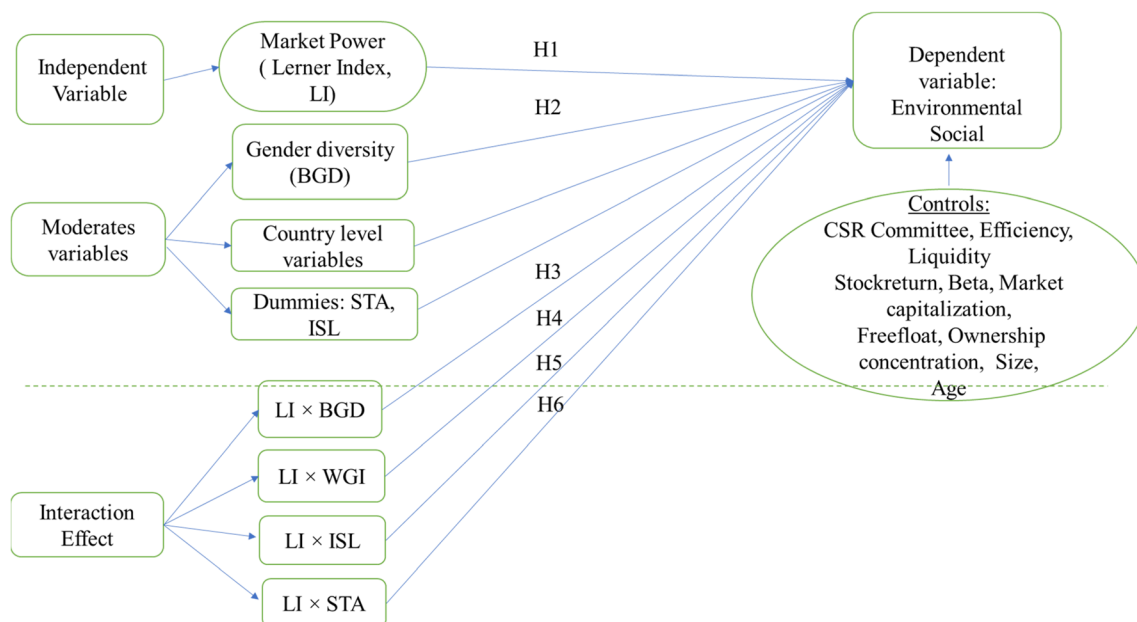


FIGURE 1 Conceptual model. Source: Own production.

TABLE 1 Descriptive statistics of the study variables.

Variable	Obs.	Mean	SD	Min	Max
ENV	308	27.39	25.64	0.00	81.14
SOC	308	37.90	22.41	2.43	92.43
LI	308	0.18	0.32	−1.36	0.69
BGD	308	6.33	9.50	0.00	40.00
CSR committee	308	38.22	41.50	0.00	95.00
Efficiency	308	0.77	0.13	0.51	1.00
Liquidity	308	0.35	0.11	0.16	0.86
Stock return	308	7.24	22.58	−53.75	92.54
BETA	308	0.94	0.38	−0.76	3.17
Market-assets	308	0.21	0.25	0.02	1.46
Free float	308	53.77	24.59	0.11	100
Ownership concentration	308	29.93	19.67	2.42	99.89
LnAsset	308	10.22	1.16	6.86	12.61
LnAge	308	3.64	0.60	2.08	4.80
KOFSOC	308	75.10	5.37	62.29	85.90
WGI	308	56.23	12.11	23.52	72.37

Note: All variables are in percentages, except LI, BETA, Size, and Age.

Source: Own production.

4.2 | Empirical results and discussion

We estimated the regression using Ordinary Least Squares (OLS) with year fixed effects, obtaining standard errors from white cross-sectional error variances. Bank-level clustering was applied to account for both heteroscedasticity and correlation. Table 2 shows a summary of the regression results, outlining the key determinants of the ENV and SOC scores. Columns 1, 2, and 3 focus on the ENV score as the

dependent variable, while columns 4, 5, and 6 center on the SOC score. The country-level variables (KOFSOC and WGI) and the dummy variables (ISL and STA) were individually incorporated into the models.

The findings presented in Table 2 reveal a significant negative correlation between the LI, representing the inverse of competition, and both ENV and SOC performance, thereby supporting Hypothesis 1. This outcome is in alignment with Stakeholder Theory and is

TABLE 2 OLS estimation of environmental and social performance.

Dependent	ENV (1)	ENV (2)	ENV (3)	SOC (4)	SOC (5)	SOC (6)
LI	−6.502* (3.967)	−6.229* (3.684)	−7.614* (3.957)	−9.717*** (3.018)	−7.020** (2.818)	−10.458*** (3.236)
BGD	0.537*** (0.125)	0.570*** (0.123)	0.489*** (0.126)	0.455*** (0.100)	0.524*** (0.101)	0.414*** (0.097)
CSR committee	0.191*** (0.027)	0.182*** (0.028)	0.149*** (0.030)	0.190*** (0.024)	0.185*** (0.026)	0.159*** (0.027)
Efficiency	−25.520*** (7.526)	−25.922*** (7.609)	−23.582*** (7.537)	−26.187*** (8.469)	−20.912** (8.208)	−23.692*** (8.747)
Liquidity	44.549*** (10.378)	50.148*** (10.150)	38.575*** (10.504)	22.498** (9.432)	15.436* (9.304)	19.012** (9.467)
Stock returns	−0.649 (6.020)	0.989 (5.902)	1.163 (5.906)	2.664 (4.838)	4.223 (4.800)	4.380 (4.884)
BETA	5.024 (3.377)	4.667 (3.295)	5.327* (3.200)	7.478*** (2.510)	6.682*** (2.399)	7.672*** (2.334)
Market-assets	8.008 (6.527)	10.502* (6.227)	13.545** (6.571)	15.537*** (4.276)	12.211*** (3.903)	19.256*** (4.780)
Free float	19.415*** (6.992)	20.605*** (6.702)	22.674*** (7.106)	6.924 (5.401)	11.800** (5.169)	10.195* (5.400)
Ownership concentration	0.220** (0.087)	0.217** (0.085)	0.187** (0.092)	0.128** (0.057)	0.128** (0.057)	0.121* (0.062)
LnAsset	6.380*** (1.271)	6.365*** (1.237)	5.472*** (1.266)	6.394*** (0.984)	6.780*** (0.999)	5.846*** (1.017)
LnAge	2.329* (1.779)	2.801* (1.721)	3.553* (1.869)	4.322** (1.724)	5.271*** (1.699)	4.160** (1.931)
ISL			−6.733*** (2.533)			−6.570*** (2.336)
STA			12.956*** (4.081)			5.262** (3.408)
KOFSOC	0.567** (0.264)		0.492* (0.264)	1.124*** (0.237)		1.118*** (0.236)
WGI		0.356*** (0.108)			0.327*** (0.088)	
Year fixed effect	YES	YES	YES	YES	YES	YES
Constant	−101.762*** (21.480)	−83.438*** (13.243)	−90.975*** (21.180)	−139.958*** (18.635)	−86.114*** (13.196)	−134.515*** (18.217)
N	308	308	308	308	308	308
R ²	0.6113	0.6224	0.6353	0.6457	0.6325	0.6604

