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**Essays on the Impact of
Competition on Efficiency,
Profitability, Stability, and
Corporate Social Responsibility
in Banks in the MENA Region**

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INDEX

| | |
|---|-----------|
| ACKNOWLEDGMENTS | 5 |
| INDEX OF TABLES | 11 |
| INDEX OF FIGURES | 13 |
| ACRONYMS & ABBREVIATIONS | 15 |
| RESUMO | 21 |
| RESUMEN | 23 |
| ABSTRACT | 25 |
| RESUMO EXTENSO | 29 |
| RESUMEN EXTENDIDO | 39 |
| | |
| INTRODUCTION | 53 |
| A. INVESTIGATION BACKGROUND AND JUSTIFICATION | 53 |
| A.1. Motivation of the study | 54 |
| B. OBJECTIVES | 58 |
| C. METHODOLOGY | 59 |
| C.1. Methodology of Chapter One..... | 59 |
| C.2. Methodology of Chapter Two | 59 |
| C.3. Methodology of Chapter Three | 60 |
| D. STRUCTURE | 60 |
| D.1. Structure of Chapter One | 60 |
| D.2. Structure of Chapter Two..... | 60 |
| D.3. Structure of Chapter Three..... | 61 |
| | |
| 1. MARKET STRUCTURE AND TECHNICAL EFFICIENCY OF BANKS IN THE MENA REGION | 65 |
| ABSTRACT | 65 |
| 1.1 INTRODUCTION | 65 |
| 1.2 LITERATURE REVIEW | 67 |

| | |
|--|-----------|
| 1.2.1 Theoretical Literature Review | 68 |
| 1.2.2. Empirical Literature Review | 69 |
| 1.3 METHODOLOGY AND DATA | 70 |
| 1.3.1 Dependent variable: Banking efficiency | 70 |
| 1.3.2 Independent variables: market structure - the HHI and the LI | 72 |
| 1.3.3 Control variables | 74 |
| 1.3.4 The relationship between market structure and efficiency | 75 |
| 1.3.5 Data | 75 |
| 1.4 EMPIRICAL RESULTS AND DISCUSSION | 79 |
| 1.4.1 Simar and Wilson model for banking efficiency | 79 |
| 1.4.2 Robustness analysis | 82 |
| 1.4.3 Granger causality analysis between competition and efficiency | 87 |
| 1.5 CONCLUSION | 89 |
| 2. COMPETITION’S IMPACT ON BANK PROFITABILITY AND STABILITY IN THE MENA REGION | 93 |
| ABSTRACT | 93 |
| 2.1 INTRODUCTION | 94 |
| 2.2 LITERATURE REVIEW AND RESEARCH HYPOTHESIS | 96 |
| 2.2.1 Theoretical Literature Review | 96 |
| 2.2.2 Empirical Literature Review | 97 |
| 2.2.3 Link between business model (Islamic versus conventional), geographical characteristics (GCC versus non-GCC), and bank profitability and stability | 101 |
| 2.3 METHODOLOGY AND DATA | 103 |
| 2.3.1 Dependent variables | 105 |
| 2.3.1.1 Bank profitability | 105 |
| 2.3.1.2 Bank stability | 106 |
| 2.3.2 Independent variables | 107 |
| 2.3.2.1 Lerner index | 107 |
| 2.3.2.2 Moderating variables | 108 |
| 2.3.2.3 Control variables | 108 |
| 2.3.4 Empirical model and estimation method | 110 |
| 2.3.5 Data | 111 |
| 2.4 EMPIRICAL RESULTS AND DISCUSSION | 115 |
| 2.4.1 Moderating effects | 122 |
| 2.4.2 Robustness analysis | 126 |
| 2.5 CONCLUSION | 129 |

| | |
|---|------------|
| 3. THE IMPACT OF COMPETITION ON CORPORATE ENVIRONMENTAL AND SOCIAL PERFORMANCE IN THE MENA BANKING SECTOR | 135 |
| ABSTRACT | 135 |
| 3.1 INTRODUCTION | 136 |
| 3.2 LITERATURE REVIEW AND RESEARCH HYPOTHESIS..... | 140 |
| 3.2.1 Competition and CSR..... | 140 |
| 3.2.3 The link between BGD, the institutional environment, the business model (Islamic versus conventional), state versus private ownership, and CSR..... | 141 |
| 3.3 METHODOLOGY | 144 |
| 3.3.1 Data | 144 |
| 3.3.2 Empirical methodology..... | 145 |
| 3.3.2.1 Baseline model..... | 145 |
| 3.3.2.2 Moderating effects | 146 |
| 3.4 EMPIRICAL RESULTS..... | 147 |
| 3.4.1 Descriptive statistics..... | 147 |
| 3.4.2 Empirical results and discussion | 149 |
| 3.4.3 Robustness..... | 153 |
| 3.4.4 Moderating effects..... | 156 |
| 3.4.5 Additional analysis..... | 159 |
| 3.5 CONCLUSION | 163 |
| 4. CONCLUSION, LIMITATIONS AND FUTURE RESEARCH STUDIES..... | 169 |
| 4.1 CONCLUSIONS..... | 169 |
| 4.1.1 Conclusion of Chapter One:..... | 169 |
| 4.1.2 Conclusion of Chapter Two:..... | 171 |
| 4.1.3 Conclusion of Chapter Three: | 174 |
| REFERENCES | 177 |

INDEX OF TABLES

| | |
|--|-----|
| Table 1: Descriptive statistics of study variables..... | 77 |
| Table 2: Mean of variables year-wise | 78 |
| Table 3: Results of truncated regressions of market structure on banking efficiency using Simar and Wilsons Algorithm II (2011-2020)..... | 83 |
| Table 4: Results of GMM regressions of relation between market structure and banking efficiency (2011-2020)..... | 84 |
| Table 5: Results of year fixed effects regressions of relation between market structure and banking efficiency (2011-2020)..... | 85 |
| Table 6: Results of truncated regressions of market structure on banking efficiency: advanced and less advanced countries..... | 86 |
| Table 7: The null hypothesis of the contrast is competition is not a Granger-cause of cost efficiency | 87 |
| Table 8: The null hypothesis of the contrast is cost efficiency is not a Granger-cause of competition | 87 |
| Table 9: Main studies that examined the connection between competition and bank profitability | 98 |
| Table 10: Main studies that examined the connection between competition and bank stability | 99 |
| Table 11: Variable explanations | 104 |
| Table 12: Sample distribution | 112 |
| Table 13: Descriptive statistics of the study variables..... | 114 |
| Table 14: Mean of variables year-wise | 115 |
| Table 15: System GMM estimation of the relationship between market power, bank profitability, and financial stability..... | 118 |

| | |
|---|-----|
| Table 16: System GMM estimation of the quadratic relationship between market power, bank profitability, and financial stability..... | 120 |
| Table 17: Moderating role of the Islamic model and operating in a GCC country on the relationship between market power, bank profitability, and financial stability..... | 122 |
| Table 18: Relationship between market power, bank profitability, and financial stability (Islamic-conventional and GCC-non-GCC subsamples) | 127 |
| Table 19: Descriptive statistics of the study variables..... | 148 |
| Table 20: OLS estimation of environmental and social performance | 152 |
| Table 21: Robustness: truncated regression and OLS | 154 |
| Table 22: Two-Stage Least Squares Regression (2SLS) | 155 |
| Table 23: OLS regression: Moderating variables | 158 |
| Table 24: Impact of ESG on banks profitability and stability..... | 160 |
| Table 25: Hypotheses of Chapter 1 and the findings..... | 169 |
| Table 26: Hypotheses of Chapter 2 and the findings..... | 171 |
| Table 27: Hypotheses of Chapter 3 and the findings..... | 174 |

INDEX OF FIGURES

| | |
|--|-----|
| Figure 1: Relationship between banking efficiency and competition indices: predictive margins..... | 80 |
| Figure 2: Conceptual model | 103 |
| Figure 3: Evolution of the main variables | 112 |
| Figure 4: Nonlinear relationship between market power and banking profitability, solvency, and credit risk..... | 121 |
| Figure 5: Interactive effect of the Islamic model and market power on bank profitability and financial stability..... | 124 |
| Figure 6: Interactive effect of operating in a GCC country and market power on bank profitability and financial stability..... | 125 |
| Figure 7: Conceptual model | 147 |

ACRONYMOS & ABBREVIATIONS

| | |
|------------|---|
| 2SLS: | Two-Stage Least Squares Regression |
| ADL: | Autoregressive Distributed Lags |
| ASEAN: | Association of Southeast Asian Nations |
| ATMs: | Automated Teller Machines |
| BCC: | Banker, Charnes, and Cooper |
| BGD: | Board Gender Diversity |
| Boone: | Boone indicator |
| BRICS: | Brazil, Russia, India, China and South Africa |
| BSH: | Banking Specificities Hypothesis |
| CBBs: | Commercial Bank Branches |
| CBs: | Conventional Banks |
| CCR: | Charnes, Cooper & Rhode |
| CE: | Cost Efficiency |
| CG: | Corporate Governance |
| CR: | Concentration Ratio |
| CRS: | Constant Returns to Scale |
| CSR: | Corporate Social Responsibility |
| DEA: | Data Envelopment Analysis |
| DMU: | Decision Making Unit |
| EA Lerner: | Efficiency-Adjusted Lerner index |
| ECB: | European Central Bank |
| EF: | Economic Freedom |
| EMEA: | Europe, Middle East, and Africa |
| ENV: | Environmental pillar |

| | |
|----------|---|
| ESG: | Environmental, Social, and Governance |
| EU: | European Union |
| FE: | Fixed Effect |
| FI: | Finance Initiative |
| G30: | Group of Thirty |
| GCC: | Gulf Cooperation Council |
| GDP: | Gross Domestic Product |
| GFDD: | Global Financial Development Database |
| GLM: | Generalized Linear Model |
| GLS: | Generalized Least Square |
| GMM: | Generalized Method of Moments |
| H: | Panzar-Rosse-H-statistic |
| HHI: | Herfindahl-Harshman Index |
| HSBC: | Hongkong and Shanghai Banking Corporation |
| IBs: | Islamic Banks |
| IFRS: | International Financial Reporting Standards |
| IFSB: | Islamic Financial Services Board |
| IMF: | International Monetary Fund |
| ISL: | Islamic |
| KOFSOC: | Social Globalisation |
| LI: | Lerner Index |
| LLP: | Loan Loss Provision |
| LLR: | Loan Loss Reserve |
| LNA: | Bank size |
| LnAGE: | Logarithm Bank Age |
| LnAsset: | Logarithm Bank Size |
| LS: | Least Squares |
| Max: | Maximum |
| MC: | Marginal Cost |

| | |
|-----------|---------------------------------------|
| MENA: | Middle Eastern and North African |
| MENAT: | Middle East, North Africa, and Turkey |
| Min: | Minimum |
| ML: | Maximum Likelihood |
| NIM: | Net Interest Margin |
| NPLs: | Non-Performing Loans |
| Obs.: | Observations |
| OLS: | Ordinary Least Squares |
| PBT: | Profit Before Tax to Average Assets |
| QLH: | Quiet Life Hypothesis |
| ROA: | Return on Assets |
| ROAA: | Net Income to Average Assets |
| ROAE: | Net Income to Average Equity |
| ROE: | Return on Equity |
| SCP: | Structure-Conduct-Performance |
| SFA: | Stochastic Frontier Analysis |
| SOC: | Social pillar |
| STA: | State-owned |
| Std. Dev: | Standard Deviation |
| TCF: | Trans-log Cost Function |
| U.S.: | United States |
| UNEP: | United Nations Principles |
| USA: | United States |
| VRS: | Variable Returns to Scale |
| WGI: | Worldwide Governance Indicators |
| WLS: | Weighted Least Squares |

RESUMO / RESUMEN / ABSTRACT

RESUMO

Esta tese investiga tres temas importantes que contribúen ao exame e análise da influencia da competencia na eficiencia bancaria, a rendibilidade, a estabilidade e o desempeño ambiental e social dos bancos que operan na rexión de Oriente Medio e Norte de África (MENA, polas súas siglas en inglés). No capítulo 1, realizamos un estudo empírico para avaliar o impacto da estrutura do mercado e outros determinantes na eficiencia técnica dos bancos dos países de MENA. O capítulo 2 analiza a influencia da competencia e doutros factores na rendibilidade e estabilidade dos bancos nos países de MENA. Finalmente, o capítulo 3 examina empíricamente o efecto da competencia e outros determinantes sobre o desempeño ambiental e social dos bancos dos países de MENA. A nosa tese consta de tres capítulos que varían en enfoques metodolóxicos, técnicas de análise e resultados. Non obstante, estes capítulos demostran a coherencia temática ao examinar como a competencia afecta a eficiencia técnica, a rendibilidade, a estabilidade e a responsabilidade social corporativa (CSR, polas súas siglas en inglés) dos bancos da rexión MENA.

Os resultados indican que a concentración afecta positivamente á eficiencia, o que refuta a hipótese da vida tranquila (QLH). O poder de mercado inflúe negativamente na eficiencia, apoiando a QLH. No que respecta ao efecto combinado de ambas variables, a coexistencia dunha maior concentración e poder de mercado aumenta a eficiencia bancaria, apoiando a hipótese das Especificidades Bancarias (BSH).

