



Green Growth, Corporate Social Responsibility, and Bank Profitability: Synergies for Sustainable Finance in the Middle East and North Africa Region

Makram Nouaili¹, Mohamed Ali Khemiri^{2*}

¹University College of Duba, University of Tabuk, Kingdom of Saudi Arabia, ²Faculty of Law, Economics, and Management of Jendouba, Tunisia. *Email: mohamedali.khemiri@fsjegj.u-jendouba.tn

Received: 28 December 2024

Accepted: 14 May 2025

DOI: <https://doi.org/10.32479/ijefi.19149>

ABSTRACT

The main purpose of this paper is to investigate the relationship between green growth (GGI), corporate social responsibility (CSR) and bank profitability measured by return on assets (ROA) and return on equity (ROE) in the Middle East and North Africa (MENA) region. It uses a sample of 40 MENA banks during the period 2010-2022 and performs the System Generalized Method of Moments (SGMM). Empirical findings of the analysis reveal that bank profitability is positively associated with the Green growth index (GGI) only for the (ROE). We found that CSR practices increases the profitability of banks in the Middle East and North Africa. Furthermore, findings support evidence that banks adopting green growth strategies through CSR initiatives experience enhanced profitability. The results of this paper could have important policy implications for both policymakers and bankers in the MENA region.

Keywords: Green Growth, Corporate Social Responsibility, Profitability, Middle East and North Africa Banks, System Generalized Method of Moments

JEL classification: G30, L25, M14

1. INTRODUCTION

The global financial industry is in the midst of a sea change as it increasingly aligns itself with the principles of sustainability. Against a background of increasing environmental pressures like climate change, resource depletion, and biodiversity loss, the concept of green growth has emerged as a key pathway toward sustainable development. Green growth emphasizes decoupling economic growth from environmental degradation and promotes resource efficiency, with the development of low-carbon technologies. Such is the transition in which the banking sector will have a main role in channeling capital toward sustainable initiatives. Concurrently, CSR has emerged as the strategic tool of companies in tackling the ESG theme and improving long-term profitability and reputation (Freeman et al., 2020). For banks,

integrating green growth and CSR into their operations is not only a moral duty but also a strategic opportunity to drive innovation, mitigate risks, and create value for stakeholders (Scholtens, 2009).

The MENA region is facing specific challenges in pursuing sustainable development, driven by economic diversification, environmental conservation, and social stability. In addition, the role of the financial sector in enabling these objectives will be increasingly important as countries in this region increasingly prioritize green growth strategies to address climate change and resource scarcity. Banks, as vital players in economic life, would be in positions to promote ecofinance, but their ability to promote eco-finance depends on manifold factors, including, among others, CSR practices of banks and bank profitability. This is supported by (Taghizadeh-Hesary and Yoshino, 2020).

Although there is some literature available regarding CSR and green finance and its impact on corporate performance for developed economies, (Friede et al., 2015; Flammer, 2021), ascertaining the empirical evidence with respect to how these practices influence bank profitability within the MENA region remains scant. Also, synergies between green growth and CSR in the banking industry are barely understood; therefore, there is an acute lack of insight on how these interventions could be manipulated toward the optimization of both sustainability performance and financial outcome (Weber, 2017). This paper will, therefore, discuss the relationship between green growth, CSR, and bank profitability within the context of the MENA region. This helps add regional insight relevant to the contribution of such initiatives among policymakers and practitioners.

The main objective of this research is to analyze the synergies between green growth, CSR, and bank profitability in the MENA region. In sum, the specific objectives of this study are that it will look at: (i) the impact of green growth initiatives on bank profitability in the MENA region, (ii) the complementary role played by CSR practices on enhancing financial performance, and finally (iii) the synergies that exist between green growth and CSR in driving sustainable finance. This study will give comprehensive information on how banks in the MENA region can combine sustainability goals with profitability in an effort to address all these objectives.

The study sample is 40 banks in 10 MENA countries that are captured between the 2010-2022 periods. Empirical tests employ the System GMM (SGMM) method. Empirical evidence is that bank profitability is positively linked to Green growth index (GGI) but only when measured by Return on Equity (ROE). Evidence also reveals that CSR activities increase bank profitability in the MENA region. Furthermore, banks that adopt green growth policies by engaging in CSR activities perform more efficiently financially.

This research contributes to the literature on sustainable finance, CSR, and green growth by investigating synergies between these elements in the MENA banking sector. Theoretically, this study develops a deeper understanding of how CSR frameworks and green growth strategies intersect to impact bank profitability, particularly in a region where environmental challenges are acute and urgent. The research has important practical implications for banking executives, policymakers, and regulators in the MENA region. It has shown the levers that exist to drive profitability through CSR and green growth initiatives, thus providing clear recommendations on the integration of sustainability into banking practices to support a sustainable and resilient financial system transition. These findings add to the general discussion of sustainable finance and have important lessons for other emerging markets that might face similar environmental and economic challenges in the near future.

The remainder of this paper is structured as follows. Literature review is given in section 2. Section 3 describes the sample and the empirical strategy. The empirical results are discussed in section 4. Section 5 concludes and addresses some policy recommendations.

2. LITERATURE REVIEW

2.1. Green Growth and Bank Profitability

Green growth refers to economic growth and development that is consistent with the ongoing availability of natural resources and environmental assets that provide the resources and environmental services on which human well-being relies. The theoretical perspectives state that financial institutions, particularly banks, promote green growth through facilitating investments in the eco-friendly projects, financing towards green businesses, and development of environmentally sustainable industries. Green finance thus forms a component of sustainable finance, seen as a way that banks could potentially contribute to the greening of growth, be it through project alignment with environmental sustainability or otherwise.

The relationship between green growth and bank profitability is increasingly being recognized as significant, especially in the context of banks increasingly adopting environmentally sustainable practices. According to studies, green banking initiatives, such as green credit and financing, have a positive effect on the profitability of commercial banks through increased operational efficiency and adherence to sustainable development goals.

Empirical evidence on the impact of green finance on bank profitability and environmental performance presents important lessons that could be used in drawing how sustainable banking practices relate to financial outcomes. Ge et al. (2024) explored the consequence of green credit policy on the total factor productivity of enterprises, and their finding indicates that green credit policy significantly promotes TFP since it motivates firms to adopt cleaner technologies and thus promotes resource efficiency. This paper underlines the wider economic benefits of green financing, which can indirectly contribute to bank profitability by establishing a more sustainable and productive business environment. In the same vein, Julia and Kassim (2016) investigate the relationship between green financing and bank profitability in Bangladesh and finds that banks involved in green financing activities benefited from increased profitability because of improved reputational benefits and access to new markets. It reveals their findings: how green finance might be a strategic tool for banks to achieve not only financial goals but also environmentally oriented goals. On the other hand, Jain and Sharma (2023) investigated green banking practices' effects on sustainable environmental performance and profitability in private sector banks. Their findings have established that the banks which follow green initiatives are helping to ensure environmental sustainability and result in better profitability due to cost savings and increased stakeholder trust. Other evidence from Indonesia comes from Rachman (2021), who conducted an analysis on banks listed in the Sri-Kehati Index and found a positive correlation between green banking practices and profitability, especially in terms of ROA and ROE, which means that green banking could improve financial performance while considering sustainability performance. Finally, Asfahaliza and Anggraeni (2022) investigated the impact of green banking on the profitability of Indonesian banks between 2016 and 2021. The outcome of the study indicated that the adoption of green banking practices influences profitability measures such as NIM

and ROA positively. All these studies put great emphasis on the synergies between green finance, environmental sustainability, and bank profitability and hence present a sound empirical basis for integrating sustainability into the banking industry.