Note: Ordinary least squares estimation with year fixed effects. Standard errors are obtained from white cross-sectional error variances, with bank level clustering to account for both heteroskedasticity and correlation. Data enclosed in () are standard error. Asterisks indicate significance at the 10% (*), 5% (**), and 1% (***) levels.

consistent with prior empirical studies such as Forgione and Migliardo (2020) in the banking sector and Dupire and M'Zali (2018), Fernández-Kranz and Santaló (2010), Flammer (2015), and Leong and Yang (2020) in non-financial sectors.

Thus, more competitive environments lead banks to adopt thorough ENV and SOC practices to meet stakeholder expectations,

differentiating their products and enhancing their reputation, potentially generating valuable intangible assets. This supports the strategic view of competition-CSR performance.

In terms of moderating variables, our analysis reveals a positive correlation between BGD and both ENV and SOC performance, supporting Hypothesis 2. This suggests that the former positively

influences the latter variables of banks in the MENA region, aligning with Agency Theory, Stakeholder Theory, Gender Socialization Theory, and Resource Dependence Theory, and with the results of prior studies.

In recent years, sustainability has become more prominent in corporate organizational charts, particularly in the board of directors. CSR is driven by the board's capacity and competence to incorporate sustainability into corporate strategy and oversee its implementation. Codes of Best Practice worldwide suggest diverse boards improve board effectiveness based on the shareholder perspective, protecting both shareholder and stakeholders interests (Garcia-Torea et al., 2016).

The 2011 Green Paper on corporate governance (European Commission, 2011) highlights that women bring different leadership styles, participate in more board meetings, and positively influence group intelligence. Increasing women's presence on boards increases the collective talent available for senior management and supervisory functions. Macaulay et al. (2018) note that female directors are generally more committed to environmental and social issues than their male counterparts and are more inclined to accept sustainability responsibilities on boards. Social engagement strategies are shaped by the choices, experiences, and values of board members (Veltri et al., 2021). Women directors enhance the strategic advisory function by evaluating various strategic choices and selecting actions that mitigate risks (Jeong & Harrison, 2017). Diverse boards improve managerial oversight, enhance board dynamics, and increase the effectiveness of the decision-making process by incorporating different perspectives, ideas, skills, and fostering open conversations, positively affecting a firm's social and environmental performance (Ben-Amar et al., 2017; Cordeiro et al., 2020; Nguyen et al., 2021).

Our results are in line with the existing literature examining the correlation between BGD and CSR in developed countries, particularly in the financial sector (e.g., Gürol & Lagasio, 2023). In the MENA region, our findings align with Issa and Zaid (2021) but contradict those of Issa, Zaid, et al. (2022), who reported a negative relationship between BGD and ESG performance. Concerning ENV performance separately, our results support empirical studies by Carvajal et al. (2022), Elmagrhi et al. (2019), Issa and Zaid (2021), and Kyaw et al. (2017), all of which have suggested that females are more committed to environmentally friendly behavior (Davidson & Freudenburg, 1996), are less likely to face lawsuits for breaching environmental requirements (Liu, 2018), and are more supportive of it (Mohai & Kershner, 2002). Regarding SOC performance, our findings are consistent with research by Hussain et al. (2018), Kyaw et al. (2017), Orazalin and Baydauletov (2020), and Shaikat et al. (2016), indicating that the higher the BGD, the better the social performance. The inclusion of women in managerial positions implies support for social initiatives and increased attention to social aspects, as suggested by Alazzani et al. (2017). Additionally, Ibrahim and Angelidis (1994) discovered that women prioritize philanthropic activities more than economic activities, emphasizing their inclination towards social responsibility.

When it comes to country-level factors, our study coincides with institutional theory and existing literature (e.g., El Khoury et al., 2023b). We observed a positive correlation between the WGI and ENV and SOC performance, agreeing with studies conducted by Hartmann and Uhlenbruck (2015) and Orazalin and Mahmood (2021) regarding environmental performance, and Keser and Gökmen (2018) concerning social sustainability. The higher the governance of the countries in which banks operate, the higher their ENV and SOC performance, as it allows stakeholders to more accurately assess the returns of ESG-based strategies.

As for the dummy variables, state-owned banks showed a positive effect on ENV and SOC performance, consistent with Chi et al. (2022), Dong, Burritt, et al. (2014), Liu and Anbumozhi (2009), and Lopatta et al. (2017). Conversely, IBs exhibited a negative influence on ENV and SOC performance, in line with Alam et al. (2022).