Ademais, os resultados empíricos suxiren que o impacto da competencia bancaria na estabilidade pode variar dependendo da medida de estabilidade utilizada. Aínda que un aumento do poder de mercado pode levar a unha maior rendibilidade e solvencia bancaria, apoiando así a teoría da fragilidade da competencia, tamén podería producir un elevado risco de crédito, proporcionando así evidencias de apoio á hipótese da estabilidade da competencia, que indican que estes puntos de vista non son mutuamente excluíntes, senon que poden coexistir dentro do sistema bancario.

O último capítulo revela que o aumento da competencia entre os bancos está asociado a maiores niveis de rendemento ambiental e social. Isto indica que cando as entidades financeiras se ven obrigadas a competir por clientes, é máis probable que prioricen as iniciativas de Responsabilidade Social Corporativa (CSR). Isto concorda coa Teoría das partes interesadas, que suxire que a competencia obriga aos bancos a intensificar as iniciativas ambientais e sociais para gañar a confianza das partes interesadas.

Palabras clave: Países MENA, Competencia bancaria, Poder de mercado, Concentración do mercado, Eficiencia bancaria, DEA, Rendibilidade bancaria, Estabilidade bancaria, Responsabilidade social corporativa, Desempeño ambiental, Desempeño social.

RESUMEN

Esta tesis investiga tres temas importantes que contribuyen al examen y análisis de la influencia de la competencia en la eficiencia, la rentabilidad, la estabilidad y los resultados medioambientales y sociales de los bancos que operan en la región de Oriente Medio y Norte de África (MENA, por sus siglas en inglés). En el Capítulo 1, se realiza un estudio empírico para evaluar el impacto de la estructura del mercado y otros determinantes en la eficiencia técnica de los bancos de los países MENA. El Capítulo 2 analiza la influencia de la competencia y otros factores sobre la rentabilidad y la estabilidad de los bancos en los países MENA. Por último, el Capítulo 3 examina empíricamente el efecto de la competencia y otros factores determinantes sobre los resultados medioambientales y sociales de los bancos en los países MENA. Nuestra tesis consta de tres capítulos que varían en cuanto a enfoques metodológicos, técnicas de análisis y conclusiones. Sin embargo, estos capítulos demuestran coherencia temática al examinar cómo la competencia afecta a la eficiencia técnica, la rentabilidad, la estabilidad y la responsabilidad social corporativa (CSR, por sus siglas en inglés) de los bancos en la región MENA.

Los resultados indican que la concentración afecta positivamente a la eficiencia, lo que refuta la hipótesis de la vida tranquila (QLH). El poder de mercado influye negativamente en la eficiencia, lo que apoya la QLH. En cuanto al efecto combinado de ambas variables, la coexistencia de una mayor concentración y poder de mercado aumenta la eficiencia bancaria, lo que apoya la hipótesis de las especificidades bancarias (BSH).

Además, los resultados empíricos sugieren que el impacto de la competencia bancaria sobre la estabilidad puede variar en función de la medida de estabilidad utilizada. Mientras que un aumento del poder de mercado puede conducir a una mayor rentabilidad y solvencia de los bancos, apoyando así la teoría de la competencia-fragilidad, también podría resultar en un elevado riesgo de crédito, proporcionando así pruebas de apoyo a la hipótesis de la competencia-estabilidad, indicando que estos puntos de vista no son mutuamente excluyentes, sino que pueden coexistir dentro del sistema bancario.

El último capítulo revela que el aumento de la competencia entre bancos está asociado a niveles más altos de rendimiento medioambiental y social. Esto indica que cuando las instituciones financieras se ven obligadas a competir por los clientes, es más probable que den prioridad a las iniciativas de CSR. Esto concuerda con la teoría de las partes interesadas, que sugiere que la competencia obliga a los bancos a intensificar las iniciativas medioambientales y sociales para ganarse la confianza de las partes interesadas.

Palabras clave: Países MENA, Competencia Bancaria, Poder de Mercado, Concentración de Mercado, Eficiencia Bancaria, DEA, Rentabilidad Bancaria, Estabilidad Bancaria, Responsabilidad Social Corporativa, Desempeño Ambiental, Desempeño Social.

ABSTRACT

This thesis investigates three important topics that contribute to the examination and analysis of the influence of competition on bank efficiency, profitability, stability, and environmental and social performance of banks operating in the Middle Eastern and North African (MENA) region. In Chapter 1, we conduct an empirical study to assess the impact of market structure and other determinants on the technical efficiency of banks in MENA countries. Chapter 2 analyzes the influence of competition and other factors on bank profitability and stability in the MENA countries. Finally, Chapter 3 empirically examines the effect of competition and other determinants on the environmental and social performance of banks in the MENA nations. Our thesis comprises three chapters that vary in methodological approaches, analysis techniques, and findings. However, these chapters demonstrate thematic coherence by examining how competition affects the technical efficiency, profitability, stability, and corporate social responsibility (CSR) of banks in the MENA region.

The results indicate that the concentration positively affects efficiency, which refutes the Quiet Life hypothesis (QLH). Market power negatively influences efficiency, thus supporting QLH. With regard to the combined effect of both variables, the coexistence of higher concentration and market power increases bank efficiency, supporting the Banking Specificities hypothesis (BSH).

Furthermore, the empirical findings suggest that the impact of bank competition on stability can vary depending on the measure of stability used. While an increase in market power may lead to higher bank profitability and solvency, thus supporting the competition-fragility theory, it could also result in elevated credit risk, thus providing supportive evidence for the competition-stability hypothesis, indicating that these viewpoints are not mutually exclusive but can coexist within the banking system.

The last chapter reveals that increased competition among banks is associated with higher levels of environmental and social performance. This indicates that when financial institutions are forced to compete for customers, they are more likely to prioritize CSR initiatives. This agrees with the Stakeholder Theory, which suggests that competition compels banks to intensify environmental and social initiatives to gain stakeholder confidence.

Keywords: MENA Countries, Bank Competition, Market Power, Market Concentration, Bank Efficiency, DEA, Bank Profitability, Bank Stability, Corporate Social Responsibility, Environmental Performance, Social Performance.

RESUMO EXTENSO RESUMEN EXTENDIDO

RESUMO EXTENSO

Capítulo 1 : Este estudo explora a influencia da estrutura do mercado na eficiencia técnica dos bancos na rexión MENA. Desde a década de 1990, os países de MENA levaron a cabo políticas de desregulación bancaria co obxectivo de aumentar a competencia (Zoghلامي & Bouchemia, 2021). Ao mesmo tempo, a intensa competencia nos mercados financeiros fai da eficiencia unha prioridade tanto para os profesionais como para os reguladores (Fiordelisi et al., 2011). A literatura empírica e teórica mostra que a estrutura do mercado ten efectos controvertidos sobre a eficiencia do sistema bancario. A hipótese da vida tranquila (QLH) revela unha conexión positiva entre a competencia e a eficiencia bancaria (Hicks, 1935), mentres que a hipótese das especificidades bancarias (BSH) implica que máis competencia entre os bancos é prexudicial para a eficiencia (Pruteanu-Podpiera et al., 2008). Ademais, os estudos analizan por separado os vínculos entre poder de mercado, concentración e eficiencia. Só algúns artigos analizan a influencia conxunta do poder de mercado e a concentración na eficiencia bancaria, aínda que utilizan varios métodos para medir a concentración e a competencia (p. ex. Attia e Alber 2022; Chan et al., 2015; Otero-González et al., 2020; Thi My Phan et al., 2016). A influencia da estrutura do mercado na eficiencia aínda non recibiu moita atención na literatura e atopáronse probas mixtas ou inconclusas. A maioría dos estudos ata o momento centráronse nos sectores bancarios dos países desenvolvidos, especialmente dentro da UE e dos EE. UU., e só uns poucos nos países en desenvolvemento, como as economías de Oriente Medio e Norte de África, como as economías de MENA. É de especial interese aquí o ambiente inestable nalgúns países con diferentes niveis de desenvolvemento social e tecnolóxico. Todas estas características considéranse áreas atractivas para a investigación na rexión MENA. A partir da revisión bibliográfica elaborouse a seguinte hipótese de investigación:

- H1: A estrutura do mercado bancario afecta a eficiencia técnica na rexión MENA.

A hipótese pódese dividir ademais en dúas hipóteses separadas, como se indica a continuación:

- H1a: O poder do mercado bancario afecta positivamente a eficiencia técnica na rexión MENA.
- H1b: A concentración bancaria afecta positivamente a eficiencia técnica na rexión MENA.

Dado que tanto o poder de mercado como a concentración bancaria poden influír positivamente, de xeito individual, na eficiencia técnica, supoñemos que o seu efecto combinado tamén pode ser positivo.

- H2: A influencia conxunta do poder de mercado e a concentración bancaria afecta positivamente a eficiencia técnica na rexión MENA.

A eficiencia bancaria obtense mediante o Data Envelopment Analysis (DEA) e o poder do mercado bancario está representado polo índice de Lerner (LI) a nivel bancario, un enfoque non estrutural. Dada a relevancia da concentración do mercado e o número de competidores en canto á competencia, o índice de Herfindahl-Harshman (HHI, polas súas siglas en inglés), un enfoque estrutural, tamén se utiliza como variable independente. Ademais, o efecto sobre a eficiencia bancaria de características específicas dos bancos (tamaño, rendibilidade, risco de liquidez, capitalización e diversificación de ingresos), tipos de bancos (islámicos ou convencionais, do Golfo ou non, estranxeiros ou domésticos, cotizados ou non), Analízanse variables macroeconómicas, marco institucional, inclusión financeira, desenvolvemento financeiro e Covid19. A nosa investigación utiliza un conxunto de datos de panel non balanceados baseado en 239 bancos de 20 países de MENA, que abarca o período 2011-2020. Os datos bancarios do presente estudo foron obtidos da base de datos Orbis BankFocus (Bureau Van Dijk), os datos sobre os factores macroeconómicos dos Indicadores de Desenvolvemento Mundial do Banco Mundial, e os indicadores de liberdade económica en cada país foron obtidos da base de datos Fundación Heritage.

A nivel metodolóxico, estimamos como o poder de mercado e a concentración afectan á eficiencia utilizando o enfoque en dúas etapas de Simar e Wilson (2007). Probouse a robustez mediante o sistema do método xeralizado dos momentos (GMM) para mitigar a potencial endoxeneidade, tal e como propuxeron Arellano e Bover (1995) e Blundell e Bond (1998).

Os resultados indican que a concentración afecta positivamente á eficiencia, o que refuta a QLH. O poder de mercado inflúe negativamente na eficiencia, apoiando así a QLH. No que respecta ao efecto combinado de ambas variables, a coexistencia dunha maior concentración e poder de mercado aumenta a eficiencia bancaria, apoiando a hipótese de BSH. Ademais, variables específicas do banco como tamaño, rendibilidade, capitalización e liquidez afectan positivamente á eficiencia na maioría dos modelos analizados. Ademais, un marco institucional eficaz e un desenvolvemento financeiro adecuado, como propón a teoría económica, contribúen a maiores niveis de eficiencia. Os resultados tamén mostran unha forte relación entre a eficiencia bancaria e a inclusión financeira. Os bancos islámicos (IBs) e os bancos nacionais teñen efectos positivos e estatisticamente significativos sobre a eficiencia. Pola contra, a eficiencia vese afectada negativamente nos bancos cotizados e nos da rexión do Golfo. Estes aspectos permítenos extraer resultados relevantes que ofrecen varias implicacións prácticas para os directivos e os responsables políticos para mellorar a eficiencia bancaria.

Capítulo 2: Este traballo investiga o impacto da competencia na rendibilidade e estabilidade dos bancos na rexión MENA. Noutras palabras, o noso exame afonda na controversia que rodea a teoría da estabilidade-competencia, que argumenta que o aumento da competencia incentiva aos bancos a ofrecer tipos de interese máis baixos aos prestatarios, mellorando así a capacidade destes para cumprir coas súas obrigas e reducindo os riscos para os bancos (Boyd & De Nicoló, 2005). Pola contra, a teoría da competencia-fragilidade argumenta que a intensificación da competencia erosiona o poder de mercado, o que resulta en marxes de beneficio máis baixas. Isto pode incentivar a vontade de asumir riscos, o que pode desestabilizar o sector bancario (Keeley, 1990). Moitos autores, como Adu (2022a), Berger et al. (2009), e Saif- Alyousfi et al. (2020), argumentan que os puntos de vista de "competencia-fragilidade" e "competencia-estabilidade" non deben verse como teorías mutuamente excluíntes senón que poden coexistir dentro do sistema bancario. Os bancos con maiores niveis de poder de mercado presentan unha maior estabilidade financeira xeral, o que indica que protexen os seus valores de franquía de carteiras máis arriscadas aumentando o colchón de capital ou empregando outras estratexias de xestión de riscos. Martínez-Miera e Repullo (2010) propuxeron un modelo para conciliar os puntos de vista enfrontados sobre a relación entre competencia e estabilidade financeira e para defender unha relación entre ambas en forma de U.