This paper analyzes the impact of Green Growth on bank profitability in the MENA region based on theoretical and empirical evidence from existing literature. The following hypothesis is tested in particular:

H₁: Green Growth is positively associated with bank profitability.

2.2. Corporate Social Responsibility and Bank Profitability

CSR refers to the voluntary efforts made by firms to contribute to society and the environment beyond profit generation. It includes practices that address environmental sustainability, social equity, and corporate governance (Carroll, 1999). The theoretical underpinning of CSR is based on stakeholder theory, which argues that firms must consider the interests of all stakeholders, not just shareholders, to achieve long-term success (Freeman and Phillips, 2002). Agle et al. (1999) that by undertaking CSR through green and social initiatives, goodwill should be accumulated for the banks and attract socially responsible investors while improving financial performance over time or in the long run.

The relationship between CSR and bank profitability is framed within the resource-based view (RBV), which suggests that CSR can be a valuable resource that enhances a bank's competitive advantage (Barney et al., 2001). Engaging in CSR activities, such as environmental stewardship or supporting community development, can lead to improved financial performance through better risk management, enhanced brand reputation, and stronger customer loyalty.

The relationship between CSR and bank profitability is not straightforward, as there is evidence of both positive and negative impacts depending on many factors. While most studies indicate that CSR initiatives can help a bank improve its image and enhance its financial performance, the results are not consistent across all banks or all financial metrics.

While empirical evidence on CSR and bank profitability is mixed, many studies suggest a positive link. Banks that engage in CSR activities, particularly in environmentally sustainable practices, tend to benefit from enhanced corporate reputations, customer loyalty, and access to a broader base of socially conscious investors (Purwanti et al., 2024; Sholikudin and Hwihanus, 2024; Mahmuda and MuktaDir-Al-Mukit, 2023). The available literature in emerging markets, of which MENA is a part, confirms that CSR performance leads to better financial performance, especially when the investment in social initiatives is tailored to local community needs and environmental concerns (Khan et al., 2021).

In fact, the studies in the MENA region have documented that the banks that practice CSR in their operations register an improved risk-adjusted return and are resilient to financial crises (Boubakri et al., 2019). The environmental conservation and community development CSR activities reduce reputational risks and regulatory costs, thus leading to profitability.

Empirical literature on the relationship between CSR and CFP in the banking sector provides a concrete structure that relates positively to those CSR initiatives on corporate image, profitability, and marketability aspects. Purwanti et al. (2024) evaluated how CSR could play a role in improving the corporate image and financial performance of the banking industry and found that CSR activities enhance reputational capital and financial outcomes significantly, represented by ROA and ROE. Similarly, a meta-analysis done by Sholikudin and Hwihanus (2024) on research studies related to CSR and the financial performance of banks revealed that CSR has a significant positive effect on profitability, with more evidence to be found within emerging markets. This is again evidenced by Mahmuda and MuktaDir-Al-Mukit (2023), since in Islamic banking; CSR disclosures positively influence profitability by building stakeholder trust and attracting investors with social concerns. Uddin et al. (2022) examined the efficiency of CSR disclosures within the banking industry related to Bangladesh. They observed that the banks bearing higher efficiency of CSR disclosure prove to be more profitable and marketable, as was reflected by the two measures known as Tobin's Q and NIM. More recently, Tran et al. (2021) add further evidence from Vietnam to confirm the positive association of CSR disclosure with profitability within the panel of listed banks, therefore highlighting its relevance in building long-run financial resilience. Saadaoui and Ben Salah (2023) included the moderating effect of financial stability, which indicates that those banks with strong financial stability are able to benefit more from CSR initiatives in performance terms because CSR reinforces customer loyalty and reduces operational risks. Finally, Liu et al. (2021) have investigated the moderating role of fintech technology in the CSR-financial performance relationship, and their results indicate that those banks that use fintech innovations enjoy greater financial benefits arising from CSR activities because of better operational efficiency and customer engagement. Collectively, these studies therefore reiterate how strategic CSR, which is fundamental in improving both the financial performance and corporate image while engendering stakeholder trust within the banking sector, is also contextual to increase through enhanced levels of financial stability and technological innovation. Based on the development above, we can formulate the following hypothesis:

H₂: Corporate Social responsibility is positively associated with bank profitability.

2.3. Synergies between Green Growth, CSR, and Bank Profitability

The theoretical linkage between green growth, CSR, and bank profitability is complex. Green growth strategies can provide banks with opportunities to diversify their portfolios, attract new clients, and create value through sustainable investments (Dimson et al., 2015). On the other hand, CSR initiatives may improve stakeholder relationships, which can lead to a more favorable business environment and, consequently, enhanced profitability (McWilliams and Siegel, 2001). The synergy between these concepts suggests that those banks which will be able to combine green growth strategies with CSR initiatives may show not only positive environmental and social impacts but also improved financial outcomes because of better stakeholder relationships and higher competitive advantage.

In this respect, recent studies in the MENA region have started to give some insights into how green growth, CSR, and bank profitability may feed into each other. For instance, Saeed and Sroufe (2021) indicate that those banks that combine their green growth strategies with CSR activities are better able to capitalize on emerging market opportunities, especially in renewable energy and sustainable infrastructure-related sectors. The results of such synergies are improved financial performances, with the banks attracting green investors and reducing environmental risks, therefore improving their social responsibility profiles.

However, challenges remain in the MENA region, such as the lack of consistent regulatory frameworks, the limited scope of green finance, and the nascent stage of CSR development. Despite these challenges, empirical studies suggest that banks in the MENA region that effectively combine green growth and CSR practices experience superior profitability and long-term sustainability, particularly when these practices align with the region’s broader sustainability and diversification goals.

Empirical literature on the interaction between green finance, Corporate Social Responsibility, and bank financial performance has shown that sustainability initiatives have increasingly become a significant factor in shaping profitability and long-term growth. Zhou et al. (2021) have investigated the moderating role of green credit in the relationship between CSR and bank financial performance in China. The authors find that green credit policies amplify the positive influence of CSR on profitability by aligning financial practices with environmental sustainability. Putri et al. (2022) analyzed the effects of green banking and financial performance on banking profitability, showing that banks that show greener performance have higher profitability due to cost efficiency, better risk management, and increased reputational capital. Rabea’Hadi et al. (2023) conducted a literature review in the realm of green banking and its duality between serving profitability and sustainability, mainly through green loan adoptions and renewable energy projects investments. In the light of governance, Birindelli and Palea (2023) investigate how CSR mechanisms, within the governance framework, determine bank decisions to pursue strategies for green products. They found evidence that strong CSR governance frameworks enhance the likelihood for banks to adopt green initiatives, which eventually make a positive contribution towards financial performance. Wu et al. (2024) extended the discussion to urban inclusive green growth, showing that CSR practices in the banking sector contribute to sustainable urban development while improving financial outcomes measured by return on assets and return on equity. Finally, Norocel and Vierescu (2024) examined the relationships between ESG factors, economic growth, and banking activity; the main conclusion is that those banks which embed ESG in their operations are much more profitable and resilient during volatile economic conditions. These studies bring out the synergies between green finance, CSR, and bank profitability, having a major strategic value of sustainability initiatives in driving financial performance, thus fostering long-term economic and environmental benefits. Building on recent insights, the following hypothesis is formulated:

H₃: Green Growth and Corporate Social responsibility are positively associated with bank profitability.