For control variables, CSR-related governance structures, such as CSR committees, positively correlate with better ENV and SOC performance, consistent with Baraibar-Diez et al. (2019), Burke et al. (2019), Elmaghrabi (2021) and Flammer (2015). Businesses that have these governance structures in place perform better in environmental and social aspects because they enforce applicable standards and adhere to a code of conduct through well-defined policies and processes.

Contrary to our expectations, efficiency negatively influenced ENV and SOC performance, corresponding with Husted et al. (2016) and Yuan et al. (2020). Our findings are partially consistent with El Khoury et al. (2023b), who discovered a negative correlation between financial performance and SOC performance, and non-significant results concerning ENV performance. They suggested that banks with poor operational performance may attempt to divert shareholders' attention by disclosing more information about their socially responsible behavior.

In terms of liquidity effects, a positive correlation between liquidity and ENV and SOC performance was observed, matching the findings of Farhan et al. (2023). The higher a bank's liquidity, the more resources can be allocated to ENV and SOC initiatives.

The association between stock returns and ENV and SOC performance was found to be non-significant, consistent with Clarkson et al. (2008). However, evidence has indicated that market capitalization over total assets positively influences ENV and SOC performance, enabling banks to absorb the costs of social and environmental initiatives, as noted by Iatridis (2013) and Forgione and Migliardo (2020).

The beta variable showed no influence on ENV performance, concurring with De Villiers et al. (2011). One possibility for this non-significant relationship is that market fluctuations have less impact on environmental practices in the banking sector, regulated by external policies and driven by long-term strategic goals rather than direct pressures. Contrary to expectations, the beta variable exhibited a positive and statistically significant impact on SOC performance, aligning with the results of Balabanis et al. (1998). The positive influence of beta on social performance may stem from firms exposed to high market risk seeking to enhance their reputation and stakeholder trust via social initiatives.

Free float was found to positively influence ENV and SOC performance, consistent with Gamerschlag et al. (2011) and Mahmood et al. (2023). Ownership concentration also positively influenced the environmental and social performance of a bank, coinciding with Agency Theory as well as Viana and Crisóstomo (2020) and Zhou et al. (2020), who observed a positive correlation between ownership concentration and environmental disclosure by banks. Javeed et al. (2022) and García-Sánchez et al. (2022) have also noted a positive correlation between ownership concentration and CSR.

The size and age of banks have been found to positively influence environmental and social performance, concurring with Hendratama and Huang (2022), suggesting that the larger and the older firms are, the better their environmental and social performance are. This supports the Legitimacy Theory, which states that the larger banks are, the higher their environmental and social scores tend to be (El Khoury et al., 2023b).

Concerning country-level factors, KOFSOC was seen to positively influence ENV scores, reducing environmental degradation (Wang et al., 2021) and CO₂ emissions (Kammerlander & Schulze, 2021). Regarding the effects on SOC performance, the findings partially corroborate previous studies; for example, Naz (2023) has noticed that KOFSOC has a positive influence on the Human Development Index (HDI).

We conducted additional regressions (2) and (5), in Table 2, with each WGI indicator individually: (a) control of corruption, (b) government effectiveness, (c) political stability and absence of violence/terrorism, (d) regulatory quality, (e) rule of law, and (f) voice and accountability. The results show that there was a positive effect for each of the variables individually.⁸

4.3 | Robustness

Next, we assessed the robustness of our initial results with alternative estimation methods. Initially, we estimated a truncated regression model by implementing a Maximum Likelihood (ML) method, as the values of the ESG variables are censored between 0 and 100. Additionally, to address potential endogeneity concerns, we employed two alternative models. We first re-estimated Equation (1), introducing a lag of 1 year in various independent and control variables as regressors, using the Ordinary Least Squares (OLS) method. Subsequently, we conducted a Two-Stage Least Squares Regression (2SLS), utilizing the variables with a one-year lag as instruments, consistent with prior studies (e.g., Amorelli & García-Sánchez, 2023; Khatri, 2023).

As shown in Tables 3 and 4, the results of the robustness analysis indicated a significant correlation between competition, BGD, and environmental and social performance, suggesting that the main results were robust to endogeneity. To validate the 2SLS, we employed several diagnostic tests. The Sargan over-identification test supported instrument validity upon rejection, the Cragg-Donald weak

identification test rejected instrument weakness if the *F* value exceeded the critical value from the Stock-Yogo test, and the Anderson tests assessed correlation between instruments and endogenous variables. Rejection in this case signified the correct identification of instruments.

A final robustness test of our findings was performed by analyzing two sub-samples at both the bank and country levels as checks to reinforce our earlier results.

Initially, we divided the sample by country into GCC banks and non-GCC banks. Subsequently, at the bank level, we categorized banks into Islamic (ISLs) and Conventional (CBs). The results obtained from these sub-samples did not exhibit significant differences compared to the results from the full sample. However, it is noteworthy that due to the limited number of observations for ISLs, the results for this subset were not statistically significant.⁹

4.4 | Moderating effects

The findings of the moderation analysis are presented in Table 5.

Regarding the moderating effect of LI $\times$ BGD (see columns 1 and 5 in Table 5), it was significant and positive in ENV and SOC, supporting hypothesis 3. This suggests that the negative impact of market power on both ENV and SOC was less pronounced in companies with more women on boards. Our findings indicate that BGD strengthens ENV and SOC effects in firms with significant market power, compared to those operating in highly competitive markets. In line with prior studies (Kamarudin et al., 2022; Boubaker et al., 2018), our work supports that BGD plays a substitutive role of competition in influencing CSR.

The effect of the LI $\times$ WGI interaction (refer to columns 2 and 6 in Table 5) on ENV and SOC was positive and significant, confirming hypothesis 4. Institutional factors can enhance banks' adherence to sustainability standards and intensify the need to address stakeholder interests. In banks operating in low competition markets with better governance indicators, banks' environmental and social performance increases.