A evidencia empírica sobre a influencia da competencia na rendibilidade e estabilidade bancaria non é concluínte, especialmente nas nacións emerxentes. O sector bancario da rexión MENA presenta características distintas, a saber, unha competencia no mercado relativamente baixa e unha propiedade estatal significativa. Ao mesmo tempo, demostrou unha robusta estabilidade financeira en comparación cos sectores financeiros doutras rexións tanto en canto á solvencia como á calidade crediticia. Con esta motivación en mente, examinamos o vínculo entre competencia, rendibilidade e estabilidade no sector bancario da rexión MENA. Tamén consideramos os aspectos únicos dos modelos de negocio dos bancos e as características xeográficas explorando as influencias moderadoras dos países do Consello de Cooperación do Golfo (GCC, polas súas siglas en inglés) e dos bancos islámicos (IBs) na relación entre competencia, rendibilidade e estabilidade. Isto permite a formulación de recomendacións específicas tanto para grupos de modelos de negocio como para países. A partir de estudos anteriores, desenvolvéronse as seguintes hipóteses de investigación:

Segundo Turk-Ariss (2009) e Naceur e Omran (2011), o sector bancario dos países de MENA foi testemuña dunha onda de fusións xunto con outras iniciativas de reforma bancaria. A tendencia á consolidación do sector bancario deu lugar a unha maior concentración, cun aumento do número de grandes bancos. En liña con esta tendencia, o sistema bancario desta rexión amosa un forte rendemento en termos de rendibilidade e estabilidade financeira. Pódese percibir como un paradigma potencial da visión da competencia-fragilidade, que postula que os sistemas bancarios máis rendibles e estables son menos susceptibles ás presións competitivas.

- H1: O poder do mercado bancario inflúe positivamente na rendibilidade e estabilidade do sector bancario na rexión MENA.

Cómpre sinalar que estudos anteriores na rexión MENA deron resultados pouco concluíntes. En base a estes achados, pódese inferir que o efecto da competencia bancaria sobre a estabilidade pode variar dependendo do proxy utilizado para medila. Aínda que pode exercer unha influencia adversa na rendibilidade e solvencia bancaria, presenta ao mesmo tempo efectos positivos sobre o risco de crédito. Os bancos con niveis máis altos de poder de mercado presentan unha maior estabilidade financeira xeral, demostrando a súa capacidade para salvagardar os valores das franquías de carteiras máis arriscadas mediante medidas como o aumento do capital propio ou a utilización doutras estratexias de xestión de riscos. En consecuencia, H1 pódese dividir en dúas hipóteses separadas, como se indica a continuación:

- H1a: O poder do mercado bancario inflúe positivamente na rendibilidade e solvencia do sector bancario na rexión MENA.
- H1b: O poder do mercado bancario inflúe positivamente no risco de crédito no sector bancario da rexión MENA.

Neste estudo, ampliamos a literatura existente explorando a posible non linealidade na relación entre competencia, rendibilidade bancaria e estabilidade. Dentro do contexto bancario de MENA, a pesar das diferenzas no poder bancario no mercado (Chaffai & Coccoresse, 2023) e no índice de concentración bancaria entre as nacións, seguen coexistindo diversas estruturas de mercado. Así, a variedade de estruturas de mercado dentro do sector bancario MENA permite a coexistencia de teorías de competencia-estabilidade e competencia-fragilidade, dependendo do nivel de concentración e poder de mercado.

- H2: Existe unha relación non lineal entre o poder de mercado, a rendibilidade, a solvencia e o risco de crédito no sector bancario da rexión MENA.

Ademais, consideramos o vínculo entre o modelo de negocio (islámico versus convencional), as características xeográficas (GCC versus non GCC) e a rendibilidade e estabilidade bancaria.

A diferenza fundamental entre os modelos bancarios islámicos e os convencionais reside nos seus métodos de xeración de ingresos. Os bancos convencionais confían en transaccións baseadas en intereses e en diversas opcións de investimento. Pola contra, os bancos islámicos adhírense aos principios da Sharia, que prohiben os intereses (riba) e as actividades especulativas, limitando as súas actividades de financiamento. Os bancos islámicos tamén se enfrontan a maiores custos operativos debido ao cumprimento da Sharia; estes custos adicionais poden reducir a súa rendibilidade en comparación cos seus

homólogos convencionais (Harkati et al., 2019). Ademais, o uso restrinxido de técnicas de xestión de riscos leva a un maior risco de crédito e unha menor rendibilidade en comparación cos bancos convencionais, que teñen acceso a unha gama máis ampla de instrumentos financeiros. (Kabir et al., 2015; Othman e Mersni, 2014).

- H3: O modelo islámico ten un impacto significativo na rendibilidade e estabilidade do sector bancario na rexión MENA.

Os países do GCC dependen en gran medida dos ingresos das exportacións de petróleo e gas, o que fai que as súas economías sexan vulnerables ás fluctuacións de prezos. Polo tanto, cando os prezos do petróleo caen, pode debilitar a actividade económica e levar a morosidade dos préstamos (Khandelwal et al., 2016; Mabkhot e Al-Wesabi, 2022). Ademais, os bancos do Golfo tenden a ter custos operativos máis elevados (Hakimi et al., 2023; Issa et al., 2022) e presentan un comportamento máis competitivo que os bancos non GCC (Al-Khouri e Arouri, 2016; Chaffai e Coccorese, 2023). . Estes aspectos conducen, nos bancos do Golfo, a unha diminución das marxes, e á asunción de maiores riscos.H4: Os bancos que operan nos países do GCC teñen un impacto negativo significativo na rendibilidade e estabilidade na rexión MENA.

Ademais, enriquecemos a literatura previa explorando as influencias moderadoras dos bancos islámicos e os países do GCC.

Segundo Risfandy et al. (2019), cando os bancos islámicos gañan un aumento significativo no poder de mercado, poden cobrar prezos máis elevados polos seus servizos bancarios porque a súa base de clientes (musulmáns) está disposta a pagar prezos máis altos polos servizos bancarios que se alían cos seus valores relixiosos, conseguindo así un maior valor. rendibilidade e estabilidade que os bancos convencionais

- H5: O efecto positivo do poder de mercado sobre a rendibilidade e a estabilidade é máis forte nos bancos islámicos que nos convencionais.

Os bancos do GCC teñen un maior grao de propiedade estatal que os bancos fóra do GCC (Al-Khouri e Arouri, 2016). A relación positiva entre o poder de mercado, a rendibilidade e a estabilidade probablemente estea influenciada pola propiedade dos bancos (Claessens et al., 2001; Ehsan & Javid, 2018; Jeon et al., 2017). Saragih e Achanta (2022) explican isto, suxerindo que os bancos de propiedade do goberno están menos inclinados a exercer o seu poder de monopolio debido ao seu foco en factores sociais ou políticos en lugar de maximizar os beneficios. Do mesmo xeito, un estudo de Yusgiantoro et al. (2019) descubriron que os bancos estatais con máis poder de mercado experimentan unha diminución da solvencia en comparación con outros tipos de propiedade, refiríndose a que os bancos estatais poden explotar o seu estado de "demasiado grandes para fallar" en resposta ao aumento do valores de franquía.. Por outra banda, no que se refire ao risco de crédito, un estudo de Srivastava et al. (2022) indica que os bancos estatais adquiren máis poder de mercado poden reducir o risco de crédito debido ás garantías soberanas.

En xeral, os bancos do GCC presentan marcos regulatorios robustos, estabilidade política, cooperación rexional e unha exposición limitada ás turbulencias financeiras mundiais, o que fai que sexan menos propensos a exercer o seu poder de monopolio (Mabkhot e Al-Wesabi, 2022).

- H6: O efecto positivo do poder de mercado sobre a rendibilidade, a solvencia e o risco de crédito é menos pronunciado nos bancos do GCC que nos bancos non pertencentes ao GCC.

Para acadar os obxectivos deste estudo, fixemos varias achegas á literatura existente. En primeiro lugar, a literatura anterior utiliza principalmente a concentración a nivel da industria como indicador da competencia nos bancos porque é fácil de calcular. Non obstante, unha maior concentración do mercado non indica necesariamente unha escasa competencia. Para avaliar a influencia da competencia na rendibilidade e estabilidade dos bancos no sector bancario de MENA, medimos a competencia bancaria utilizando LI a nivel bancario como medida directa do poder de mercado. Examinamos os índices de rendibilidade, en concreto o rendibilidade dos activos (ROA), xunto cos indicadores de estabilidade bancaria habitualmente empregados, a saber, o Z-score (solvencia) e o ratio de provisión para perdas de crédito (LLP) (risco de crédito), para determinar se unha maior competencia na rexión MENA intensifica a propensión dos bancos a asumir maiores riscos de insolvencia e crédito debido á erosión da súa rendibilidade. En segundo lugar, consideramos importantes características específicas do banco (eficiencia, risco de crédito, apalancamento, diversificación de ingresos e tamaño) e factores macroeconómicos. Ademais, examinamos a influencia do marco institucional na relación entre a competencia e a rendibilidade e estabilidade bancaria. Os datos a nivel de banco obtivéronse da base de datos Orbis BankFocus (Bureau Van Dijk), os datos sobre factores macroeconómicos obtivéronse dos Indicadores de Desenvolvemento Mundial do Banco Mundial e estudouse o marco institucional mediante un índice de liberdade económica da Heritage Foundation. A nosa investigación centrouse nunha mostra final que contén un conxunto de datos de panel non balanceado de 239 bancos que operan en 20 países de MENA, que abarca o período 2011-2020.

A nivel metodolóxico, para evitar problemas como o sesgo de variables omitidas, a simultaneidade e a endoxeneidade, aplicamos a estimación dun sistema GMM para un panel suxerido por Arellano e Bover (1995) e Blundell e Bond (1998), que se aplica con erros estándar corrixidos por Windmeijer nunha estimación en dúas etapas. Os resultados da aplicación empírica indican que o efecto da competencia bancaria na estabilidade pode variar dependendo da proxy utilizada para medir a estabilidade. Aínda que pode exercer unha influencia adversa na solvencia bancaria, presenta ao mesmo tempo efectos positivos sobre o risco de crédito, mostrando que varios tipos de riscos poden explicar os efectos heteroxéneos observados anteriormente na literatura. Os nosos resultados suxiren que un aumento do poder de fixación de prezos dos bancos, medido por LI, está asociado cunha maior estabilidade bancaria (solvencia), apoiando así a teoría da competencia-fragilidade. Por outra banda, o estudo tamén revela unha asociación positiva entre LI e LLP (risco de

crédito), proporcionando así evidencias de apoio á hipótese da competencia-estabilidade. Afirmamos que os puntos de vista de "competencia-fraxilidade" e "competencia-estabilidade" non deben ser vistos como teorías mutuamente excluíntes senón que poden coexistir dentro do sistema bancario. Os bancos con maior poder de mercado e, polo tanto, cun maior valor de franquía teñen máis probabilidades de cobrar taxas de interese máis altas sobre os préstamos, o que á súa vez aumenta o nivel de risco asociado ás súas carteiras de crédito (Berger et al., 2009). Ademais, os nosos descubrimentos proporcionan apoio empírico para o nexos entre as teorías da competencia-estabilidade e a competencia-fraxilidade. A evidencia revela unha relación inversa en forma de U entre o poder de mercado e a solvencia bancaria e unha conexión en forma de U entre o poder de mercado e o risco de crédito bancario. Así, confirmamos que a estabilidade e a fraxilidade da competencia poderían producirse simultaneamente para os bancos de MENA. Non obstante, non atopamos probas que confirmasen unha relación non lineal entre o poder de mercado e a rendibilidade. Ademais, os resultados indican que os bancos con maior eficiencia, menor apalancamento, máis diversificación de ingresos e menor tamaño son máis rendibles e solventes. En termos de risco de crédito, os bancos con maior apalancamento, menor tamaño e maior diversificación de ingresos afrontan un risco máis elevado. Ademais, ao examinar o termo de interacción, é dicir, a influencia conxunta do índice de Lerner e da ficticia de bancos islámicos, a evidencia suxire que a rendibilidade e a solvencia aumentan a medida que se incrementa o poder de mercado en maior proporción nos bancos que operan con principios islámicos en comparación cos bancos convencionais. En canto ás características xeográficas, a saber, o efecto da interacción entre o índice de Lerner e a ficticia GCC, a evidencia suxire que a rendibilidade, a solvencia e o risco de crédito aumentan a medida que se incrementa o poder de mercado en menor proporción nas nacións do GCC en comparación coas non GCC. Estes achados proporcionan valiosas implicacións e orientación aos xestores dos bancos, aos reguladores e aos responsables políticos nos seus esforzos por mellorar a rendibilidade e a estabilidade dos bancos.

Capítulo 3 : Este estudo explora o impacto da competencia no desempeño ambiental e social das empresas no sector bancario de MENA. Na nosa análise, postulamos que o rendemento dun banco nun ambiente de maior volatilidade económica, rápidos avances tecnolóxicos e crecentes desafíos ecolóxicos globais probablemente estea influenciado non só por factores internos cuantitativos senón tamén por factores internos cualitativos relacionados coas preferencias directivas. Dado que o sector bancario enfróntase na actualidade a unha intensa competencia, os bancos están a priorizar o atractivo público e a crear unha imaxe corporativa positiva mediante iniciativas sociais e ambientais nun entorno empresarial fráxil. A maioría das investigacións existentes, en consonancia coa teoría dos grupos de interese, indican que a medida que aumenta a competencia, as empresas melloran os seus compromisos ambientais, sociais e de gobernanza (ESG, polas súas siglas en inglés) para fortalecer a súa relación cos diferentes grupos de interese e acadar unha mellor reputación no mercado (Flammer, 2015). e seguir unha estratexia de maximización de beneficios (Martins, 2022). Hawn e Kang (2018) propoñen que as empresas de sectores competitivos, aínda que teñan recursos limitados, poidan implementar iniciativas de CSR, xa que aínda que estas iniciativas non produzan

beneficios económicos perceptibles inmediatos, permítelles diferenciar os seus produtos, espertar o interese dos consumidores e conseguir unha vantaxe competitiva (Porter & Kramer, 2006).