3. SAMPLE AND METHODS

3.1. The sample

To explore the relationship between Green Growth, corporate social responsibility and bank profitability, we used a sample of conventional banks located in MENA countries over the period 2010-2022. The initial sample is made by 109 banks. However, due to the availability and the continuity of bank information, several banks have been excluded. Hence, the final sample was reduced to 40 conventional banks (Table 1).

3.2. Variable Selection and Theoretical Justification

3.2.1. Dependent variable: Bank profitability

The paper contributes to the existing literature through analyzing the impact of climate risk and corporate social responsibility on profitability in the banking industry. To capture that relationship, the dependent variable is profitability as measured using the ROA and ROE ratio. Referring to Goddard et al. (2004), and Hakimi et al. (2023), we have used two metrics representing different dimensions of bank performance. ROA reflects bank efficiency in using its assets to generate income and is calculated as the net income-to-total assets ratio. The net income-to-total equity ratio is called return on equity, or ROE.

3.2.2. Main explanatory variable: Green growth

The Green growth index (GGI) is a composite indicator that measures a country’s progress toward sustainable development by evaluating its performance in achieving environmentally sustainable economic growth. It assesses key dimensions such as efficient and sustainable resource use, natural capital protection, green economic opportunities, and social inclusion (Acosta et al., 2020). The index is developed by the Global Green Growth Institute (GGGI) and provides a comprehensive framework to track how well economies balance economic growth with environmental sustainability and social equity.

3.2.3. Other explanatory variable: Corporate social responsibility

A composite Environmental, Social, and Governance (ESG) index is employed to quantify corporate sustainability performance, according to Boussaada et al. (2023). The index serves as a pillar score, giving a balanced metric of a company’s adherence to environmental responsibility, social responsibility, and corporate governance. The environmental pillar evaluates parameters such as

Table 1: Distribution of the sample by country

Middle East North Africa countries		
Countries	Number of banks	Percentage
Jordan	4	10
Kuwait	4	10
Oman	2	5
Lebanon	1	2.5
Qatar	4	10
Saudi Arabia	7	17.5
United Arab Emirates	6	15
Egypt	1	2.5
Morocco	2	5
Tunisia	10	25
Number of banks	40	100

carbon emissions, energy efficiency, and waste management. The social dimension evaluates the employment policies, community engagement, and diversity initiatives, while the governance aspect analyzes corporate ethics, board structure, and transparency. By integrating the three dimensions, the ESG index provides a comprehensive view of a company's sustainability efforts to help investors, regulators, and stakeholders evaluate its long-term soundness and moral business practices.

3.2.4. Control variables

As outlined, our econometric model incorporates several control variables. The first category pertains to bank-specific factors, including bank size (BS), which is used to explain variations in bank performance (Anginer et al., 2018), the capital adequacy ratio (CAR), a key determinant of bank performance (Molyneux and Thornton, 1992), the liquidity risk (LTD) and the diversification (NII) (Hakimi et al., 2023). The second category relates to industry-specific variables, such as bank concentration (CONC) recognized as significant drivers of bank profitability (Hakimi et al., 2023). The third category encompasses macroeconomic conditions and financial environment, represented by the GDP growth rate (GDPG), inflation rate (INF), (Abreu and Mendes, 2001). The Domestic credit to private sector (% of GDP) (DCTPS), and the Gross domestic savings (% of GDP) (GDS) (Ozili and Ndah, 2024).

Bank-level data, including financial and accounting variables, were sourced from the Refinitiv Eikon database and the annual reports of individual banks. Country-level data, reflecting industry-specific and macroeconomic conditions, were gathered from two primary sources: The Global Financial Indicators database and the World Bank Indicators database. Climate risk index (CRI) data were obtained from Germanwatch, while data on the composite environmental, social and governance index (ESG score) were retrieved from the Refinitiv Eikon database.

3.3. Empirical Approach and Model Specification

The empirical approach employed in this study is thus based on the SGMM methodology. One of the major problems in corporate and banking finance is endogeneity, which can be sorted out with the use of the SGMM approach. Moreover, omitted variables bias and measurement errors are two problems that are consistently faced by OLS and fixed- and random-effect (FE and RE) models. To this end, we used the SGMM approach, recommended by Blundell and Bond (1998) in this study. Results are more reliable and useful in the SGMM method (Teixeira and Queirós, 2016; Danisman and Tarazi 2020; Hakimi et al., 2023).

The empirical approach in this work is based on three phases. First, we explore the relationship between climate risk and bank profitability. Equation (1) presents the econometric to be tested in this step:

$$PROF_{i,t} = \beta_0 + \beta_1 PROF_{i,t-1} + \beta_2 GGI_{i,t} + \beta_3 BS_{i,t} + \beta_4 CAR_{i,t} + \beta_5 LTD_{i,t} + \beta_6 NII_{i,t} + \beta_7 CONC_{i,t} + \beta_8 GDPG_{i,t} + \beta_9 INF_{i,t} + \beta_{10} DCTPS_{i,t} + \beta_{11} GDS_{i,t} + \varepsilon_{i,t} \quad (1)$$

We looked into how corporate social responsibility affected bank profitability in the second stage. The following equation (2) presents the econometric model:

$$PROF_{i,t} = \beta_0 + \beta_1 PROF_{i,t-1} + \beta_2 CSR_{i,t} + \beta_3 BS_{i,t} + \beta_4 CAR_{i,t} + \beta_5 LTD_{i,t} + \beta_6 NII_{i,t} + \beta_7 CONC_{i,t} + \beta_8 GDPG_{i,t} + \beta_9 INF_{i,t} + \beta_{10} DCTPS_{i,t} + \beta_{11} GDS_{i,t} + \varepsilon_{i,t} \quad (2)$$

The third phase is determining if the link between climate risk and bank profitability is moderated by corporate social responsibility. In order to capture the interplay between climate risk and corporate social responsibility, we incorporate an interactional variable into the econometric model. Equation (3) provides the econometric model to be tested:

$$PROF_{i,t} = \beta_0 + \beta_1 PROF_{i,t-1} + \beta_2 GGI * CSR_{i,t} + \beta_3 BS_{i,t} + \beta_4 CAR_{i,t} + \beta_5 LTD_{i,t} + \beta_6 NII_{i,t} + \beta_7 CONC_{i,t} + \beta_8 GDPG_{i,t} + \beta_9 INF_{i,t} + \beta_{10} DCTPS_{i,t} + \beta_{11} GDS_{i,t} + \varepsilon_{i,t} \quad (3)$$

All variables' definitions are given in Table 2.

4. ANALYSIS AND RESULTS

4.1. Summary Statistics and Correlation Matrix

Table 3 presents descriptive statistics for the variables used in our analysis. It outlines the key characteristics of this dataset. The table details, for each variable, the mean, standard deviation, minimum, and maximum value. These statistics summarize the variables used in the SGMM model.