Similarly, the effect on both ENV and SOC (as seen in columns 4 and 8 in Table 5) of the LI $\times$ STA interaction was positive, supporting hypothesis 6. State-owned banks, less market-oriented and more socially responsible, counteract the negative effects of high LI. State ownership has a greater positive effect on environmental and social performance in banks with more market power, aligning with Xia and Liu (2022). State-owned banks weaken the effect of bank competition on environmental and social performance.

Finally, the effect of the LI $\times$ ISL interaction (as shown in columns 3 and 7 in Table 5) was significant and negative only for SOC performance, partially aligning with hypothesis 5. This indicates that in IBs, the negative effect of market power on social performance is strengthened. According to Bollen (2007) and Risfandy et al. (2019), IBs can exert greater market power than conventional ones because

⁸Results are available upon request.

⁹Results are available upon request.

TABLE 3 Robustness: Truncated regression and OLS.

Dependent	Truncated regression				OLS	
	ENV	ENV	SOC	SOC	ENV	SOC
LI	−6.644* (−3.515)	−6.317* (−3.582)	−9.283** (−3.613)	−6.458* (−3.429)	−8.149* (−4.617)	−15.322*** (−3.257)
BGD	0.553*** (0.119)	0.587*** (0.121)	0.526*** (0.113)	0.598*** (0.116)	0.539*** (0.138)	0.485*** (0.111)
CSR committee	0.193*** (0.025)	0.183*** (0.027)	0.213*** (0.025)	0.210*** (0.027)	0.234*** (0.032)	0.200*** (0.028)
Efficiency	−25.952*** (−9.028)	−26.291*** (−7.451)	−34.041*** (−10.931)	−28.360*** (−10.804)	−37.595*** (−8.756)	−30.558*** (−10.157)
Liquidity	44.863*** (−10.414)	50.441*** (−9.907)	28.230** (−11.599)	18.330 (−11.338)	42.277*** (−11.313)	28.252** (−10.879)
Stock returns	−0.327 (−5.616)	1.373 (−5.804)	2.886 (−5.445)	4.615 (−5.478)	2.373 (−6.500)	11.309* (−6.171)
BETA	5.122** (−2.565)	4.757 (−3.230)	8.322*** (−2.869)	7.292*** (−2.736)	8.801*** (−3.055)	10.799*** (−2.451)
Market-assets	8.029 (−5.470)	10.489* (−6.051)	17.653*** (−4.660)	13.602*** (−4.229)	5.188 (−8.029)	18.036*** (−4.647)
Free float	19.503*** (−6.652)	20.761*** (−6.534)	9.666 (−6.478)	15.202** (−6.314)	28.443*** (−8.088)	5.746 (−6.276)
Ownership concentration	0.219*** (0.072)	0.216*** (0.082)	0.175** (0.069)	0.177** (0.070)	0.353*** (0.106)	0.108 (0.069)
LnAsset	6.411*** (−1.222)	6.406*** (−1.201)	7.391*** (−1.183)	7.903*** (−1.242)	6.228*** (−1.524)	6.756*** (−1.261)
LnAge	2.323* (−2.136)	2.809* (−1.671)	5.009** (−2.251)	6.318*** (−2.259)	2.620* (−1.833)	3.899** (−1.956)
KOFSOC	0.588** (0.257)		1.254*** (0.265)		0.371* (0.319)	1.022*** (0.271)
WGI		0.364*** (0.105)		0.354*** (0.096)		
Year fixed effect	YES	YES	YES	YES	YES	YES
Constant	−118.216*** (−20.033)	−99.485*** (−12.899)	−162.496*** (−20.903)	−102.383*** (−15.276)	−87.020*** (−24.324)	−132.149*** (−21.607)
Sigma	16.038*** (0.656)	15.808*** (0.724)	14.521*** (0.715)	14.841*** (0.766)		
N	308	308	308	308	235	235
R ²					0.6539	0.6613
chi ²	464.25	968.03	453.31	456.60		
Prob > chi ²	0.0000	0.0000	0.0000	0.0000		

Note: The truncated regression model has been estimated by Maximum Likelihood (ML). The basic model has been estimated by OLS with the independent and control variables lagged by one period. Data enclosed in () are standard error. Dummy variables for time have been used. Asterisks indicate significance at the 10% (*), 5% (**), and 1% (***) levels.

their customers are prepared to pay a premium for services that align with their religious values. Additionally, compliance with Shari'ah guidelines places less pressure on them regarding CSR disclosure (Ellili & Nobanee, 2023). Consequently, Islamic banks focus more on

financial returns and adopt better environmental and social practices only in more competitive markets.

In conclusion, the study's results robustly confirm the moderating influence of women on boards, state ownership of banks, and a better

TABLE 4 Two-stage least squares regression (2SLS).