A medida que o interese por este tema de investigación creceu e se facía máis sofisticado, estudos posteriores comezaron a explorar os efectos moderadores, achegando unha comprensión máis profunda da relación entre a competencia e o rendemento corporativo.

O noso obxectivo é abordar a seguinte pregunta de investigación: é a competencia un motor para o desempeño ambiental e social do sector bancario na rexión MENA? Esta pregunta é importante por varias razóns. En primeiro lugar, comprender o impacto da competencia no mercado no desempeño da Responsabilidade Social Corporativa (CSR) é un aspecto pouco desenvolvido na literatura. Os estudos anteriores centráronse principalmente en empresas non financeiras, e cada sector afronta presións únicas das partes interesadas. En consecuencia, estes resultados poden non ser aplicables a outros sectores. O único estudo similar ao noso, realizado por Forgione e Migliardo (2020), examina o sector bancario nunha mostra de países desenvolvidos dentro da OCDE. Ademais, os esforzos de investigación concentráronse principalmente nas nacións do Consello de Cooperación do Golfo (GCC) debido ao seu avance económico, mentres que as rexións non pertencentes ao GCC enfrontáronse a desafíos relacionados coa accesibilidade limitada dos datos (Farah et al., 2021). No noso estudo, abarcamos contextos GCC e non GCC. Ademais, a maioría das investigacións anteriores exploraron a relación entre a competencia e a CSR a escala global (por exemplo, Baldini et al., 2018). No noso traballo, analizamos os piares ambiental e social por separado co obxectivo de discernir como inflúen as variables explicativas seleccionadas no seu comportamento e se presentan patróns similares. En segundo lugar, explorar o papel da diversidade de xénero no desempeño ambiental e social dentro do sector financeiro da rexión MENA é un aspecto novedoso. A maioría da literatura anterior centrouse predominantemente nos países desenvolvidos occidentais, principalmente no sector non financeiro. A evidencia empírica segue sendo inconclusa e a relación entre a diversidade de xénero do consello (BGD) e os factores ESG pode variar entre os países desenvolvidos e os países en desenvolvemento (Alkhwaja et al., 2023; Wasiuzzaman & Subramaniam, 2023). Estudos previos específicos do sector financeiro na rexión MENA tamén presentan resultados conflitivos, algúns indican unha relación positiva (Issa & Zaid, 2021) e outros suxiren unha correlación negativa (Issa et al., 2022a). En terceiro lugar, a nosa investigación reconece que o desempeño ambiental e social do sector bancario nesta rexión pode verse influenciado por varios marcos económicos, sociais, culturais, legais e políticos de cada país (Elamer et al., 2020). Esta complexidade complica a tarefa de extraer inferencias definitivas (Buallay et al., 2020; Çek & Eyupoglu, 2020). Estes factores non só inflúen directamente nas prácticas ESG das empresas (Baldini et al., 2018), senón tamén de forma indirecta nas perspectivas dos investidores e doutras partes interesadas, estimulando así as empresas a adoptar prácticas ESG (Clementino & Perkins, 2020; Dyck et al., 2019). Segundo Sayan (2009), a rexión MENA mostrou un rendemento atrasado en termos de calidade institucional en

comparación coa media mundial. O uso da teoría institucional pode proporcionar información para analizar ata que punto estes factores actúan como determinantes na CSR. En cuarto lugar, consideramos varias características relevantes da empresa que poden influír nos seus esforzos ambientais ou sociais. En concreto, consideráronse factores como o tipo de banco, a estrutura da propiedade (estatal ou privada) e se se trata dun banco islámico ou convencional. Finalmente, o estudo non só se centra no impacto directo do poder de mercado no desempeño ambiental e social, senón que tamén enriquece a literatura previa explorando se este efecto pode ser moderado por factores como a diversidade de xénero, o entorno institucional da rexión MENA, o estado estrutura de propiedade privada, ou a natureza islámica-convencional dos bancos. A partir da revisión bibliográfica elaboráronse as seguintes hipóteses de investigación:

- H1: O poder de mercado inflúe negativamente no desempeño ambiental ou social do sector bancario na rexión MENA.
- H2: A diversidade de xénero dos consellos ten un impacto significativo no desempeño ambiental e social dos bancos da rexión MENA.
- H3: O efecto negativo do poder de mercado no desempeño ambiental e social é menos acusado nos bancos con maior diversidade de xénero no seu consello de administración.
- H4: O efecto negativo do poder de mercado sobre o desempeño ambiental e social é menos pronunciado nos bancos que operan en países con mellores contornos institucionais.
- H5: O efecto negativo do poder de mercado no desempeño ambiental e social é máis forte nos bancos islámicos que nos convencionais.
- H6: O efecto negativo do poder de mercado no desempeño ambiental e social é menos pronunciado nos bancos estatais que nos privados.

A variable dependente é a puntuación que reflicte o desempeño ambiental ou social dos bancos. A variable independente a nivel bancario é LI, que é unha medida directa do poder de mercado (inversa da competencia). Ademais, o efecto sobre o desempeño social e ambiental da banca de determinadas características específicas dos bancos (BGD, eficiencia, liquidez, rendemento de accións, BETA, capitalización de mercado, capital flotante, concentración da propiedade, tamaño do banco e antigüidade do banco), analízanse os tipos de bancos (islámicos ou convencionais, estatais ou privados) e os datos a nivel de país. Para os datos financeiros e non financeiros (ESG) dos bancos dos países de MENA durante o período de estudo (2015-2021), utilizamos a base de datos Eikon Refinitiv (Thomson Reuters). Este estudo abarca datos de bancos que operan en 11 países. Outras nacións da rexión MENA carecen de bancos cotizados ou non dispoñen información ESG. Despois de excluír os bancos con datos incompletos, a mostra final componse de 82 bancos. A nosa análise límitase aos bancos que cotizan en bolsa e

informan das súas puntuacións ambientais e sociais. Os datos a nivel de país obtéñense do Banco Mundial e o índice de globalización é do Instituto Económico Suízo KOF.

A nivel metodolóxico, estimamos a regresión mediante mínimos cadrados ordinarios (MCO) con efectos fixos por ano. Tamén realizamos probas de robustez volvendo a estimar a ecuación con varias variables independentes e de control retardadas un ano mediante o método MCO. Posteriormente, realizamos unha regresión de mínimos cadrados en dúas etapas (2SLS) utilizando variables cun retardo dun ano como instrumentos. Os resultados indican que a maior presión competitiva obriga aos bancos a mellorar as súas iniciativas ambientais e sociais. Este enfoque estratéxico ten como obxectivo xerar confianza con varias partes interesadas e obter unha vantaxe competitiva sobre outros bancos. Isto concorda coa Teoría das partes interesadas, que suxire que a competencia obriga aos bancos a intensificar as iniciativas ambientais e sociais para gañar a confianza das partes interesadas. Ademais, observouse unha correlación positiva entre un maior BGD e un mellor rendemento ambiental e social. Ademais, outras variables específicas do banco (liquidez, capitalización de mercado, capital flotante, concentración da propiedade, tamaño do banco e idade) inciden positivamente sobre o rendemento ambiental e social na maioría dos modelos analizados. Ademais, a globalización social e os indicadores de gobernanza mundial contribúen a maiores niveis de rendemento ambiental e social. Finalmente, os resultados indican que o impacto negativo do poder de mercado no desempeño ambiental e social é menos acusado nos bancos con maior BGD, os que operan en países cun mellor entorno institucional e nos bancos estatais. Pola contra, o impacto negativo é máis acusado nos bancos islámicos. Os aspectos descritos anteriormente teñen implicacións significativas tanto para consideracións teóricas como para os profesionais da banca. Contribúen ao discurso en curso arredor do proceso de toma de decisións estratéxicas no marco da sustentabilidade, arroxando luz sobre os beneficios asociados á competencia e á diversidade de xénero. Ademais, estes achados son relevantes para os reguladores e os responsables políticos, xa que ofrecen coñecementos que poden informar sobre posibles directrices para futuras reformas.

RESUMEN EXTENDIDO

Capítulo 1: Este estudio explora la influencia de la estructura del mercado en la eficiencia técnica de los bancos de la región MENA. Desde la década de 1990, los países de la región MENA han emprendido políticas de desregulación bancaria con el objetivo de aumentar la competencia (Zoghلامي & Bouchemia, 2021). Al mismo tiempo, la intensa competencia en los mercados financieros hace que la eficiencia sea una prioridad absoluta tanto para los profesionales como para los reguladores (Fiordelisi et al., 2011). La literatura empírica y teórica muestra que la estructura del mercado tiene efectos controvertidos sobre la eficiencia del sistema bancario. La hipótesis de la vida tranquila (QLH) revela una conexión positiva entre la competencia y la eficiencia bancaria (Hicks, 1935), mientras que la hipótesis de las especificidades bancarias (BSH) implica que una mayor competencia entre los bancos va en detrimento de la eficiencia (Pruteanu-Podpiera et al., 2008). Además, los estudios analizan por separado los vínculos entre poder de mercado, concentración y eficiencia. Sólo unos pocos trabajos analizan la influencia conjunta del poder de mercado y la concentración en la eficiencia bancaria, aunque utilizan diversos métodos para medir la concentración y la competencia (por ejemplo, Attia & Alber 2022; Chan et al., 2015; Otero-González et al., 2020; Thi My Phan et al., 2016). La influencia de la estructura del mercado en la eficiencia aún no ha recibido mucha atención en la literatura, y se han encontrado pruebas contradictorias o no concluyentes. Hasta ahora, la mayoría de los estudios se han centrado en los sectores bancarios de los países desarrollados, en particular de la UE y EE.UU., y solo unos pocos en los países en desarrollo, como las economías de Oriente Medio y Norte de África. Resulta especialmente interesante el entorno inestable de algunos países con distintos niveles de desarrollo social y tecnológico. Todas estas características se consideran áreas atractivas para la investigación en la región MENA. A partir de la revisión bibliográfica, se elaboró la siguiente hipótesis de investigación:

- H1: La estructura del mercado bancario afecta a la eficiencia técnica en la región MENA.

La hipótesis puede dividirse a su vez en dos hipótesis distintas, como se expone a continuación:

- H1a: El poder del mercado bancario afecta positivamente a la eficiencia técnica en la región MENA.
- H1b: La concentración bancaria afecta positivamente a la eficiencia técnica en la región MENA.

Dado que tanto el poder de mercado como la concentración bancaria pueden influir positivamente de manera individual en la eficiencia técnica, suponemos que su efecto combinado también puede ser positivo.

- H2: La influencia conjunta del poder de mercado y la concentración bancaria afecta positivamente a la eficiencia técnica en la región MENA.

La eficiencia bancaria se obtiene mediante el Análisis Envolvente de Datos (DEA), y la competencia bancaria se aproxima mediante el índice de Lerner (LI) a nivel bancario, un enfoque no estructural. Dada la importancia de la concentración del mercado y el número de competidores en términos de competencia, también se utiliza como variable independiente el índice Herfindahl-Harshman (HHI, por sus siglas en inglés), un enfoque estructural. Además, se analiza el efecto sobre la eficiencia bancaria de las características específicas de los bancos (tamaño, rentabilidad, riesgo de liquidez, capitalización y diversificación de ingresos), los tipos de bancos (islámicos o convencionales, del Golfo o no, extranjeros o nacionales, cotizados o no), las variables macroeconómicas, el marco institucional, la inclusión financiera, el desarrollo financiero y Covid19. Nuestra investigación utiliza un conjunto de datos de panel no balanceado basado en 239 bancos de 20 países de Oriente Medio y Norte de África, que abarca el período 2011-2020. Los datos bancarios del presente estudio se han obtenido de la base de datos Orbis BankFocus (Bureau Van Dijk), los datos sobre los factores macroeconómicos proceden de los Indicadores de Desarrollo Mundial del Banco Mundial, y los indicadores de libertad económica de cada país procedían de la base de datos de la Heritage Foundation.

A nivel metodológico, estimamos cómo afectan el poder de mercado y la concentración a la eficiencia utilizando el enfoque en dos etapas de Simar y Wilson (2007). La robustez se comprobó utilizando el sistema del Método Generalizado de Momentos (GMM) para mitigar la posible endogeneidad, como proponen Arellano y Bover (1995) y Blundell y Bond (1998).

Los resultados indican que la concentración influye positivamente en la eficiencia, lo que refuta la QLH. El poder de mercado influye negativamente en la eficiencia, lo que apoya la QLH. En cuanto al efecto combinado de ambas variables, la coexistencia de una mayor concentración y poder de mercado aumenta la eficiencia bancaria, lo que apoya la hipótesis BSH. Además, variables específicas de los bancos como el tamaño, la rentabilidad, la capitalización y la liquidez afectan positivamente a la eficiencia en la mayoría de los modelos analizados. Por otra parte, un marco institucional eficaz y un desarrollo financiero adecuado, tal como propone la teoría económica, contribuyen a mayores niveles de eficiencia. Los resultados también muestran una fuerte relación entre la eficiencia bancaria y la inclusión financiera. Los bancos islámicos (IBs) y los bancos nacionales tienen efectos positivos y estadísticamente significativos sobre la eficiencia. Por el contrario, la eficiencia se ve afectada negativamente en los bancos que cotizan en bolsa y en los de la región del Golfo. Estos aspectos nos permiten extraer resultados relevantes

que ofrecen varias implicaciones prácticas para que los gestores y los responsables políticos mejoren la eficiencia bancaria.