Bank profitability, as expressed by return on assets or (ROA), stands at an average of 1.358, while a maximum value of 3.808 and a minimum value of -2.576 were achieved. (ROE) ranges between -23.056 and 50.393 with an average value of 12.249. For conventional banks, the Green growth index (GGI) oscillates at an average value of 45.412, while the maximum achieved is 53.06. While calculating the ESG scores (ESG), its average worked out to 40.357, ranging from to 80.794 the maximum value and 12.842 for the minimum.

The average of bank size is 23.500, ranging from 20.942 to 26.512. The (CAR) stands for Capital Adequacy Ratio, which averages 15.839, ranging from 0 to 211.47. According to the ratio of liquid assets to deposits, the mean level of liquidity risk reaches about 84.858 from a minimum value of 0 and maximum value of 162.312. The average of diversification as determined by NII, with a high value of 96 and a low of 9.552, is thus 38.120.

Industry-specific factors are that the average bank concentration (CONC) is 80.888, with a maximum of 100.000 and a minimum of 56.035.

Macroeconomic conditions, represented by the GDP growth rate (GDPG) and inflation rate-(INF) are on average 2.530, with a maximum of 19.592 and a minimum of -21.399. The inflation rate averages 3.877, ranging from -3.749 to 171.20. Finally, the Domestic credit to private sector (DCTPS) has an average of 68.796, with a maximum of 138.857 and a minimum of 3.706. The average of Gross domestic savings (GDS) is 30.565 with a high value of 75.549 and a low of -21.374.

Table 2: Definition of variables

Variables	Definitions	Measures
Dependent variables (PROF)		
ROA	Return on assets	Net income after tax to total assets
ROE	Return on equity	Net income after tax to total equities
Green Growth		
GGI	Green Growth index	Green growth index (GGI) of the Global Green Growth Institute (GGGI). (Acosta et al., 2020).
Corporate social responsibility		
CSR	ESG score	Composite environmental, social and governance index (ESG). (Boussaada et al., 2023)
Interaction variables		
GGI*CSR	Interactional variable	The interaction between GGI and CSR
Bank specifics		
BS	Bank size	Natural logarithm of total assets
CAR	Capital adequacy ratio	Bank capital to total assets (%)
LTD	Liquidity risk	Loans to deposits ratio (%)
NII	Bank diversification	Non-interest income in % of total income.
Industry specifics		
CONC	Bank concentration	Bank concentration (%)
Macroeconomic conditions and financial environment		
GDPG	The growth rate of GDP	Annual growth rate of GDP (%)
INF	The inflation rate	Consumer price index (%)
DCTPS	Domestic credit to private sector	Domestic credit to private sector (% of GDP)
GDS	Gross domestic savings	Gross domestic savings (% of GDP)

Table 3: Descriptive statistics

Variable	Mean	Standard deviation	Min	Max
ROA	1.358	0.743	-2.576	3.808
ROE	12.249	7.151	-23.056	50.39
GGI	45.412	3.606	38.07	53.06
CSR	40.357	12.702	12.842	80.794
BS	23.500	1.313	20.942	26.512
CAR	15.839	10.987	0	211.47
LTD	84.858	25.228	0	162.312
NII	38.120	17.499	9.552	96
CONC	80.888	14.140	56.035	100
GDPG	2.253	4.050	-21.399	19.592
INF	3.877	10.913	-3.749	171.20
DCTPS	68.796	20.011	3.706	138.857
GDS	30.565	21.374	-21.417	75.549

The correlation matrix gives the strength and type of relationships between the variables by calculating the coefficients of linear correlations between the variables. The correlation matrix for all variables in this study is presented in the table below, Table 4.

To further validate the results in Table 4, we performed a variance inflation factor (VIF) test for multicollinearity, which measures how much the variance of estimated regression coefficients is inflated due to correlations among predictors. The VIF value of 1 indicates no correlation; values between 1 and 5 suggest moderate correlation, and values >5 indicate potentially severe multicollinearity.

Results from Table 5, for example, present the mean VIF for the first model-that is, investigating the influence of Green Growth on the profitability of banks to be around 1.60, thereby indicating no severe multicollinearity among the variables and thus showing a good moderate correlation across all values. Second, Table 5 shows the mean VIF of 1.51 for the second model, which analyzes

the effect of corporate social responsibility on bank profitability. Again, this confirms no severe multicollinearity, with moderate correlations between the variables. Finally, Table 5 presents the mean VIF value of 1.54 for the third model that probes the interaction effect of both corporate social responsibility and Green Growth on bank profitability. Thus, similar to the two previously discussed models, no severe multicollinearity would be expected, though this would show a moderate correlation between the variables.

4.2. Discussion of the Empirical Findings

4.2.1. Findings of the effect of green growth on bank performance

Testing the effect of Green Growth, as determined by the green growth index (GGI), on bank performance in the MENA area, as determined by the ROA and ROE, is the first stage of the empirical approach used in this article. The empirical results are shown in Table 6.

The results of the Sargan and serial correlation diagnostic tests indicate that the null hypothesis, which assumes the validity of over-identifying restrictions and the absence of correlation, cannot be rejected. This conclusion is supported by P-values for both the Arellano and Bond AR (2) test and the Sargan test, which exceed the 5% threshold.

From the results of Table 6, it is observed that the lagged dependent variable has significantly a positive coefficient which indicates that for both ROA and ROE profitability in this current year, bank profitability in preceding year is positively as well as highly affects.

Overall, the empirical results for the whole sample from Table 6 show a positive correlation between Green Growth and profitability as measured by ROE. For MENA banks, a rise in the

Table 4: Correlation matrix

	CSR	GGI	BS	CAR	LTD	NII	CONC	GDP	INF	DCTPS	GDS
CSR	1.0000										
GGI	0.3838*	1.0000									
	0.0000										
BS	0.2533*	0.0225	1.0000								
	0.0000	0.6430									
CAR	0.0093	-0.0817	0.2389*	1.0000							
	0.8358	0.0625	0.0000								
LTD	0.0522	0.2817*	-0.3178*	-0.0707	1.0000						
	0.2462	0.0000	0.0000	0.1080							
NII	-0.1499*	-0.237*	0.3424*	0.1506*	-0.1379*	1.0000					
	0.0008	0.0000	0.0000	0.0006	0.0018						
CONC	-0.1519*	0.1232*	0.4160*	0.2078*	-0.1114*	-0.2248*	1.0000				
	0.0007	0.0049	0.0000	0.0000	0.0113	0.0000					
GDPG	0.0106	-0.0336	0.0849	0.0385	-0.1033*	0.1112*	0.1387*	1.0000			
	0.8135	0.4454	0.0797	0.3809	0.0188	0.0118	0.0016				
INF	-0.0184	-0.0731	-0.0470	-0.0626	-0.2116*	-0.1528*	-0.1492*	-0.180*	1.0000		
	0.6824	0.0959	0.3322	0.1541	0.0000	0.0005	0.0007	0.0000			
DCTPS	0.1947*	0.4962*	-0.0956	-0.0414	0.1057*	-0.1815*	-0.1589*	-0.339*	0.0817	1.0000	
	0.0000	0.0000	0.0504	0.3533	0.0177	0.0000	0.0003	0.0000	0.0665		
GDS	-0.0343	0.1012*	0.5005*	0.1552*	0.0664	0.2601*	0.6187*	0.3394*	-0.269*	-0.2436*	1.0000
	0.4485	0.0220	0.0000	0.0004	0.1341	0.0000	0.0000	0.0000	0.0000	0.0000	