Dependent	ENV	ENV	SOC	SOC
LI	−11.565** (4.814)	−11.807** (5.117)	−15.541*** (4.238)	−18.953*** (4.329)
BGD	0.578*** (0.141)	0.547*** (0.144)	0.575*** (0.124)	0.510*** (0.122)
CSR committee	0.222*** (0.027)	0.231*** (0.027)	0.195*** (0.024)	0.197*** (0.023)
Efficiency	−46.603*** (11.799)	−47.789*** (12.219)	−31.639*** (10.388)	−39.126*** (10.337)
Liquidity	51.988*** (12.448)	49.216*** (13.332)	24.051** (10.960)	37.089*** (11.279)
Stock returns	0.580 (6.237)	−0.357 (6.334)	4.832 (5.491)	2.245 (5.358)
BETA	7.921** (3.151)	8.623*** (3.193)	9.867*** (2.775)	11.296*** (2.701)
Market-assets	11.255* (5.834)	9.582 (6.125)	15.464*** (5.137)	20.948*** (5.182)
Free float	29.492*** (7.408)	28.195*** (7.645)	12.441* (6.523)	6.937 (6.467)
Ownership concentration	0.328*** (0.084)	0.336*** (0.085)	0.099 (0.074)	0.107 (0.072)
LnAsset	6.812*** (1.421)	6.734*** (1.440)	7.839*** (1.251)	7.132*** (1.219)
LnAge	1.742 (2.461)	1.208 (2.505)	3.856* (2.167)	2.754* (2.120)
KOFSOC		0.582* (0.306)		1.270*** (0.258)
WGI	0.318*** (0.112)		0.303*** (0.098)	
Year fixed effect	YES	YES	YES	YES
Constant	−92.503*** (14.258)	−112.956*** (22.889)	−85.488*** (12.554)	−148.087*** (19.363)
N	235	235	235	235
Centered R^2	0.6610	0.6545	0.6458	0.6667
Uncentered R^2	0.8489	0.8460	0.9157	0.9207
Anderson canon. corr. LM statistic	176.402	172.986	176.402	172.986
Chi-sq (7) P-val	0.0000	0.0000	0.0000	0.0000
Cragg-Donald Wald F statistic	70.241	65.087	70.241	65.087
Stock-Yogo weak ID test critical values: 5% maximal IV relative bias	16.10	16.10	16.10	16.10
Sargan statistic	6.009	5.800	7.515	8.310
Chi-sq (7) P-val	0.4221	0.4460	0.2758	0.2163

Note: This table provides the estimation of the Two Stage Least Square Regression models of environmental and social performance. Data enclosed in () are standard error. Dummy variables for time have been used. Asterisks indicate significance at the 10% (*), 5% (**), and 1% (***) levels.

institutional environment regarding the negative effects of market power on ENV and SOC performance. These variables can enhance environmental and social performance in high market power

environments. However, Islamic banks negatively influence ENV and SOC performance compared to conventional ones, with the negative impact more pronounced in less competitive banks.

TABLE 5 OLS regression: Moderating variables.

	ENV (1)	ENV (2)	ENV (3)	ENV (4)	SOC (5)	SOC (6)	SOC (7)	SOC (8)
LI	−10.677*** (3.938)	−31.867* (18.695)	−9.042* (4.806)	−11.193*** (4.060)	−15.484*** (2.857)	−15.289 (16.147)	−9.602*** (3.592)	−13.663*** (3.153)
BGD	0.390*** (0.138)				0.252** (0.103)			
LI × BGD	0.979** (0.417)				1.353*** (0.312)			
WGI		0.287** (0.128)				0.310*** (0.097)		
LI × WGI		0.443* (0.321)				0.127* (0.278)		
ISL			−8.838*** (2.675)				−7.095*** (2.461)	
LI × ISL			0.275 (5.918)				−6.200* (5.489)	
STA				8.167*** (3.137)				0.690 (2.391)
LI × STA				26.405*** (8.154)				25.067*** (6.863)
KOFSOC	0.436* (0.259)		0.773*** (0.276)	0.655** (0.281)	0.943*** (0.228)		1.296*** (0.246)	1.257*** (0.247)
CSR committee	0.194*** (0.026)	0.177*** (0.030)	0.161*** (0.031)	0.163*** (0.030)	0.193*** (0.023)	0.183*** (0.028)	0.159*** (0.026)	0.173*** (0.025)
Efficiency	−22.188*** (7.675)	−29.577*** (7.887)	−25.140*** (7.978)	−29.355*** (7.681)	−21.585** (8.410)	−23.637*** (8.332)	−26.230*** (9.007)	−28.892*** (8.611)
Liquidity	43.931*** (10.016)	51.930*** (9.739)	49.223*** (10.480)	48.435*** (9.999)	21.645** (8.751)	19.111** (8.944)	25.037*** (9.501)	27.724*** (9.374)
Stock return	0.347 (6.001)	3.002 (5.931)	4.476 (5.907)	1.061 (5.793)	4.040 (4.863)	6.977 (5.148)	6.908 (4.910)	3.951 (4.982)
Beta	4.938 (3.071)	5.292* (3.130)	5.565* (3.050)	6.136* (3.352)	7.360*** (2.198)	7.058*** (2.163)	7.897*** (2.206)	8.399*** (2.373)
Market-assets	8.998 (6.489)	7.690 (6.405)	9.471 (6.368)	11.504* (6.790)	16.904*** (4.070)	9.014** (3.945)	17.924*** (4.470)	17.431*** (4.387)
Free float	18.944*** (6.972)	23.442*** (7.013)	25.729*** (7.465)	20.766*** (7.314)	6.273 (5.325)	14.703*** (5.126)	13.076** (5.450)	8.107 (5.453)
Ownership concentration	0.228*** (0.085)	0.216** (0.088)	0.257*** (0.090)	0.172* (0.095)	0.139*** (0.052)	0.146** (0.057)	0.162*** (0.057)	0.104* (0.057)
LnAsset	6.083*** (1.305)	5.726*** (1.264)	5.123*** (1.271)	4.483*** (1.294)	5.984*** (0.997)	6.036*** (1.054)	5.439*** (1.031)	5.001*** (1.028)
LnAge	2.741 (1.834)	7.089*** (1.578)	4.248** (1.660)	9.438*** (1.681)	4.892*** (1.741)	9.172*** (1.732)	5.658*** (1.722)	9.430*** (1.821)
Year fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Constant	−107.103*** (21.445)	−99.810*** (14.129)	−126.199*** (21.769)	−125.202*** (22.736)	−124.990*** (17.748)	−87.475*** (13.858)	−145.898*** (19.094)	−149.722*** (19.938)
N	308	308	308	308	308	308	308	308
R ²	0.5950	0.5998	0.6073	0.6657	0.5990	0.5091	0.6386	0.6325

Note: Ordinary least squares estimation with year fixed effects. Standard errors are obtained from white cross-sectional error variances, with bank level clustering to account for both heteroskedasticity and correlation. Data enclosed in () are standard error. Asterisks indicate significance at the 10% (*), 5% (**), and 1% (***) levels.