Capítulo 2: Investigación del impacto de la competencia sobre la rentabilidad y la estabilidad de los bancos en la región MENA. En otras palabras, nuestro examen ahonda en la controversia que rodea a la teoría de la competencia-estabilidad, que sostiene que el aumento de la competencia anima a los bancos a ofrecer tipos de interés más bajos a los prestatarios, mejorando así la capacidad de éstos para cumplir sus obligaciones y reduciendo los riesgos para los bancos (Boyd & De Nicoló, 2005). Por el contrario, la teoría de la competencia-fragilidad sostiene que la intensificación de la competencia erosiona el poder de mercado, lo que se traduce en menores márgenes de beneficio. Esto puede incentivar la voluntad de asumir riesgos, desestabilizando potencialmente el sector bancario (Keeley, 1990). Muchos autores, como Adu (2022a), Berger et al. (2009) y Saif-Alyousfi et al. (2020), sostienen que los puntos de vista de "competencia-fragilidad" y "competencia-estabilidad" no deben considerarse teorías mutuamente excluyentes, sino que pueden coexistir dentro del sistema bancario. Los bancos con mayores niveles de poder de mercado muestran una mayor estabilidad financiera general, lo que indica que salvaguardan sus valores de franquicia de carteras más arriesgadas aumentando el colchón de capital o empleando otras estrategias de gestión del riesgo. Martínez-Miera y Repullo (2010) propusieron un modelo para conciliar las opiniones contradictorias sobre la relación entre competencia y estabilidad financiera y defender una relación entre ambas en forma de U.

Los datos empíricos sobre la influencia de la competencia en la rentabilidad y la estabilidad de los bancos no son concluyentes, sobre todo en los países emergentes. El sector bancario de la región de Oriente Medio y el Norte de África presenta características distintivas, a saber, una competencia de mercado relativamente baja y una propiedad estatal significativa. Al mismo tiempo, ha demostrado una sólida estabilidad financiera en comparación con los sectores financieros de otras regiones, tanto en lo que respecta a la solvencia como a la calidad crediticia. Con esta motivación en mente, examinamos la relación entre competencia, rentabilidad y estabilidad en el sector bancario de Oriente Medio y el Norte de África. También consideramos los aspectos singulares de los modelos de negocio y las características geográficas de los bancos, explorando las influencias moderadoras de los IBs y los países del Consejo de Cooperación del Golfo (GCC, por sus siglas en inglés) en la relación entre competencia, rentabilidad y estabilidad. Esto permite formular recomendaciones específicas para ambos grupos de modelos de negocio y países. Basándose en estudios anteriores, se elaboraron las siguientes hipótesis de investigación:

Según Turk-Ariss (2009) y Naceur y Omran (2011), el sector bancario de los países MENA ha sido testigo de una oleada de fusiones junto con otras iniciativas de reforma bancaria. La tendencia a la consolidación del sector bancario ha dado lugar a una mayor concentración, con un aumento del número de grandes bancos. En consonancia con esta tendencia, el sistema bancario de esta región muestra unos buenos resultados en términos de rentabilidad y estabilidad financiera. Puede percibirse como un paradigma potencial de

la visión competencia-fragilidad, que postula que los sistemas bancarios más rentables y estables son menos susceptibles a las presiones competitivas. Por lo tanto, se puede formular la siguiente hipótesis:

- H1: El poder de mercado de los bancos influye positivamente en la rentabilidad y la estabilidad del sector bancario en la región MENA.

Cabe señalar que estudios anteriores realizados en la región MENA han arrojado resultados poco concluyentes. Sobre la base de estos resultados, puede deducirse que el efecto de la competencia bancaria sobre la estabilidad puede variar en función del indicador utilizado para medir la misma. Aunque puede influir negativamente en la rentabilidad y la solvencia de los bancos, al mismo tiempo tiene efectos positivos en el riesgo de crédito. Los bancos con mayores niveles de poder de mercado exhiben una mayor estabilidad financiera general, lo que demuestra su capacidad para salvaguardar los valores de franquicia de carteras más arriesgadas mediante medidas como el aumento del capital social o el empleo de otras estrategias de gestión del riesgo. En consecuencia, H1 puede dividirse a su vez en dos hipótesis separadas, como se expone a continuación:

- H1a: El poder de mercado de los bancos influye positivamente en la rentabilidad y la solvencia del sector bancario en la región MENA.
- H1b: El poder de mercado de los bancos influye positivamente en el riesgo de crédito en el sector bancario de la región MENA.

En este estudio, ampliamos la bibliografía existente explorando la posible no linealidad en la relación entre competencia, rentabilidad bancaria y estabilidad. En el contexto bancario de MENA, a pesar de las diferencias en el poder de mercado bancario (Chaffai & Coccorese, 2023) y en la ratio de concentración bancaria entre naciones, siguen coexistiendo diversas estructuras de mercado. Así, la variedad de estructuras de mercado dentro del sector bancario de MENA permite la coexistencia de las teorías de la competencia-estabilidad y de la competencia-fragilidad, dependiendo del nivel de concentración y del poder de mercado.

- H2: Existe una relación no lineal entre el poder de mercado, la rentabilidad, la solvencia y el riesgo de crédito en el sector bancario de la región MENA.

Asimismo, consideramos la relación entre el modelo de negocio (islámico frente a convencional), las características geográficas (GCC frente a no GCC) y la rentabilidad y estabilidad de los bancos.

La diferencia fundamental entre los modelos bancarios islámico y convencional radica en sus métodos de generación de ingresos. Los bancos convencionales se basan en transacciones basadas en intereses y diversas opciones de inversión. En cambio, los bancos islámicos se adhieren a los principios de la Sharia, que prohíben los intereses (riba) y las

actividades especulativas, lo que limita sus actividades de financiación. Los bancos islámicos también se enfrentan a costes operativos más elevados debido al cumplimiento de la Sharia; estos costes adicionales pueden reducir su rentabilidad en comparación con sus homólogos convencionales (Harkati et al., 2019). Además, el uso restringido de técnicas de gestión de riesgos conduce a un mayor riesgo de crédito y a una menor rentabilidad en comparación con los bancos convencionales, que tienen acceso a una gama más amplia de instrumentos financieros. (Kabir et al., 2015; Othman & Mersni, 2014).

H3: El modelo islámico tiene un impacto significativo en la rentabilidad y la estabilidad del sector bancario en la región MENA.

Los países del GCC dependen en gran medida de los ingresos procedentes de las exportaciones de petróleo y gas, lo que hace que sus economías sean vulnerables a las fluctuaciones de sus precios. Por lo tanto, cuando los precios del petróleo caen, puede debilitar la actividad económica y provocar impagos de préstamos (Khandelwal et al., 2016; Mabkhot & Al-Wesabi, 2022). Además, los bancos del Golfo tienden a tener costes operativos más elevados (Hakimi et al., 2023; Issa et al., 2022) y muestran un comportamiento más competitivo que los bancos no pertenecientes al GCC (Al-Khouri y Arouri, 2016; Chaffai y Coccorese, 2023). Estos aspectos conducen, en los bancos del Golfo, a una disminución de los márgenes, y a la asunción de mayores riesgos.

- H4: Los bancos que operan en los países del GCC tienen un impacto negativo significativo en la rentabilidad y la estabilidad de la región MENA.

Además, enriquecemos la literatura previa explorando las influencias moderadoras de los bancos islámicos y los países del GCC.

Según Risfandy et al. (2019), cuando los bancos islámicos obtienen un aumento significativo del poder de mercado, pueden cobrar precios más altos por sus servicios bancarios porque su base de clientes (musulmanes) está dispuesta a pagar precios más altos por servicios bancarios que se alinean con sus valores religiosos, logrando así una mayor rentabilidad y estabilidad que los bancos convencionales.

- H5: El efecto positivo del poder de mercado sobre la rentabilidad y la estabilidad es mayor en los bancos islámicos que en los bancos convencionales.

Los bancos del GCC tienen un mayor grado de propiedad estatal que los bancos de fuera del GCC (Al-Khouri y Arouri, 2016). Es probable que la relación positiva entre poder de mercado, rentabilidad y estabilidad esté influida por la propiedad de los bancos (Claessens et al., 2001; Ehsan y Javid, 2018; Jeon et al., 2017). Saragih y Achsanta (2022) explican esto, sugiriendo que los bancos de propiedad estatal son menos propensos a ejercer su poder de monopolio debido a su enfoque en factores sociales o políticos en lugar de maximizar las ganancias. Del mismo modo, un estudio de Yusgiantoro et al. (2019) encontró que los bancos de propiedad

estatal con más poder de mercado experimentan una disminución en la solvencia en comparación con otros tipos de propiedad, refiriéndose a que los bancos estatales pueden explotar su condición de "demasiado grandes para quebrar" en respuesta al aumento de los valores de franquicia. Por otro lado, en lo que respecta al riesgo de crédito, un estudio de Srivastava et al. (2022) indica que los bancos de propiedad estatal que adquieren más poder de mercado pueden reducir el riesgo de crédito debido a las garantías soberanas.

En general, los bancos del GCC presentan marcos reguladores sólidos, estabilidad política, cooperación regional y una exposición limitada a las turbulencias financieras mundiales, lo que les hace menos proclives a ejercer su poder monopolístico (Mabkhot & Al-Wesabi, 2022).

- H6: El efecto positivo del poder de mercado sobre la rentabilidad, la solvencia y el riesgo de crédito es menos pronunciado en los bancos del GCC que en los bancos no pertenecientes al GCC.

Para alcanzar los objetivos de este estudio, hemos realizado varias aportaciones a la literatura existente. En primer lugar, la literatura anterior utiliza mayoritariamente la concentración a nivel sectorial como aproximación a la competencia en los bancos porque es fácil de calcular. Sin embargo, una mayor concentración del mercado no indica necesariamente una baja competencia. Para evaluar la influencia de la competencia en la rentabilidad y la estabilidad de los bancos en el sector bancario de Oriente Medio y el Norte de África, medimos la competencia bancaria utilizando el LI a nivel de banco como medida directa del poder de mercado. Examinamos las ratios de rentabilidad, concretamente la rentabilidad sobre activos (ROA), junto con indicadores de estabilidad bancaria comúnmente empleados, a saber, la Z-score (solvencia) y la ratio de provisión para insolvencias (LLP) (riesgo de crédito), para determinar si una mayor competencia en la región MENA intensifica la propensión de los bancos a asumir mayores riesgos de insolvencia y de crédito debido a la erosión de su rentabilidad. En segundo lugar, tenemos en cuenta importantes características específicas de los bancos (eficiencia, riesgo de crédito, apalancamiento, diversificación de ingresos y tamaño) y factores macroeconómicos. Además, examinamos la influencia del marco institucional en la relación entre la competencia y la rentabilidad y estabilidad de los bancos. Los datos a nivel bancario se obtuvieron de la base de datos Orbis BankFocus (Bureau Van Dijk), los datos sobre factores macroeconómicos se obtuvieron de los Indicadores de Desarrollo Mundial del Banco Mundial, y el marco institucional mediante el índice de libertad económica de la Fundación Heritage. Nuestra investigación se centró en una muestra final que contiene un conjunto de datos de panel no balanceado para 239 bancos que operan en 20 naciones de Oriente Medio y Norte de África, que abarca el período 2011-2020.