*, indicate level of significance at 5%

Table 5: Variance inflation factor (VIF)

Model 1			Model 2			Model 3		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
GDS	2.73	0.366	GDS	2.42	0.413	GDS	2.45	0.408
CONC	1.91	0.524	BS	2.13	0.468	BS	2.12	0.471
BS	1.88	0.532	CONC	1.89	0.528	CONC	1.92	0.520
GGI	1.78	0.563	LTD	1.43	0.700	LTD	1.44	0.695
DCTPS	1.56	0.640	NII	1.31	0.765	GGI*CSR	1.43	0.699
LTD	1.46	0.685	CSR	1.30	0.766	NII	1.32	0.755
NII	1.29	0.777	GDPG	1.20	0.833	DCTPS	1.26	0.796
GDPG	1.19	0.842	DCTPS	1.18	0.848	GDPG	1.20	0.834
INF	1.18	0.850	INF	1.18	0.850	INF	1.18	0.850
CAR	1.08	0.921	CAR	1.09	0.921	CAR	1.08	0.921
Mean VIF	1.60		Mean VIF	1.51		Mean VIF	1.54	

Green Growth index enhances bank profitability. Green growth and profitability improve through the creation of new revenue streams in the financing of renewable energy projects, sustainable infrastructure, and energy-efficient technologies, which are one of the fastest-growing sectors. It reduces the banks' exposure to climate-related risks, such as extreme weather events and changes in legislation, by reducing the probability of loan defaults and, by that, improving portfolio quality. Access to green financing options, such as green bonds, often comes at preferential terms, reducing funding costs and boosting profitability. Sustainable banks also have better reputations, drawing in ecologically conscious customers and investors, and regulatory incentives for green projects raise the bottom line. Improved risk management practices, market differentiation, and long-term economic resilience achieved through sustainability all come together to enhance the financial performance of banks, raising profitability. This finding is in line with the works of Ge et al. (2024) Julia and Kassim (2016). Therefore, we accept H_1 .

The findings also indicated that bank size is negatively and significantly associated with bank performance as measured by ROE. Bank size may strongly lower the level of bank

performance because of various challenges related to larger scale and complexity. In this regard, larger banks are more prone to bureaucratization, slower decision-making, and higher operational costs as a manifestation of some sort of diseconomies of scale. The higher complexity of the management of larger organizations implies coordination problems and miscommunication that further worsen performance. Large banks, which have to assume more risks in order to maintain growth, tend to have higher NPLs and be more financially unstable. Besides, they are also under stricter regulatory requirements, resulting in higher compliance costs that eat away at profitability. The perception of being "too big to fail" can create moral hazard, encouraging riskier behavior and poor decision-making. Market saturation, a decline in customer service quality, and a lack of agility in innovation exacerbate these issues, cumulatively contributing to lower efficiency, profitability, and overall bank performance. This result corroborates those generated by Hakimi et al. (2023) and Barros et al. (2007).

Results also indicate that well capitalized banks are more profitable. This result is confirmed only for ROA. Well-capitalized banks have better profitability with lower cost of capital, higher lending capacity, prudent risk management, regulatory favor,

Table 6: Results of the effect of green growth on bank profitability

Variables	(1) ROA	Variables	(2) ROE
L.ROA	0.408*** (8.37)	L.ROE	0.249*** (8.92)
GGI	0.0222 (1.23)	GGI	0.726* (2.39)
BS	-0.0403 (-0.63)	BS	-0.921* (-1.97)
CAR	0.000679* (2.42)	CAR	0.00228 (0.34)
LTD	-0.00610*** (-3.56)	LTD	-0.0116 (-0.86)
NII	-0.00298 (-1.90)	NII	-0.0246** (-2.84)
CONC	-0.00336 (-1.18)	CONC	-0.0454 (-1.18)
GDPG	0.0379*** (16.77)	GDPG	0.194*** (12.30)
INF	-0.00363* (-2.34)	INF	0.00633 (0.24)
DCTPS	-0.00473*** (-3.88)	DCTPS	-0.00329 (-0.28)
GDS	0.00237 (1.73)	GDS	0.0823*** (4.63)
_cons	2.800 (1.26)	_cons	1.101 (0.06)
AR (1)	-3.3628	AR (1)	-1.718
Prob	0.0008	Prob	0.0858
AR (2)	0.41663	AR (2)	1.124
Prob	0.6769	Prob	0.2610
Sargan test	32.7999	Sargan test	34.0217
Prob	1.0000	Prob	1.0000

***P<0.01, **P<0.05, *P<0.1

market confidence, competitive advantage, less vulnerability to economic downturn, and return of capital to shareholders. All these factors are inclusive in ensuring better financial performance and higher profitability. This finding is in line with the works of Bourke (1989), Molyneux and Thornton (1992), Goddard et al. (2004), and Mehran and Thakor (2011).

Liquidity risk is found to be negatively and significantly associated with bank profitability for both ROA and ROE. Liquidity risk is entirely adverse to bank profitability since a bank cannot easily meet its current liabilities without suffering critical losses. During liquidity stress, banks may be compelled to liquidate assets at all costs, which would lead to the incidence of huge capital losses. If a bank cannot get funding through regular channels for instance, interbank markets or customer deposits it must resort to more expensive ways of borrowing, boosting its operating costs and thus squeezing profit margins. Liquidity shortage also cuts down the bank's lending capability, hence directly influencing interest income. The continued liquidity problems may lead to a loss of investor and customer confidence, hence increasing the level of financial instability and affecting profitability negatively. In the final analysis, the higher the liquidity risk, the greater the disruption of bank operation and financial performance. This result is in line with Hakimi et al. (2023).

With greater bank diversification, profitability of banks decreases, as confirmed by both ROA and ROE. There are a number of

reasons that could explain such a result. Non-interest revenue in the current state of the diversification stage seems to positively impact bank profitability in the MENA region. At the same time, despite considerable investment in IT infrastructure to extend financial services and electronic banking services, the investments aren't fully utilized by MENA banks. On the other hand, infrastructure development costs in the IT area may be offset by returns in an imbalanced way. For this reason, the negative determinant of bank profitability is NII, standing in line with the findings provided by Hai 2021, and Githaiga 2020, concluding that diversification without adequate gain in efficiency impacts negatively on profitability.

Findings also indicate that growth economic positively and significantly affect the level of bank profitability. This result is confirmed for both ROA and ROE. The coefficient of the GDPG ratio is positive and significant at the level of 1%. Economic growth positively influences bank profitability through a number of channels. An expanding economy means that businesses and people have higher incomes, raising the demand for banking services such as loans, deposits, and investments. Higher credit demand allows banks to expand their loan portfolios, generating more interest income, one of the major sources of profitability. This result is in line with Athanasoglou et al. (2008), Calza et al. (2003), Hamdi et al. (2017), Hakimi et al. (2020).