5 | CONCLUSIONS

CSR is a critical issue for financial institutions given their crucial role in fostering economic stability and their impact on the environment and society via investment and lending practices.

Our research has explored both the theoretical and empirical dimensions of socially responsible conduct in the banking sectors of developing countries. In particular, we have researched the impact of banking competition on environmental and social performance in the MENA banking sector from the period 2015–2021. Traditionally, socially irresponsible behavior has been corrected by government intervention or by appealing to the altruistic behavior of firms (Leong & Yang, 2020). However, our results demonstrate a positive correlation between increased market competition and environmental and social outcomes. Firms seeking a competitive edge are inclined to invest in environmental and social efforts. This is in line with Stakeholder Theory, suggesting that competition compels banks to intensify environmental and social initiatives to gain stakeholder confidence. In competitive environments, banks may prioritize environmental and social investments to secure long-term benefits, including heightened brand visibility and differentiation. This strategic approach may contribute to an enhanced reputation and increased loyalty among stakeholders. Ultimately, these efforts do not only benefit the firm but also positively impact shareholders (Hasan et al., 2018).

Market competition and strategic interests drive environmental and social performance, but depending solely on the market or the willingness of enterprises has its limitations. Companies with significant market power and short-term visions may resist demands for socially responsible behavior. Attaining better performance necessitates collective efforts from both companies and stakeholders, especially consumers, workers, the government, and regulatory authorities.

Corporate governance, particularly Board Gender Diversity, serves as an instrument to mitigate pressures on environmental and social performance. Our research confirms the positive effect of BGD on these outcomes, aligning with Agency, Gender Socialization, Resource Dependence, and Stakeholder Theories. This underscores the significance of gender diversity in corporate leadership. It is essential for companies to view gender diversity not merely as an obligation but as a strategic business priority as well. Gender diversity, and other dimensions of diversity, such as cultural ones, coupled with increased training and experience in sustainability, is intricately linked to value creation and has the potential to serve as a key driver of business success.

Our findings underscore the substantial influence of the socio-economic and institutional context for every country in shaping firms' environmental and social commitments, corresponding with the principles of Institutional Theory. Banks, as key players, operate with a societal contract, aligning their actions with the prevailing societal preferences and values.

Furthermore, the type of bank (state-owned or Islamic) plays a significant role when it comes to influencing environmental and social performance, with both a positive and negative significant association observed in the coefficients. State-owned banks demonstrate a higher

level of performance compared to private counterparts. Despite the similarities between CSR standards and pillars of Islamic finance, our findings indicate low sustainability implementation in Islamic banking. The results highlight the importance of considering the ownership and nature of a bank when assessing its impact on environmental and social factors.

Our study also explores the moderating role of internal factors and the institutional framework on competition's impact on environmental and social performance. The impact of gender diversity, state ownership, and institutional framework on performance increases as market competition decreases. For firms with a prominent market position, these mechanisms can induce greater investment in CSR initiatives. Conversely, the Islamic nature of banks allows them to wield greater market power and be more focused on achieving better financial returns.

Additionally, various control variables have emerged as drivers of positive environmental and social outcomes. Governance structures such as CSR committees, liquidity, market capitalization to total assets, market risk, free float, ownership concentration, size, and age all positively impact on environmental and social performance. These variables collectively contribute to firms in the MENA banking sector fostering environmental and social responsibility.

A key practical implication of this paper is that a more competitive market encourages banks in the MENA region to engage in environmental and social initiatives to enhance their competitiveness and ensure survival. Furthermore, board gender diversity in top management, state ownership of banks, and robust institutional environments are significant drivers of environmental and social strategies. These mechanisms have a larger positive effect on performance as competition decreases.

Overall, the study enhances the understanding of how internal factors and the broader institutional framework influence CSR performance in the MENA banking industry. It sheds light on how market competition modulates these relationships. Banks aiming to improve their environmental and social scores should consider both external and internal governance mechanisms and adapt their strategies according to the market competition level.

Considering the expected increase in ESG investments in developing countries, our results have policy implications for banking industry regulators in the MENA region. A deeper understanding of environmental and social strategies may help with future reforms, such as policies promoting competition and gender-diverse boards. Regulators and policymakers should focus on creating a more competitive banking industry by reducing barriers to entry for new players, promoting privatization, lowering activity restrictions, and encouraging CSR innovation. Additionally, they should strengthen supervision and regulations to mitigate potential adverse effects on performance and risk, thoroughly assess associated risks and consequences, and improve the disclosure framework.

This study provides empirical evidence that female directors improve a firm's CSR, resulting in substantial benefits in stakeholders value and company's reputation. Regulators and policymakers should support relevant policies, considering the institutional characteristics

of each country to enhance a firm's sustainable behavior. Countries must create an enabling environment for environmental and social measures, requiring collaboration between businesses and government to establish clear regulations, incentives, and standards for implementation.

Governments should decrease the market share held by large state-owned banks to foster sufficient competition in the credit market. Reducing the proportion of state-owned banks can enhance the positive impact of bank competition on CSR. However, state-owned banks significantly influence business activities and require resources and managerial attention to adopt CSR-promoting policies in less competitive markets.

Although Islamic principles are closely associated with social implications, this study reveals limited implementation of sustainability in Islamic banking. Regulators and policymakers should strengthen the role of Sharia Supervisory Boards to enhance alignment with sustainability goals. Furthermore, they should introduce legislation mandating minimum sustainability disclosure practices, proposing guidelines to improve the quality and rigor of such disclosures (Wijayanti & Setiawan, 2023).