A nivel metodológico, para evitar problemas como el sesgo de variables omitidas, la simultaneidad y la endogeneidad, aplicamos la estimación de un sistema GMM a un panel sugerida por Arellano y Bover (1995) y Blundell y Bond (1998), que se aplica con errores

estándar corregidos por Windmeijer en una estimación en dos etapas. Los resultados de la aplicación empírica indican que el efecto de la competencia bancaria sobre la estabilidad puede variar en función de la variable sustitutiva utilizada para medir la estabilidad. Mientras que puede ejercer una influencia adversa sobre la solvencia bancaria, al mismo tiempo muestra efectos positivos sobre el riesgo de crédito, lo que demuestra que varios tipos de riesgos pueden explicar los efectos heterogéneos observados anteriormente en la literatura. Nuestros resultados sugieren que un aumento del poder de fijación de **precios** de los bancos, medido por el LI, está asociado a una mayor estabilidad (solvencia) bancaria, lo que apoya la teoría de la competencia-fragilidad. Por otra parte, el estudio también revela una asociación positiva entre LI y LLP (riesgo crediticio), lo que aporta pruebas a favor de la hipótesis de competencia-estabilidad. Sostenemos que los puntos de vista de la "competencia-fragilidad" y la "competencia-estabilidad" no deben considerarse teorías mutuamente excluyentes, sino que pueden coexistir en el sistema bancario. Los bancos con mayor poder de mercado y, por tanto, con un mayor valor de franquicia, tienen más probabilidades de aplicar tipos de interés más altos a los préstamos, lo que a su vez aumenta el nivel de riesgo asociado a sus carteras de préstamos (Berger et al., 2009). Además, nuestros resultados respaldan empíricamente el nexo entre las teorías de la competencia-estabilidad y la competencia-fragilidad. Los datos revelan una relación en forma de U inversa entre el poder de mercado y la solvencia bancaria y una conexión en forma de U entre el poder de mercado y el riesgo de crédito bancario. Así pues, confirmamos que la estabilidad y la fragilidad de la competencia podrían darse simultáneamente en los bancos de la región MENA. Sin embargo, no encontramos pruebas que confirmen una relación no lineal entre el poder de mercado y la rentabilidad. Además, los resultados indican que los bancos con mayor eficiencia, menor apalancamiento, mayor diversificación de ingresos y menor tamaño son más rentables y solventes. En términos de riesgo de crédito, los bancos con mayor apalancamiento, menor tamaño y mayor diversificación de ingresos se enfrentan a un riesgo más elevado. Además, al examinar el término de interacción, es decir, la influencia conjunta del índice de Lerner y la ficticia islámico, los datos sugieren que la rentabilidad y la solvencia aumentan a medida que se incrementa el poder de mercado en mayor proporción en los bancos que operan según los principios islámicos en comparación con los bancos convencionales. En cuanto a las características geográficas, es decir, el efecto de la interacción entre el índice de Lerner y la ficticia GCC, las pruebas sugieren que la rentabilidad, la solvencia y el riesgo de crédito aumentan a medida que se incrementa el poder de mercado en menor proporción en las naciones del GCC en comparación con las que no pertenecen al GCC. Estos resultados proporcionan valiosas implicaciones y orientaciones a los gestores bancarios, los reguladores y los responsables políticos en sus esfuerzos por mejorar la rentabilidad y la estabilidad de los bancos.

Capítulo 3: Este estudio explora el impacto de la competencia en los resultados medioambientales y sociales de las empresas en el sector bancario de Oriente Medio y el Norte de África. En nuestro análisis, postulamos que el rendimiento de un banco en un entorno de mayor volatilidad económica, rápidos avances tecnológicos y crecientes retos ecológicos mundiales probablemente se vea influido no sólo por factores internos

cuantitativos, sino también por factores internos cualitativos relacionados con las preferencias de los directivos. Dado que el sector bancario se enfrenta en la actualidad a una intensa competencia, los bancos están dando prioridad al atractivo público y a la creación de una imagen corporativa positiva a través de iniciativas sociales y medioambientales en un entorno empresarial frágil. La mayoría de las investigaciones existentes, en consonancia con la teoría de las partes interesadas, indican que, a medida que aumenta la competencia, las empresas mejoran sus compromisos ambientales, sociales y de gobernanza (ESG, por sus siglas en inglés) para fortalecer su relación con las diferentes partes interesadas, lograr una mejor reputación en el mercado (Flammer, 2015) y perseguir una estrategia de maximización de beneficios (Martins, 2022). Hawn y Kang (2018) proponen que las empresas de sectores competitivos, aunque dispongan de recursos limitados, podrían poner en marcha iniciativas de CSR, ya que aunque estas iniciativas no produzcan beneficios económicos perceptibles de forma inmediata, les permite diferenciar sus productos, despertar el interés de los consumidores y alcanzar una ventaja competitiva (Porter & Kramer, 2006).

A medida que el interés por este tema de investigación crecía y se hacía más sofisticado, estudios posteriores empezaron a explorar los efectos moderadores, aportando una comprensión más profunda de la relación entre competencia y rendimiento empresarial.

Nuestro objetivo es responder a la siguiente pregunta de investigación: ¿Es la competencia una fuerza impulsora de los resultados medioambientales y sociales del sector bancario en la región MENA? Esta pregunta es importante por varias razones. En primer lugar, la comprensión del impacto de la competencia en el mercado sobre los resultados en materia de CSR es un aspecto poco desarrollado en la bibliografía. Los estudios anteriores se han centrado predominantemente en las empresas no financieras, y cada sector se enfrenta a presiones únicas de las partes interesadas. Por consiguiente, estos resultados pueden no ser aplicables a otros sectores. El único estudio similar al nuestro, realizado por Forgione y Migliardo (2020), examina el sector bancario en una muestra de países desarrollados de la OCDE. Además, los esfuerzos de investigación se han concentrado principalmente en las naciones del Consejo de Cooperación del Golfo (GCC) debido a su avance económico, mientras que las regiones no pertenecientes al GCC se han enfrentado a retos relacionados con la limitada accesibilidad a los datos (Farah et al., 2021). En nuestro estudio, abarcamos tanto los contextos del GCC como los de fuera del GCC. Además, la mayoría de las investigaciones previas han explorado la relación entre la competencia y la CSR a escala global (por ejemplo, Baldini et al., 2018). En nuestro trabajo, analizamos los pilares medioambiental y social por separado con el objetivo de discernir cómo influyen las variables explicativas seleccionadas en su comportamiento y si presentan patrones similares. En segundo lugar, explorar el papel de la diversidad de género en el desempeño medioambiental y social dentro del sector financiero de la región MENA es un aspecto novedoso. La mayor parte de la literatura anterior se ha centrado predominantemente en los países desarrollados occidentales, principalmente dentro del sector no financiero. Las pruebas empíricas siguen siendo poco concluyentes, y la relación entre la diversidad de

género en los consejos de administración (BGD) y los factores ESG puede variar entre los países desarrollados y los países en desarrollo (Alkhawaja et al., 2023; Wasiuzzaman & Subramaniam, 2023). Estudios anteriores específicos del sector financiero en la región MENA también presentan resultados contradictorios, ya que algunos indican una relación positiva (Issa & Zaid, 2021) y otros sugieren una correlación negativa (Issa et al., 2022a). En tercer lugar, nuestra investigación reconoce que los resultados medioambientales y sociales del sector bancario en esta región pueden verse influidos por diversos marcos económicos, sociales, culturales, jurídicos y políticos de cada país (Elamer et al., 2020). Esta complejidad complica la tarea de extraer inferencias definitivas (Buallay et al., 2020; Çek & Eyupoglu, 2020). Estos factores no solo influyen directamente en las prácticas ESG de las empresas (Baldini et al., 2018), sino que también configuran indirectamente las perspectivas de los inversores y otras partes interesadas, estimulando así a las empresas a adoptar prácticas ESG (Clementino & Perkins, 2020; Dyck et al., 2019). Según Sayan (2009), la región de Oriente Medio y Norte de África se ha quedado rezagada en términos de calidad institucional en comparación con la media mundial. El uso de la teoría institucional puede aportar ideas para analizar en qué medida estos factores actúan como determinantes en la CSR. En cuarto lugar, consideramos diversas características relevantes de las empresas que pueden influir en sus esfuerzos medioambientales o sociales. En concreto, se han considerado factores como el tipo de banco, la estructura de propiedad (estatal o privada) y si se trata de un banco islámico o convencional. Por último, el estudio no sólo se centra en el impacto directo del poder de mercado sobre los resultados medioambientales y sociales, sino que también enriquece la bibliografía anterior al explorar si este efecto puede verse moderado por factores como la diversidad de género, el entorno institucional de la región MENA, la estructura de propiedad estatal-privada o el carácter islámico-convencional de los bancos. Basándose en la revisión de la literatura, se desarrollaron las siguientes hipótesis de investigación:

- H1: El poder de mercado influye negativamente en los resultados medioambientales o sociales del sector bancario en la región MENA.
- H2: La diversidad de género en los consejos de administración tiene un impacto significativo en los resultados medioambientales y sociales de los bancos de la región MENA.
- H3: El efecto negativo del poder de mercado sobre los resultados medioambientales y sociales es menos pronunciado en los bancos con mayor diversidad de género en su consejo de administración.
- H4: El efecto negativo del poder de mercado sobre los resultados medioambientales y sociales es menos pronunciado en los bancos que operan en países con mejores entornos institucionales.
- H5: El efecto negativo del poder de mercado sobre los resultados medioambientales y sociales es mayor en los bancos islámicos que en los bancos convencionales.

- H6: El efecto negativo del poder de mercado sobre los resultados medioambientales y sociales es menos pronunciado en los bancos estatales que en los privados.

La variable dependiente es la puntuación que refleja el comportamiento medioambiental o social de los bancos. La variable independiente a nivel bancario es LI, que es una medida directa del poder de mercado (inverso de la competencia). Además, se analiza el efecto sobre los resultados sociales y medioambientales de determinadas características de los bancos (BGD, eficiencia, liquidez, rentabilidad de las acciones, BETA, capitalización bursátil, capital flotante, concentración de la propiedad, tamaño del banco y antigüedad del banco), tipos de bancos (islámicos o convencionales, estatales o privados) y datos nacionales. Para los datos financieros y no financieros (ESG) de los bancos de los países MENA durante el periodo de estudio (2015-2021), utilizamos la base de datos Eikon Refinitiv (Thomson Reuters). Este estudio abarca datos de bancos que operan en 11 países. Otras naciones de la región MENA carecen de bancos cotizados o no comunican información ESG. Tras excluir los bancos con datos incompletos, la muestra final consta de 82 bancos. Nuestro análisis se limita a los bancos que cotizan en bolsa y comunican sus puntuaciones medioambientales y sociales. Los datos por países proceden del Banco Mundial, y el índice de globalización, del Instituto Económico Suizo KOF.

A nivel metodológico, estimamos la regresión utilizando mínimos cuadrados ordinarios (MCO) con efectos fijos de año. También realizamos pruebas de robustez reestimando la ecuación con diversas variables independientes y de control retardadas un año utilizando el método MCO. Posteriormente, realizamos una regresión por mínimos cuadrados en dos etapas (2SLS) utilizando como instrumentos variables con un retardo de un año. Los resultados indican que la mayor presión competitiva obliga a los bancos a mejorar sus iniciativas medioambientales y sociales. El objetivo de este enfoque estratégico es generar confianza entre las distintas partes interesadas y obtener una ventaja competitiva frente a otros bancos. Esto concuerda con la Teoría de las Partes Interesadas, que sugiere que la competencia obliga a los bancos a intensificar las iniciativas medioambientales y sociales para ganarse la confianza de las partes interesadas. Además, se observó una correlación positiva entre un mayor BGD y la mejora de los resultados medioambientales y sociales. Además, otras variables específicas de los bancos (liquidez, activos de mercado, capital flotante, concentración de la propiedad, tamaño del banco y edad) afectan positivamente a los resultados medioambientales y sociales en la mayoría de los modelos analizados. Por otra parte, la globalización social y los indicadores de gobernanza mundial contribuyen a elevar los niveles de rendimiento medioambiental y social. Por último, los resultados indican que el impacto negativo del poder de mercado sobre el desempeño medioambiental y social es menos pronunciado en los bancos con mayor BGD, en los que operan en países con un mejor entorno institucional y en los bancos de propiedad estatal. En cambio, el impacto negativo es más pronunciado en los bancos islámicos. Los aspectos descritos anteriormente tienen importantes implicaciones tanto para las consideraciones teóricas como para los profesionales de la banca. Contribuyen al discurso actual en torno al proceso de toma de decisiones estratégicas en el

marco de la sostenibilidad, arrojando luz sobre los beneficios asociados a la competencia y la diversidad de género. Además, estas conclusiones son pertinentes para los reguladores y los responsables políticos, ya que ofrecen ideas que pueden servir de base a posibles directrices para futuras reformas.

INTRODUCTION

INTRODUCTION

A. INVESTIGATION BACKGROUND AND JUSTIFICATION

Our thesis comprises three independent chapters that vary in methodological approaches, analysis techniques, and findings. However, these chapters demonstrate thematic coherence by examining how competition affects the technical efficiency, profitability, stability, and corporate social responsibility (CSR) of banks in the MENA region.

Despite numerous prior studies that have examined these topics differently, concentrating on each topic individually, most of the studies so far have primarily concentrated on banking sectors in developed nations (EU and in the USA) or even certain large developing economies (China). There is a dearth of empirical evidence in the context of emerging economies, particularly within the MENA region. To the best of our knowledge, this thesis is the first to fill a gap in the literature by examining how competition affects all aspects of bank performance (technical efficiency, profitability, stability, and CSR). Simultaneously, it can provide bankers with valuable insights and a complete picture that they can use to make and develop informed strategic decisions that promote banking performance in this region. In addition, the findings of this thesis can inform policymakers about potential policy interventions that can improve bank performance.

As mentioned earlier, we were initially motivated to conduct this thesis because of the limited existing research that explores the influence of competition on bank performance within the MENA region. Furthermore, there are several reasons why the MENA region is an interesting area for investigation. First, over the past decade, the region has experienced many transformations, including the liberalization of foreign competition in its markets and augmented reliance on bank lending. Second, this region encompasses four of the globe's most pivotal international commerce waterways, namely the Suez, Hormuz, Bab-el-Mandeb, and Gibraltar canals, making it a magnet destination for investors and bankers. Third, the MENA region contains 21 countries and approximately 6% of the world's population; it also accounts for nearly 4% of the total world economy. The MENA region has shown significant economic development over the past decades. Due to natural gas and oil producers, this region also plays a vital part in the world economy and development, holding 60 % and 45 % of the oil and natural gas reserves, respectively. Moreover, the region's banks are the main source of finance for investments in the oil and gas sectors. Fourth, the MENA region experiences escalating anxiety about reducing carbon emissions, achieving carbon neutrality, developing green finance, social aspects, and improving the quality of reporting by listed companies. Fifth, the MENA

countries are still in the early stages of development, and their banking sectors are still striving to enhance their performance and stability. Sixth, of particular interest here is the unstable environment in some countries such as (Iraq, Syria, Libya and Yemen), with different levels of social and technological development. Seventh, the existence of Islamic banks within the region adds an intriguing dimension to the unique banking system, as they operate on a different business model than conventional banks. In addition, this zone has other peculiarities, such as high concentration and control of ownership and a significant degree of state ownership in certain nations. These issues render this region intriguing and deserving of further investigation.