We discovered that, in contrast to the GDP effect, bank profitability is considerably reduced by any increase in the inflation rate. Inflation compresses net interest margins, increases NPLs, and raises the cost of operation, hence lowering bank profitability. The higher the inflation, the weaker the debtors' ability to pay becomes, increasing loan defaults and hence forcing banks to increase provisions against credit losses. On the one hand, this cuts loan and investment demand and reduces the real value of banks' financial assets. Bank capital is eroded, and inflation also raises volatility in financial markets, further impairing profitability. This result corroborates the works of Revell (1979), Perry (1992), and Pasiouras and Kosmidou (2007).

The Domestic credit to the private sector was found to bear significant negative influence on the bank profitability. Domestic credit to the private sector may strongly negatively affect bank profitability because of many interlinked factors. When banks extend more credit to the private sector, there is a tendency to lower their lending standards in order to attract borrowers, increasing thereby credit risk and higher NPLs. This expansion usually leads to margin compression, since competitive pressures force banks to offer loans at lower interest rates, thus reducing net interest income. Besides, the private sector is vulnerable to economic cycles, and in case of a downturn, defaults could increase and further eat into profitability. Rapid credit growth can also lead to deterioration in asset quality, increasing the need for higher provisioning and write-offs. Increased regulatory scrutiny and related compliance costs, along with higher operational complexity and inefficiencies, further drain profitability. Finally, in saturated markets, finding creditworthy borrowers becomes difficult, which results in lower-quality loan portfolios and reduced profitability. All these factors put together would, therefore, suggest that increased domestic

credit to the private sector leads to decreased bank profitability. This result is in line with Hallak (2013).

High gross domestic savings as a percentage of GDP boost bank performance by expanding the deposit base, enhancing liquidity, and reducing reliance on costly external funding. This allows banks to increase lending, improve net interest margins, and strengthen financial stability. Higher savings also support long-term investment and economic growth, driving demand for financial services. Savings are also a source of efficient capital allocation and hence sustainable profitability, as they channel funds through formal banking institutions. These findings are consistent with the results obtained by Anila et al. (2020).

4.2.2. Findings of the effect of corporate social responsibility on bank performance

Examining the effect of corporate social responsibility on bank profitability in the MENA region is the second phase in the empirical strategy. Table 7 presents the empirical results.

Results indicate that corporate social responsibility (CSR) significantly increase bank profitability measured by ROA and ROE. The coefficient of CSR is positive and statistically significant at the level of 1% for both ROA and ROE. This result is an indication that, CSR has a positive influence on the profitability of banks, as it enhances the entity's reputation, attracts socially sensitive customers, and builds brand loyalty hence driving the revenue streams. In addition, it promotes good risk management through maintaining regulatory compliance

and adopting sustainable practices that minimize eventual fines and disruptions of operation. CSR initiatives improve employee engagement and retention, leading to high productivity with low turnover costs. Besides, banks with good CSR practices tend to attract more investors and have better access to capital on more favorable terms since they are perceived to be less risky and more sustainable. In building trust, driving innovation, and improving operational efficiency, CSR contributes to long-term profitability and a stronger competitive position in the market. This result is in line with Purwanti et al. (2024). Therefore, we accept H_2 .

For the effect of bank specifics, no significant changes with comparison to the results discussed in Table 6. Regarding industry specifics, bank concentration become significant only for ROE. It is shown that the profitability of banks in the MENA area is more susceptible to an increase in bank concentration. A concentrated banking system can negatively affect bank profitability via decreased competition, systemic risk, stricter regulation, reduced opportunities to expand and grow, dependence from customers, a reduction in the rate of innovation, reputational risk for the banks, making them more vulnerable to economic cycles. These are sure to culminate in rising costs, dwindling revenues, and overall lowered profitability. This result is in line with Li et al. (2023) and Mateev et al. (2023).

As macroeconomic conditions and financial environment, the signs and the significances of GDPG, DCTPS and GDS are similar the results discussed in Table 6. The inflation rate (INF) become non significant.

Table 7: The effect of CSR on bank profitability

Variables	(1) ROA	Variables	(2) ROE
L.ROA	0.479*** (13.71)	L.ROE	0.240*** (14.24)
CSR	0.00625*** (8.77)	CSR	0.0342*** (3.49)
BS	-0.0136 (-0.35)	BS	-1.486*** (-5.15)
CAR	0.000839** (2.81)	CAR	0.00148 (0.27)
LTD	-0.00611*** (-4.42)	LTD	-0.0338** (-2.85)
NII	-0.00437* (-2.48)	NII	-0.0423*** (-3.71)
CONC	-0.00344 (-1.31)	CONC	-0.0698* (-2.55)
GDPG	0.0377*** (14.18)	GDPG	0.126*** (5.08)
INF	-0.00249 (-1.46)	INF	0.0299 (1.30)
DCTPS	-0.00359* (-2.47)	DCTPS	0.0100 (1.29)
GDS	0.00259 (1.29)	GDS	0.125*** (8.28)
_cons	1.289 (1.77)	_cons	51.14*** (9.36)
AR (1)	-3.5111	AR (1)	-1.6913
Prob	0.0004	Prob	0.0908
AR (2)	0.42855	AR (2)	1.0469
Prob	0.6683	Prob	0.2951
Sargan test	33.6043	Sargan test	31.2224
Prob	1.0000	Prob	1.0000

***P<0.01, **P<0.05, *P<0.1. CSR: Corporate social responsibility

4.2.3. Findings of the interactional effect of green growth and corporate social responsibility on bank performance

Exploring how corporate social responsibility and Green Growth interact with bank profitability is the third phase in the empirical approach. To put it another way, we looked into whether CSR and Green Growth combine to improve bank profitability in the MENA area. Table 8 presents the empirical findings.

Results in Table 8 indicate that the interaction between corporate social responsibility and Green Growth ($GGI*CSR$) is positively and significantly associated with the level of bank profitability. Corporate Social Responsibility and Green Growth are coming together to make banks more profitable through improved reputations, attracting ecologically conscious customers, and building brand loyalty through sustainable behavior. Banks that invest in green initiatives, such as renewable energy financing or eco-friendly operations, tap into new markets and revenue streams while reducing risks associated with climate change and regulatory compliance. CSR-driven sustainability measures decrease operational costs and increase efficiency, while strong ESG performance attracts socially responsible investors and leads to a reduction in the cost of capital. Furthermore, employee engagement will be positively affected, as will stakeholder trust, creating a virtuous circle of innovation, resilience, and long-term profitability. Together, CSR and Green Growth align financial success with environmental and social responsibility, ensuring sustainable growth in a competitive and evolving market. This result is in line with Zhou et al. (2021) and Wu et al. (2024). Therefore, we accept H_3 .