As with all papers, we acknowledge that ours has some shortcomings. First, the sample size of our study was small owing to the data limitations, as a number of banks were not listed, while other MENA banks did not disclose ESG information. In addition, the absence of a uniform benchmark for sustainability reporting for the environmental conditions under study implied that some challenges were encountered in achieving the level of generalizability that we had initially aimed for in our results.

Future studies could expand upon our research by exploring the relationship between sub-components of social and environmental performance. Additionally, it would be interesting to broaden the scope of the current sample to non-financial industries to assess whether these effects vary based on their environmental and social impact, especially in industries that contribute to pollution and are socially controversial. Furthermore, testing these findings in samples encompassing both developed and developing countries, where diverse institutional environments, competition levels, gender equality, and regulatory frameworks, whether voluntary or mandatory, regarding ESG disclosure, are present, would also be of interest.

Increasing the presence of women on boards of directors is only the first step on a long road towards their taking on leadership roles in board structures. A further development of this paper could be to analyze not only the percentage of women in senior management positions, but also those who chair boards of directors or are CEOs of companies. In addition, other diversity-related factors, such as age, education and training, as well as geographic origin, could be just as significant for investors and companies.

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ORCID

José Manuel Maside-Sanfiz  <https://orcid.org/0000-0001-5621-6546>

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APPENDIX A

TABLE A1 Distribution of sample observations across countries.

Country	Frequency	Percentage
Bahrain	15	4.87
Egypt	17	5.52
Israel	28	9.09
Jordan	19	6.17
Kuwait	36	11.69
Oman	43	13.96
Qatar	39	12.66
Saudi Arabia	53	17.21
United Arab Emirates	58	18.83
Total	308	100.00

TABLE A2 Sample selection.

	Observations	Banks
Observations/banks listed in the LSEG database for the MENA banking industry from 2015 to 2021	1.246	178
Less observations/banks with missing ENV and SOC data	916	96
Less observations/banks with insufficient data for estimating the Lerner index	22	5
Final sample	308	77

APPENDIX B

The preceding literature has commonly employed the Herfindahl–Hirschman index (HHI) due to its simplicity in calculation, serving as a proxy for market competition and a measure of market concentration. However, it is important to note that high market concentration does not necessarily imply low competitiveness. To address the limitations of the HHI indicator, we utilized the Lerner index (LI) as a direct measure of market power (the inverse of competition). The LI for a bank i in year t was calculated as the ratio between the markup (subtracting the marginal cost of banking products from their price) divided by the same price:

$$\text{Lerner}_{it} = \frac{P_{it} - \text{MC}_{it}}{P_{it}}$$

where P_{it} was the price of output (total assets), represented by the total revenue over total assets, and MC_{it} was the marginal cost MC_{it} .

Given the unavailability of direct information on marginal costs from financial information, this study estimated the marginal cost via a trans-log cost function (TCF) with one output and three inputs. The LI was then calculated for each bank individually, irrespective of the geographic market in which it operated.

$$\begin{aligned} \ln \text{TC}_{it} = & \alpha_0 + \beta_1 \ln \text{TA}_{it} + \frac{1}{2} \beta_2 (\ln \text{TA}_{it})^2 + \sum_{j=1}^3 \alpha_j \ln w_{it}^j \\ & + \sum_{j=1}^3 \phi_j \ln \text{TA}_{it} \ln w_{it}^j + \frac{1}{2} \sum_{j=1}^3 \sum_{k=1}^3 \theta_{jk} \ln w_{it}^j \ln w_{it}^k + \gamma_1 T \\ & + \frac{1}{2} \gamma_2 T^2 + \gamma_3 T \ln \text{TA}_{it} + \sum_{j=4}^6 \gamma_j T \ln w_{it}^j + \varepsilon_{it} \end{aligned}$$

where TC_{it} represented total costs (financial and operational), TA_{it} stood for the output (total assets), w_{it}^j ($j = 1, 2, 3$) denoted the price of inputs as w_{it}^1 , which was interest paid on deposits (interest expense on total deposits), w_{it}^2 was the price of labor (labor costs over total assets), and w_{it}^3 were other operating expenses (other operating expenses over total assets), T captured the changes in the cost function over time, and ε_{it} was an error term.

The estimated coefficients of the TCF function were used to calculate the MC using the observations of each bank i in year t :

$$\text{MC}_{it} = \frac{\partial \text{TC}_{it}}{\partial \text{TA}_{it}} = \left[\beta_1 + \beta_2 \ln \text{TA}_{it} + \sum_{j=1}^3 \phi_j \ln w_{it}^j + \gamma_3 T \right] \frac{\text{TC}_{it}}{\text{TA}_{it}}$$



APPENDIX C

For the purpose of efficiency estimation in this paper, we employed the Data Envelopment Analysis (DEA) with variable returns to scale (VRS) and an output-oriented perspective. The assumption of VRS was considered more appropriate for assessing efficiency in the banking sector, considering the varying sizes of banks and the different markets in which they operated (Avkiran, 2015; Wang et al., 2014).

Following the selected literature (Apergis & Polemis, 2016; Dong, Hamilton, et al., 2014), the inputs considered were staff expenses, fixed assets and deposits, while gross loans, other earning assets and non-interest income served as outputs.

The proposed models met to the isotonicity requirement, which dictates that inputs must increase, and outputs must not decrease. This compliance is ensured by a statistically significant and positive coefficient association between outputs and inputs. The input and output combinations selected maintained Spearman's rank correlation coefficients below 0.9 (Lee & Seo, 2017).