Regarding the banking industry in particular, the MENA region's banking system exhibits distinct characteristics in certain aspects; the banking system within the region exhibits relatively low market competition and moderately concentrated concentration; bank technical efficiency is categorized as "moderately efficient" and robust financial stability concerning banks' profitability, solvency, and credit quality; and the practice of CSR in the region is still in its early stages with low gender diversity on corporate boards.

These unique characteristics raise questions about the impact of competition on bank performance, particularly regarding efficiency, profitability, stability, and corporate social responsibility.

A.1. Motivation of the study

Over the preceding three decades, the banking system's market structure has experienced numerous alterations. These changes include the liberalization of markets, deregulation, financial reforms, opening-up of markets, and innovation, with the aim of enhancing the performance of banks, increasing competition, and establishing a more resilient and stable financial environment. Among the restructuring of banking systems, understanding the issues of "banking performance" and its determinants is of significant importance.


The performance of banks is a crucial topic because of their substantial role in the economic landscape, particularly in developing nations such as the MENA region. The banking sector in the MENA economy serves as the primary source of corporate financing, acting as a financial intermediary between suppliers and applicants of funds, financing government budget deficits, and collaborating in executing a country's monetary policy. As the number of banks grows and competition for clientele intensifies, it becomes increasingly vital to analyze the factors that impact their performance. This analysis helps identify the key determinants of performance and, consequently, identify potential areas for improvement to enhance overall bank performance.

For decades, the performance of banks has been the subject of intense examination on a worldwide scale. This scrutiny has gained heightened relevance, particularly in the wake of the 2008 global financial crisis and the implementation of risk-based capital

allocation regulations such as Basel III, ultimately influencing the performance and stability of the banking industry. The MENA region, a predominantly bank-based economy, where capital markets are almost nonexistent, is not out of this global trend of scrutinizing the factors that drive banks' performance. Owing to the effects of the financial crisis experienced by developed nations, the ongoing discussion about ideal policies for the banking industry is particularly significant in emerging economies, particularly in MENA nations, where the zone has not been immune to these challenges. In the late 2010s, several countries experienced protests and demonstrations against existing political systems, known as the Arab Spring. These events, combined with the COVID-19 pandemic, have further impeded the recovery of the banking sector from the financial crisis. With increased competition from several new entrants, both incumbent and new banks in the MENA region certainly need academic studies that identify the key drivers of banking performance. From this standpoint, the banking market structure is a crucial consideration for supervisory bodies, government officials, and central banks when determining policy measures, such as the impact of banking competition, particularly considering the vulnerability of investments to changes in loan rates. In addition, theoretically and empirically, the level of competition within the banking sector can influence access to financial services for individuals and businesses, and therefore, the welfare of a population. As a result, these changes in the market structure, as assessed through market power and/or concentration, have prompted concerns about how they may affect banks' performance. Indeed, the influence of competition on bank performance remains inconclusive and not yet clear.

Given the importance of banks in economic growth in any country, researchers have been interested in studying the performance of banks; this interest has led to the emergence of different methods in this field. The literature review showed that "banking performance" can be performed in several ways : (1) by running a traditional analysis of accounting ratios, such as (profitability, solvency, and credit risk), or (2) by using the distance function approach, where best practice production is represented by a "production frontier" and each "production point" corresponds to a firm that is compared to this frontier, and is usually calculated using data envelopment analysis (DEA) (a nonparametric method), since the activities of banks are characterized by multiple inputs and outputs. Hence, the first essay of this thesis explores the influence of market structure on the technical efficiency of banks in the MENA region.

This essay is based on a comprehensive database of 20 countries in the MENA region from 2011 to 2020. Although previous work has used various indicators of concentration and market power, to the best of our knowledge, this study is the first to examine their combined effects on bank efficiency in the MENA region. These aspects allow us to extract relevant results that offer several practical implications for managers and policy makers to improve bank efficiency.

 The second essay investigates the impact of competition on bank profitability and stability in the MENA region.

This essay contributes to the existing literature in several ways. First, previous literature mostly uses industry-level concentration as a proxy for competition in banks because it is easy to calculate. However, higher market concentration does not necessarily indicate low competition. To assess the influence of competition on bank profitability and stability in the MENA banking sector, we measure banking competition using the bank-level Lerner Index (LI) as a direct measure of market power. We examined profitability ratios, specifically the return on assets (ROA), along with commonly employed indicators of bank stability, namely the Z-score (solvency) and the Loan Loss Provision (LLP) ratio (credit risk), to determine whether more competition in the MENA region intensifies banks' propensity to assume greater insolvency and credit risks because of their profitability erosion. Second, we expand the existing literature by exploring potential nonlinearity in the relationship between competition, bank profitability, and stability. Third, we enrich previous literature by exploring the moderating influences of IBs and GCC countries. Fourth, we consider important bank-specific characteristics and macroeconomic factors. In addition, we examine the influence of the institutional framework.

However, we argue that these explanatory variables alone are not sufficient to fully comprehend the multifaceted nature of bank performance. In our analysis, we posit that the performance of a bank in an environment of increased economic volatility, rapid technological advances, and growing global ecological challenges is likely influenced not only by quantitative internal factors but also by qualitative internal factors related to managerial preferences. As the banking industry is currently facing intense competition, banks are now prioritizing public appeal and creating a positive corporate image through social and environmental initiatives in a fragile business environment, where traditional reporting no longer meets the changing needs of diverse stakeholders in an environment of increased economic volatility, rapid technological advances, and growing global ecological challenges. In recent years, the role of banks in promoting ESG has gained significant attention in areas such as climate change mitigation, responsible lending practices, social concerns, and gender diversity. On the basis of this idea, emerges the third essay of this thesis, which explores the impact of competition on corporate environmental and social performance in the MENA banking sector.

As interest in this research topic grew and became more sophisticated, subsequent studies began exploring moderating effects, bringing a deeper understanding of the relationship between competition and corporate performance. Studies on the moderator-mediator effect appeared in the literature in the early 1980s. Baron and Kenny (1986) introduced a classic method for testing the mediator and moderator effects in regression analyses. A moderating effect indicates a variable that can influence the intensity or direction of the association between an independent variable and a dependent variable. Thus, moderation involves individual differences or circumstantial conditions that can alter how two variables influence each other (Edwards & Lambert, 2007). In a mediation process, the mediator clarifies the link between an independent variable and a dependent variable. Hayes (2022) defined this mediation effect between variables and quantified it

using statistical and regression models. Recently, researchers have delved into these concepts to gain deeper insights into the intricate dynamics between variables and how they influence various economic phenomena. Based on the literature, a negative interaction coefficient means that the combined influence of two predictors is less than the sum of their individual influences. If the interaction between A and B is negative, an increase in A diminishes B's significant impact. If B has a negative influence, this effect will become less negative as A increases, but when the impact of B is positive, A's increase will lessen the positive impact. Consequently, the negative associated effect diminishes the magnitude of the influence without affecting its sign or direction, and the same goes for positive influence, which does not affect the sign of either variable, but rather increases them in the same direction. Positive relationships between the two variables and the outcome are weaker when the values of the other variable are high.

Our goal is to address the following research question: Does competition significantly influence the environmental and social performance of banks in the MENA region? This question is important for several reasons. First, the impact of market competition on Corporate Social Responsibility (CSR) performance is a topic that has not been extensively studied, and existing findings are inconclusive. Previous studies have mostly focused on non-financial companies, with each sector facing unique pressures from stakeholders. Therefore, these findings may not apply to other industries. Forgiione and Migliardo (2020) is the only study similar to ours that examines the banking sector in a sample of developed countries within the OECD. Moreover, research efforts have primarily concentrated on the Gulf Cooperation Council (GCC) nations due to their economic advancement, while non-GCC regions have faced challenges related to limited data accessibility (Farah et al., 2021). In our study, we consider both GCC and non-GCC contexts. Additionally, most previous research has examined the relationship between competition and CSR on a global scale (e.g., Baldini et al., 2018). In our research, we separately analyze the environmental and social aspects to understand how selected explanatory variables influence the behavior of these aspects and whether they exhibit similar patterns. Second, it is novel aspect to explore the role of gender diversity in environmental and social performance in the financial sector of the MENA region. The majority of previous literature focuses primarily on developed Western countries, particularly non-financial sectors. Empirical evidence in this regard remains inconclusive, and the relationship between gender diversity and ESG factors may vary between developed and developing countries (Alhawaja et al., 2023; Wasiuzzaman & Subramaniam, 2023). Previous studies specifically examining the financial sector in the MENA region have also presented conflicting results, with some indicating a negative relationship (Issa et al., 2022a) and others suggesting a positive correlation (Issa & Zaid, 2021). Third, our research acknowledges that various economic, social, cultural, legal, and political frameworks in each country influence the environmental and social performance of the banking sector in this region (Elamer et al., 2020). This complexity complicates drawing definitive conclusions (Buallay et al., 2020; Çek & Eyupoglu, 2020). These factors not only directly impact firms' ESG practices (Baldini et al., 2018) but also indirectly shape the perspectives of investors and other stakeholders, thereby stimulating

firms to adopt ESG practices (Clementino & Perkins, 2020; Dyck et al., 2019). 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 can provide insights into analyzing the extent to which these factors act as determinants in CSR. Fourth, we have taken into account various relevant company characteristics that may influence its environmental or social efforts. Specifically, we considered factors such as the type of bank, ownership structure (state or private), and whether it is an Islamic or conventional bank. Finally, our study not only focuses on the direct impact of market competition on environmental and social performance but also contributes to existing literature by examining whether this effect may be moderated by factors such as gender diversity, the institutional environment of the MENA region, the state-private ownership structure, or the Islamic-conventional nature of banks.

B. OBJECTIVES

As previously stated, this thesis examines three chapters.

B.1. The first chapter examines the influence of market structure on the technical efficiency of banks in the MENA region. To assess this effect, it is necessary to analyze:

1. The impact of market power on banking technical efficiency.
2. The effect of concentration on banking technical efficiency.
3. The joint influence of market power and concentration on banking technical efficiency.

B.2. The second chapter investigates the influence of competition on bank profitability and stability in the MENA region. To achieve this objective, we need to examine:

1. The impact of market power on the profitability and stability of the banking sector in the MENA region.
2. Whether there is a nonlinear relationship among market power, profitability, solvency, and credit risk in the banking sector in the MENA region
3. Whether the positive effect of market power on profitability and stability is stronger in Islamic banks than in conventional banks.
4. Whether the positive effect of market power on profitability, solvency, and credit risk is less pronounced in GCC banks than in non-GCC banks.

B.3. The third chapter analyzes the impact of competition on corporate environmental and social performance in the MENA banking sector. To assess this effect, it is necessary to explore:

1. The effect of market power on the environmental or social performance of the banking sector in the MENA region.
2. The influence of board gender diversity on the environmental and social performance of banks in the MENA region.
3. Whether the negative effect of market power on environmental and social performance is less pronounced in banks with greater gender diversity on their board of directors.
4. Whether the negative effect of market power on environmental and social performance is less pronounced in banks operating in countries with better institutional environments.
5. Whether the negative effect of market power on environmental and social performance is stronger in Islamic banks than in conventional banks.
6. Whether the negative effect of market power on environmental and social performance is less pronounced in state-owned banks than in private banks.

C. METHODOLOGY

C.1. Methodology of Chapter One

Our investigation uses an unbalanced panel dataset based on 20 MENA countries, covering the period 2011-2020. The bank data in the current study has been obtained from the Orbis BankFocus database (Bureau Van Dijk), the data on the macroeconomic factors is from the World Bank's World Development Indicators, and the indicators of economic freedom in each country were from the Heritage Foundation's database.

At the methodological level, we assessed the relationship between market power and concentration on efficiency using Simar and Wilson's two-stage approach (2007). Robustness was tested using the Generalized Method of Moments (GMM) system to mitigate potential endogeneity, as proposed by Arellano and Bover (1995) and Blundell and Bond (1998).

C.2. Methodology of Chapter Two

Bank-level data were obtained from the Orbis BankFocus database (Bureau Van Dijk), data on macroeconomic factors were obtained from the World Bank's World Development Indicators, and institutional quality as captured by overall economic freedom was studied using the Heritage Foundation's. To ensure the reliability of our findings, we meticulously filtered the data to eliminate any missing or implausible entries. Our

investigation focused on a final sample containing an unbalanced panel dataset for 239 banks operating in 20 MENA nations, covering the period 2011-2020.

At the methodological level, to avoid problems such as omitted variable bias, simultaneity, and endogeneity, we apply a system GMM estimation for panel regression suggested by Arellano & Bover (1995) and Blundell and Bond (1998), which is applied with Windmeijer-corrected standard errors in a two-step estimation.