Table 8: The interactional effect of green growth and CSR on bank profitability

Variables	(1) ROA	Variables	(2) ROE
L.ROA	0.452*** (11.51)	L.ROE	0.249*** (10.52)
GGI*CSR	0.000121*** (5.45)	GGI*CSR	0.000543* (2.52)
BS	-0.0733 (-1.44)	BS	-1.346*** (-4.16)
CAR	0.000794* (2.55)	CAR	0.00167 (0.30)
LTD	-0.00620*** (-4.80)	LTD	-0.0287* (-2.40)
NII	-0.00520*** (-3.86)	NII	-0.0351** (-2.89)
CONC	-0.00177 (-0.71)	CONC	-0.0374 (-1.09)
GDPG	0.0365*** (14.56)	GDPG	0.126*** (4.65)
INF	-0.00207 (-1.28)	INF	0.0408 (1.85)
DCTPS	-0.00252 (-1.65)	DCTPS	0.00773 (1.05)
GDS	0.00284 (1.62)	GDS	0.108*** (5.93)
_cons	2.528* (2.52)	_cons	44.66*** (5.24)
AR (1)	-3.5149	AR (1)	-1.7266
Prob	0.0004	Prob	0.0842
AR (2)	0.30101	AR (2)	1.0567
Prob	0.7634	Prob	0.2906
Sargan test	28.8385	Sargan test	28.1184
Prob	1.0000	Prob	1.0000

***P<0.01, **P<0.05, *P<0.1

Regarding the effects of bank-specific factors, industry characteristics, and macroeconomic conditions, there are no significant changes compared to the results presented in Table 6.

5. CONCLUSION

The paper tries to investigate the relationship between Green Growth, corporate social responsibility and bank profitability measured by return on assets (ROA) and return on equity (ROE). The empirical estimation based on the SGMM has used data from 40 conventional banks over the period 2010-2022. The empirical findings derived through the estimation show that, across the full sample, bank profitability is positively associated with Green Growth. Furthermore, more CSR practices are found to enhance bank profitability. Moreover, the interaction between corporate social responsibility and Green Growth further improves bank profitability in the MENA region.

These findings do also bear some critical policy implications for sustainable finance development in the MENA region. First, policymakers should lean toward the creation of robust regulatory frameworks which create incentives for green investments and make banks integrate ESG into their operations. The effort could also range from creating tax incentives on green financing, disclosure about climate change risks, and even creation of regional variation of green banking standards. This involves pursuit of governments and financial regulators' collaboration in

the MENA region for increasing awareness and raising financial literacy in respect to sustainable finance on the part of banks, businesses, and consumers in creating market demand for green products and services. Thirdly, develop public-private partnerships for green infrastructure financing where it will lead banks into diversification in portfolios and thus also be helpful towards the SDG goals. Policymakers should also encourage banks to adopt CSR initiatives that are in line with green growth objectives, as these could improve reputational capital and long-term profitability. Finally, regional cooperation through organizations like the Arab Monetary Fund could facilitate knowledge sharing, capacity building, and the harmonization of sustainable finance policies across MENA countries, ensuring a cohesive approach to addressing climate risks and promoting economic resilience. The package of measures underlines how the development of the financial sector should be aligned with environmental sustainability for inclusive and sustainable growth in the MENA region.

However, there are a few limitations to this study. First, considering that ESG-related disclosures and green financing metrics are at their nascent stage in the MENA region, the research might be constrained by data availability and hence limit the depth of the empirical analysis. Second, though focusing on the MENA region is really valuable, generalizing the findings to other regions with different economic, regulatory, and environmental contexts might be a limitation. Third, this study may not capture the long-term dynamics in the relationship between green growth, CSR, and bank profitability because most of these variables take time to manifest and may be affected by external factors like global economic changes or technological changes.

These limitations can be overcome by future research with the scope of expanding the domain of study to cover cross-regional comparisons that can provide insight into how synergies between green growth, CSR, and bank profitability are influenced by different regulatory and economic environments. Longitudinal studies could also be carried out to assess temporal dynamics. More might be done, for instance, on how technological innovation in general, and the fintech or blockchain variety, could contribute to sustainable finance. These are just areas that will definitely add to the literature in sustainable finance and lead to better policy interventions whenever they are filled.

REFERENCES

- Abreu, M., Mendes, V. (2001), Commercial bank interest margins and profitability: Evidence for some EU countries. In: Pan-European Conference Jointly Organised by the IEFIS-UK and University of Macedonia Economic and Social Sciences, Thessaloniki, Greece. Vol. 34. p17-20).
- Acosta, L.A., Maharjan, P., Peyriere, H.M., Mamiit, R.J. (2020), Natural capital protection indicators: Measuring performance in achieving the sustainable development goals for green growth transition. *Environmental and Sustainability Indicators*, 8, 100069.
- Agle, B.R., Mitchell, R.K., Sonnenfeld, J.A. (1999), Who matters to ceos? An investigation of stakeholder attributes and salience, corporate performance, and Ceo values. *Academy of Management Journal*, 42(5), 507-525.
- Anginer, D., Demircuc-Kunt, A., Huizinga, H., Ma, K. (2018), Corporate