We evaluated n DMUs ($i = 1, 2, \dots, n$) for each period t ($t = 1, \dots, t$), considering m outputs ($r = 1, 2, \dots, m$) that produced $Y_{it} = \{Y_{rit}\}$ and j inputs ($s = 1, 2, \dots, j$) that consumed $X_{it} = \{X_{sit}\}$. The VRS model, with output orientation, was mathematically represented as follows:

$$\begin{aligned} \text{Max Efficiency}_{0t} : x_{s0t} - \sum_{i=1}^{n_t} \lambda_{it} x_{sit} &\geq 0; \\ \sum_{i=1}^{n_t} \lambda_{it} Y_{rit} - \text{Efficiency}_{0t} Y_{r0t} &\geq 0; \sum_{i=1}^{n_t} \lambda_{it} = 1; \\ \lambda_{it} &\geq 0 \end{aligned}$$

where Efficiency_0 was the efficiency score for DMUs and λ was the weight. The DMU was efficient if Efficiency_0 was equal to 1, and the DMU was inefficient if Efficiency_0 was greater than 1. To express the efficiency scores in percentage points, they were inverted ($1/\text{Efficiency}$). Consequently, values below 1 indicated inefficiency.

TABLE C1 Descriptive statistics for the inputs/outputs used in the DEA model.

	Variable	Obs.	Mean	SD	Min	Max
Outputs	Gross loans	330	31,561.35	35,580.43	72.28	216,928.90
	Other earning assets	330	11,113.10	12,713.03	266.70	77,995.32
	Non-interest income	330	558.79	614.55	5.62	3521.28
Inputs	Staff expenses	330	335.71	343.61	15.00	1515.94
	Fixed assets	330	433.58	496.12	6.68	2844.43
	Deposits	330	36,948.13	42,673.11	0.65	237,649.40

Source: Own elaboration.

TABLE C2 Correlation coefficients for the inputs/outputs used in the DEA model.

	Outputs			Inputs		
	Gross loans	Other earning assets	Non-interest income	Staff expenses	Fixed assets	Deposits
Gross loans	1.0000					
Other earning assets	0.8369	1.0000				
Non-interest income	0.8354	0.8148	1.0000			
Staff expenses	0.8497	0.7265	0.8286	1.0000		
Fixed assets	0.7469	0.7858	0.7304	0.7247	1.0000	
Deposits	0.8798	0.8840	0.8531	0.8775	0.7728	1.0000

Note: The coefficients are significant at the 1% level.

Source: Own elaboration.



APPENDIX D

TABLE D1 Variable explanations.

Dependent variables	Symbol	Definition	Source	Expected sign	Main references
Environmental pillar	ENV	The bank's impact on air, land, water, and entire ecosystems. The score is based on three categories of emissions, innovation, and resource use.	EIKON database		Forgione and Migliardo (2020), Martins (2022), El Khoury et al. (2023b)
Social pillar	SOC	The bank's ability to generate trust and loyalty among its workforce, customers, and society. This index includes four categories: human rights, product responsibility, workforce, and community.			
Explanatory variable					
Lerner index	LI	Lerner index using trans-log cost function with 1 output and 3 inputs.	Author's own calculations	(−)	Cicchello et al. (2023), Forgione and Migliardo (2020)
Moderated variables					
Board gender diversity	BGD	The percentage of females on the board of directors.	EIKON database	(−/+)	Issa and Zaid (2021), Issa, Zaid, et al. (2022)
Worldwide governance indicators	WGI	Measures the quality of governance based on six governance-related dimensions: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.	World Bank	(+)	Hartmann and Uhlenbruck (2015), Keser and Gökmen (2018), Orazalin and Mahmood (2021)
Business model	ISL	A dummy variable equal 1 if the bank is Islamic, 0 otherwise.	EIKON database;	(−)	Alam et al. (2022)
Ownership type	STA	A dummy variable equal 1 if the bank is state-owned, 0 otherwise.	Annual report of banks	(+)	Chi et al. (2022), Dong, Burritt, and Wu (2014), Liu and Anbumozhi (2009), Lopatta et al. (2017)
Control variables					
CSR committee score	CSR committee	Score that indicates the presence of a CSR committee	EIKON database	(+)	Baraibar-Diez and Odriozola (2019), Baraibar-Diez et al. (2019), Burke et al. (2019), Elmaghrabi (2021), Flammer (2015)
Efficiency	Efficiency	Technical efficiency calculated using data envelopment analysis.	Author's own calculations	(+)	Cho and Lee (2019)
Liquidity	Liquidity	The proportion of cash, due, and other non-earning assets scaled by total assets.	EIKON database	(+)	Farhan et al. (2023)
Market performance	Stock return	The difference between the closing price at time t and the closing price at time $t-1$, over the closing price at time $t-1$.		(+)	De Villiers et al. (2011)
Market value	Market assets	Market capitalization to total assets.		(+)	Iatridis (2013)
Market risk	BETA	How much the price of a stock changes in relation to the movement of the market.		(−)	Cormier and Magnan (2004), Roberts (1992)
Free float	Free float	The proportion of shares that can be publicly traded.		(+)	Gamerschlag et al. (2011), Mahmood et al. (2023), Balabanis et al. (1998)
Ownership concentration	Ownership concentration	The percentage of shares owned by the largest shareholder.		(+)	Javeed et al. (2022), García-Sánchez et al. (2022), Viana and Crisóstomo (2020), Zhou et al. (2020)

**TABLE D1** (Continued)

Dependent variables	Symbol	Definition	Source	Expected sign	Main references
Bank size	LnAsset	The logarithm of total assets.		(+)	El Khoury et al. (2023b)
Bank age	LnAGE	The logarithm of the number of years since incorporation.		(+)	Hendratama and Huang (2022), Adu (2022)
Social globalization	KOFSOC	How countries are socially integrated with the rest of the world through the exchange of knowledge and technology, along with the transfer of human capital.	KOF Swiss Economic Institute	(+)	Kammerlander and Schulze (2021), Naz (2023), Rudolph and Figge (2017), and Wang et al. (2021)

Source: Own elaboration.