- governance of banks and financial stability. *Journal of Financial Economics*, 130(2), 327-346.
- Anila, C., Francis, K.M., Sabu, P.J. (2020), An analysis of the close nexus between savings, investment and gross domestic product in India. *Journal of Emerging Technologies and Innovative Research*, 7(4), 1659-1663.
- Asfahaliza, A.N.P., Anggraeni, P.W. (2022), Pengaruh Penerapan Green Banking Terhadap Profitabilitas Perbankan di Indonesia Periode 2016-2021. *Contemporary Studies in Economic, Finance and Banking*, 1(2), 298-311.
- Athanasoglou, P.P., Brissimis, S., Delis, M. (2008), Bank-specific. Industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money* 18(2), 121-136.
- Barney, J., Wright, M., Ketchen, D.J. Jr. (2001), The resource-based view of the firm: Ten years after 1991. *Journal of Management*, 27(6), 625-641.
- Barros, C.P., Ferreira, C., Willians, J. (2007), Analysing the determinants of performance of best and worst European banks: A mixed logit approach. *Journal of Banking and Finance*, 31, 2189-2203.
- Birindelli, G., Palea, V. (2023), To green or not to green? How CSR mechanisms at the governance level affect the likelihood of banks pursuing green product strategies. *Corporate Governance: The International Journal of Business in Society*, 23(1), 219-242.
- Blundell, R., Bond, S. (1998), Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143.
- Boubakri, N., Guedhami, O., Kwok, C.C., Wang, H.H. (2019), Is privatization a socially responsible reform? *Journal of Corporate Finance*, 56, 129-151.
- Bourke, P. (1989), Concentration and other determinants of bank profitability in Europe. North America and Australia. *Journal of Banking and Finance*, 13, 65-79.
- Boussaada, R., Hakimi, A., Karmani, M. (2023), Non-performing loans and bank performance: What role does corporate social responsibility play? A system GMM analysis for European banks. *Journal of Applied Accounting Research*, 24(5), 859-888.
- Calza, A., Gartner, C., Sousa, J. (2003), Modelling the demand for loans to the private sector in the euro area. *Applied Economics*, 35, 107-117.
- Carroll, A.B. (1999), Corporate social responsibility: Evolution of a definitional construct. *Business and Society*, 38(3), 268-295.
- Danisman, G.O., Tarazi, A. (2020), Financial inclusion and bank stability: Evidence from Europe. *The European Journal of Finance*, 26(18), 1842-1855.
- Dimson, E., Karakas, O., Li, X. (2015), Active ownership. *The Review of Financial Studies*, 28(12), 3225-3268.
- Flammer, C. (2021), Corporate green bonds. *Journal of Financial Economics*, 142(2), 499-516.
- Freeman, R.E., Harrison, J.S., Zyglidopoulos, S. (2018), *Stakeholder Theory: Concepts and Strategies*. Cambridge: Cambridge University Press.
- Freeman, R.E., Phillips, R.A. (2002), Stakeholder theory: A libertarian defense. *Business Ethics Quarterly*, 12(3), 331-349.
- Friede, G., Busch, T., Bassen, A. (2015), ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance and Investment*, 5(4), 210-233.
- Ge, S., Luo, X., Li, Y., Zheng, L. (2024), The impact of green credit policy on total factor productivity of enterprises. *International Review of Economics and Finance*, 95, 103480.
- Githaiga, P.N. (2020), Human capital, income diversification and bank performance-an empirical study of East African banks. *Asian Journal of Accounting Research*, 6(1), 95-108.
- Goddard, J., Molyneux, P., Wilson, J.O. (2004), The profitability of European banks: A cross-sectional and dynamic panel analysis. *The Manchester School*, 72(3), 363-381.
- Hai, T. (2021), Diversification and Bank performance: The case of Vietnamese commercial banks, *Journal of Economic and Banking Studies*, 1(1), 23-34.
- Hakimi, A., Boussaada, R., Hamdi, H. (2020), The interactional relationships between credit risk, liquidity risk and bank profitability in MENA region. *Global Business Review*, 23, 1-23.
- Hakimi, A., Hamdi, H., Khemiri, M.A. (2023), Banking in the MENA region: The pro-active role of financial and economic freedom. *Journal of Policy Modeling*, 45, 1058-1076.
- Hallak, I. (2013), Private sector share of external debt and financial stability: Evidence from bank loans. *Journal of International Money and Finance*, 32, 17-41.
- Hamdi, H., Hakimi, A., Zaghdoudi, K. (2017), Diversification, bank performance and risk: Have Tunisian banks adopted the new business model? *Financial Innovation*, 3, 22.
- Jain, P., Sharma, B.K. (2023), Impact of green banking practices on sustainable environmental performance and profitability of private sector banks. *International Journal of Social Ecology and Sustainable Development*, 14(1), 1-19.
- Julia, T., Kassim, S. (2016), Green financing and bank profitability: Empirical evidence from the banking sector in Bangladesh. *Al-Shajarah: Journal of the International Institute of Islamic Thought and Civilization (ISTAC)*, 21(3), 307-330.
- Khan, S.A.R., Zia-Ul-Haq, H.M., Umar, M., Yu, Z. (2021), Digital technology and circular economy practices: An strategy to improve organizational performance. *Business Strategy and Development*, 4(4), 482-490.
- Li, L., Gao, W., Gu, W. (2023), Fintech, bank concentration and commercial bank profitability: Evidence from Chinese urban commercial banks. *Finance Research Letters*, 57, 104234.
- Liu, Y., Saleem, S., Shabbir, R., Shabbir, M.S., Irshad, A., Khan, S. (2021), The relationship between corporate social responsibility and financial performance: A moderate role of fintech technology. *Environmental Science and Pollution Research*, 28, 20174-20187.
- Mahmuda, N.A., Mukhtadir-Al-Mukit, D. (2023), Corporate social responsibility disclosures and profitability of Islamic banks: An empirical study. *Social Responsibility Journal*, 19(6), 1142-1160.
- Mateev, M., Usman Tariq, M., Sahyouni, A. (2023), Efficiency, market concentration and bank performance during the COVID-19 outbreak: Evidence from the MENA region. *PLoS One*, 18(5), e0285403.
- McWilliams, A., Siegel, D. (2001), Corporate social responsibility: A theory of the firm perspective. *Academy of Management Review*, 26(1), 117-127.
- Mehran, H., Thakor A.V. (2011), Bank capital and value in the cross-section. *Review of Financial Studies*, 24(4), 1019-1067.
- Molyneux, P., Thornton, J. (1992), Determinants of European bank profitability: A note. *Journal of Banking and Finance*, 16(6), 1173-1178.
- Norocel, I.I., Vierescu, E.M. (2024), The relationship between environmental, social and governance factors, economic growth, and banking activity. *Journal of Risk and Financial Management*, 17(7), 285.
- Ozili, P.K., Ndah, H. (2024), Impact of financial development on bank profitability. *Journal of Economic and Administrative Sciences*, 40(2), 238-262.
- Pasiouras, F., Kosmidou, K. (2007), Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, 21(2), 222-237.
- Perry, P. (1992), Do banks gain or lose from inflation? *Journal of Retail Banking*, 14, 25-30.
- Purwanti, A., Melinasari, S., Nurhanimah, N. (2024), The role of CSR in improving corporate image and financial performance in the banking

- industry. *Nomico*, 1(8), 37-53.
- Putri, P.I., Rahayu, K.N., Rahmayani, D., Siregar, M.E.S. (2022), The effect of green banking and financial performance on banking profitability. *Calitatea*, 23(191), 38-44.
- Rabea'Hadi, M., Hasan, M.F., Flayyih, H.H., Hussein, M.K. (2023), Green banking: A literature review on profitability and sustainability implications. *Ishtar Journal of Economics and Business Studies*, 4(2), 1-6.
- Rachman, A.A. (2021), Green banking and profitability (Banks registered on the sri-kehati index in Indonesia stock exchange 2015-2019). *Turkish Journal of Computer and Mathematics Education*, 12(8), 473-486.
- Revell, J. (1979), *Inflation and Financial Institutions*. London: Financial Times.
- Saadaoui, A., Ben Salah, O. (2023), The moderating effect of financial stability on the CSR and bank performance. *EuroMed Journal of Business*, 18(4), 621-642.
- Saeed, A., Sroufe, R. (2021), Performance, risk, and cost of capital: Trends and opportunities for future CSR research. *Journal of Risk and Financial Management*, 14(12), 586.
- Scholtens, B. (2009), Corporate social responsibility in the international banking industry. *Journal of Business Ethics*, 86(2), 159-175.
- Sholikudin, M., Hwihanus, H. (2024), Is bank financial performance affected by corporate social responsibility? A meta-analysis. *Jurnal Riset Akuntansi*, 2(3), 53-63.
- Taghizadeh-Hesary, F., Yoshino, N. (2020), Sustainable solutions for green financing and investment in renewable energy projects. *Energies*, 13(4), 788.
- Teixeira, A.A., Queir Os, A.S. (2016), Economic growth, human capital and structural change: A dynamic panel data analysis. *Research Policy*, 45, 1636-1648.
- Tran, Q.T., Vo, T.D., Le, X.T. (2021), Relationship between profitability and corporate social responsibility disclosure: Evidence from Vietnamese listed banks. *The Journal of Asian Finance, Economics and Business*, 8(3), 875-883.
- Uddin, M.N., Rashid, M.H.U., Rahman, M.T. (2022), Profitability, marketability, and CSR disclosure efficiency of the banking industry in Bangladesh. *Heliyon*, 8(11), e11904.
- Weber, O. (2017), Corporate sustainability and financial performance of Chinese banks. *Sustainability Accounting, Management and Policy Journal*, 8(3), 358-385.
- Wu, H., Luo, S., Li, S., Xue, Y., Hao, Y. (2024), Fostering urban inclusive green growth: Does corporate social responsibility (CSR) matter? *Journal of Business Ethics*, 189(4), 677-698.
- Zhou, G., Sun, Y., Luo, S., Liao, J. (2021), Corporate social responsibility and bank financial performance in China: The moderating role of green credit. *Energy Economics*, 97, 105190.