C.3. Methodology of Chapter Three

For both financial and non-financial (ESG) data of banks in MENA countries during the study period (2015-2021), we used the Eikon Refinitiv database (Thomson Reuters). This study encompasses data from 82 banks operating in 11 countries. Other nations in the MENA region either lack listed banks or do not report ESG information. Our analysis is confined to banks listed and reporting their environmental and social scores in the Eikon Refinitiv database. Country-level data are obtained from the World Bank, and the globalization index is from the KOF Swiss Economic Institute.

At the methodological level, we estimate the regression using Ordinary Least Squares (OLS) with year-fixed effects. We also conducted robustness tests by re-estimating the equation with various independent and control variables and introducing a lag of one year using the OLS method. Subsequently, we conducted a Two-Stage Least Squares Regression (2SLS) using variables with a one-year lag as instruments.

D. STRUCTURE

D.1. Structure of Chapter One

The Chapter is arranged as follows: introduction (section 1), literature and previous experience about the topic (section 2); the methodological approach adopted (section 3); data description (section 4); the empirical analysis and results (section 5). Finally, some conclusions are highlighted.

D.2. Structure of Chapter Two

The Chapter is arranged as follows: introduction (section 1), literature and previous experience related to the topic of our research (section 2), the methodological approach adopted (section 3), data description (section 4), empirical analysis, and results (section 5). In the final section, the conclusions are presented.

D.3. Structure of Chapter Three

The Chapter is organized as follows. The following section provides a review of the relevant literature and develops the hypotheses. Section 3 outlines the methodological approach, and section 4 presents the empirical results, and section 5 discusses the conclusions.

This thesis is organized into four chapters to perform the identified essays concerning the MENA banking system: the current introduction, followed by three chapters forming the thesis's main body (each chapter of which corresponds to an essay), and the thesis concludes with a final chapter (conclusion).

1

MARKET STRUCTURE AND TECHNICAL EFFICIENCY OF BANKS IN THE MENA REGION

1. MARKET STRUCTURE AND TECHNICAL EFFICIENCY OF BANKS IN THE MENA REGION

ABSTRACT

This study examines the influence of market structure on efficiency in the banking sector using a sample of 239 companies in the Middle Eastern and North African (MENA) region between 2011 and 2020. Banking efficiency scores have been obtained by the Data Envelopment Analysis (DEA), the level of concentration has been measured by the Herfindahl-Hirschman index and market power has been proxied by the bank-level Lerner index. Simar and Wilson's two-stage approach (2007) has been applied. The robustness of the results has been tested using the Generalized Method of Moments (GMM) system and various measures of efficiency. The results indicate that concentration influences efficiency positively and market power negatively; as for the interaction between both variables, it increases bank efficiency, in accordance with the bank specificity hypothesis (BSH). In addition, bank-specific characteristics (size, profitability and capitalization) and bank type (Islamic, domestic) positively affect efficiency, as do indicators of financial inclusion, institutional framework and financial development.

Keywords: MENA Countries, Bank Competition, Market Power, Market Concentration, Bank Efficiency, DEA.

1.1 INTRODUCTION

Since the 1990s, MENA countries have undertaken banking deregulation policies with the objective of increasing competition (Zoghalmi & Bouchemia, 2021). In most of these countries, there has been a wave of liberalization and the opening-up of banking markets with the aim of reducing the involvement of the public sector (Naceur & Omran, 2011).

The MENA economy's banking sector is the main source of corporate financing (Chaffai & Coccoresse, 2023) as equity and corporate bond markets are still relatively underdeveloped (Awartani et al., 2016). Banks are a key part of economic development (Mrad & Mateev, 2020), meaning that banking competition and its effects are of particular interest in these countries. In addition, investment in the region is particularly sensitive to declining lending rates (El Moussawi & Mansour, 2022), and efficiency gains positively affect investment and economic growth.

The banking sector in this area has high levels of public ownership and a lack of competition (Awartani et al., 2016; Zoghلامي & Bouchemia, 2021). For a complete view of the banking market in which enterprises operate, it is essential to bear in mind that competition and concentration are two different components of market structure. There, banks operate under monopolistic competition with considerable market power (Elfeituri & Vergos, 2019; Issa et al., 2022b; Polemis, 2015). In terms of the banking market, Zoghلامي and Bouchemia (2021) note that it is "moderately concentrated", although, in recent years, there has been a trend towards making it less so as well as reducing market power. The MENA region's lower levels of competition relative to others are due to it having scant credit information, strict rules and regulations governing bank entry, and little development of alternative sources of financing (Issa et al., 2022b).

Banks are one of the key players boosting economies and financial markets globally (Hunjra et al., 2022). Furthermore, several significant changes have taken place in the industry in recent years. As the banking industry has grown, so have the number of players, and Islamic banks (IBs) have become an essential part of the banking system (Saiti & Noordin, 2018). In fact, several large conventional banks (CBs) compete internationally with IBs to offer their services (El-Halaby et al., 2018). IBs have made inroads into the global financial system, their assets having risen from \$195 billion in 2000 to \$2.7 trillion in 2020 (IFSB, 2021). The emergence of IBs in the MENA region has had a notable effect on the market power of preexisting banks weakening; this is attributed to the fact that IBs are newcomers to the MENA market. With this in mind and so that they can spur the market and expand their client base, they have had to exert more pressure on pricing and margins (Chaffai & Coccoresse, 2023). However, recently, there has been a trend toward convergence (Moudud-Ul-Huq, 2021; Mateev et al., 2022), which may undermine the originality of the Islamic banking industry and limit its expansion (Azmat et al., 2020).

Increased competition in the banking market has forced banks to allocate their available resources more efficiently if they want to be more competitive (Casu & Girardone, 2009). IBs and CBs, as for-profit entities, have similar goals, such as to increase the wealth of their stockholders (Olson & Zoubi, 2008), meaning that it is necessary to measure the efficiency of these institutions.

Efficiency studies provide valuable benchmarking information for bank managers and policymakers regarding the improvements needed to enhance banking performance (Vilvanathan, 2021). At the same time, intense competition in financial markets makes efficiency a top priority for both sets of professionals and for regulators (Fiordelisi et al., 2011). The empirical and theoretical literature show that market structure has controversial effects on the efficiency of the banking system. The Quiet Life hypothesis (QLH) reveals a positive connection between competition and banking efficiency while the Banking Specificities hypothesis (BSH) implies that more competition among banks is detrimental to efficiency. Furthermore, studies analyze the links between competition, concentration, and efficiency separately. Only a few papers analyze the joint influence of competition and concentration on banking efficiency, even though they use various methods to measure

concentration and competition (e.g. Attia & Alber 2022; Chan et al., 2015; Otero-González et al., 2020; Thi My Phan et al., 2016).

The influence of market structure on efficiency has not yet received much attention in the literature, and mixed or inconclusive evidence has been found. Most of the studies so far have focused on banking sectors in developed countries, particularly within the EU and in the USA, with just a few in developing countries, such as in MENA economies. Of particular interest here is the unstable environment in some countries, with different levels of social and technological development. All the above characteristics are considered attractive areas for research in the MENA region.

This paper aims to fill a gap in the literature by analyzing the effect of market structure, namely market power and bank concentration, on the efficiency of the banking sector operating in the MENA region over the period 2011-2020. Banking efficiency is obtained by the Data Envelopment Analysis (DEA), and banking market power is proxied by the bank-level Lerner Index (LI), a non-structural approach. Given the relevance of market concentration and the number of rivals competition-wise, the Herfindahl-Harshman index (HHI), a structural approach, is also used as an independent variable. In addition, the effect on banking efficiency of specific bank characteristics (size, profitability, liquidity risk, capitalization, and income diversification), types of banks (Islamic or conventional, Gulf or non-Gulf, foreign or domestic, listed or unlisted), macroeconomic variables, the institutional framework, financial inclusion, financial development, and Covid19 are analyzed.

At the methodological level, Simar and Wilson's two-stage approach (2007) has been applied, specifically using the DEA at the first stage to estimate efficiency scores and then truncated regression estimation with double-bootstrap to investigate how market power as well as concentration affects banking efficiency. However, market power or market concentration could also depend on banking efficiency, following the efficiency structure hypothesis (Casu & Girardone, 2009). If so, there would be reverse causation. To alleviate the concern about the potential endogeneity and the persistence in the dependent variable, we have used the Generalized Method of Moments (GMM) system, as proposed by Arellano and Bover (1995) and Blundell and Bond (1998).

The remainder of the paper is arranged as follows: the literature and previous experience (section 2); the methodological approach adopted (section 3); data description (section 4); the empirical analysis and the results (section 5); in the final section, the conclusions are presented.

1.2 LITERATURE REVIEW

In this section, we briefly overview the literature on the correlation between market structure and bank efficiency.

1.2.1 Theoretical Literature Review

IBs act as financial intermediaries adhering to the Shariah principle, which states that IBs must not engage in transactions based on *riba* (interest), *gharar* (risk or uncertainty), *maysir* (such as speculation or gambling) or *haram* (illegal) industries (such as tobacco, alcohol or pork) (Paltrinieri & Kutan, 2019). In other words, the financial framework for IBs is based on "no exposure to toxic assets", on transforming conventional lending into transactions based on real economic services involving tangible assets, and on profit and loss sharing, similarly to equity-based finance in the sense that lenders own a stake in borrowers' activities (Othman et al., 2017). In this situation, IBs may require significant human capital to develop Shariah-compliant tools and may need more input to assess and monitor borrowers than CBs do. Additionally, due to their business model, IBs engage in riskier activities and many financial instruments do not comply with Islamic principles, which may cause sometimes leading to undesirable outputs (Alexakis et al., 2019; Harkati et al., 2019). Indeed, these principles may affect input, output and production technology selection in IBs, which could hinder the maximization of their production and impose further constraints in achieving efficiency.

In contrast to previous literature, other characteristics of IBs may increase their efficiency relative to CBs (Bitar et al., 2018). The business model of the Islamic banking system, in which both the bank and the borrower share the risks and rewards of an investment, incentivizes IBs to adopt more prudent lending practices than CBs, which rely on an interest-based profit maximization system, ultimately resulting in lower efficiency compared to IBs. In addition, the latter rely on real economic transactions, backed by tangible assets, which can improve their efficiency and also mitigate risks associated with market volatility.

Regarding the relationship between efficiency and competition, the literature highlights two approaches. The first is the Quiet Life hypothesis (QLH), a statement taken from the structure-conduct-performance (SCP) hypothesis, which declares that "the best of all monopoly profits is the quiet life" (Hicks, 1935). The QLH proposes that monopoly rents disincentivize cost concerns in banks in less competitive markets, leading to inefficient allocation decisions or the pursuit of other strategic objectives that negatively impact performance (Haghnejad et al., 2020). The more relaxed attitude in the monopolistic market permits banks to be less concerned about cost efficiency (Otero-González et al., 2020), where those with a large market share put more of their attention and resources into reducing risks rather than maximizing earnings (Berger & Hannan, 1998).

The second, the Bank Specificity hypothesis (BSH), states that banks are less efficient in highly competitive markets. The banking sector has some characteristics that make it unique as an industry due to information asymmetries between banks and borrowers and related problems such as adverse selection and moral hazard. Increased competition may increase monitoring costs and may cause the relationship with clients to be shorter, which further decreases the efficiency of banks (Pruteanu-Podpiera et al.,

2008). Thi My Phan et al. (2016) suggests two potential explanations for this outcome: higher financial costs and higher operating costs. Firstly, competition between banks leads to higher interest rates, which attract depositors and expand market share. Secondly, it may make the adverse selection of borrowers more likely, thus requiring additional resources (such as employees) to screen and monitor them. These aspects make them vulnerable to strict regulation and supervision, which may affect the influence of market power on efficiency in support of the BSH (Haghejad et al., 2020).

1.2.2. Empirical Literature Review

The empirical literature on the influence of market structure on efficiency is inconclusive; some studies (Alhassan & Ohene-Asare, 2016; El Moussawi & Mansour, 2022) accept the QLH, others reject it (Apergis & Polemis, 2016; Sarpong-Kumankoma et al., 2017), and Moyo (2018) finds mixed results.

The employment of various competition proxies may account for differences in outcomes. There is no agreement on the most suitable indicator for measuring competition. According to Yuanita (2019), structural measures of competition provide different results from non-structural ones when it comes to its effect on profitability in Indonesian banks.

Even though many studies have examined concentration and competition, few have looked into their combined effects on banking efficiency. Otero-González et al. (2020) have studied a sample of MENA region banks from 2005 to 2012, pointing out that market concentration negatively affects efficiency, thus fulfilling the QLH. Regarding competition, it has a negative influence on efficiency. They have found support for the competition-inefficiency hypothesis due to the decline in bank-customer loyalty. Chan et al. (2015) studied a sample of the banking sectors in five countries belonging to the Association of Southeast Asian Nations (ASEAN) from 1998 to 2012, by investigating the influence of market structure on banking efficiency. The findings imply that market power, LI, is positively correlated with bank efficiency. Moreover, the higher the concentration level the lower the bank's efficiency, and the interaction between the LI and banking concentration negatively impacts efficiency. Lastly, they found that even in highly concentrated banking sectors, a better institutional framework plays a significant mediating role in improving banking efficiency.

Other papers point out a positive connection between banking concentration and efficiency. Thi My Phan et al. (2016) examined the link between concentration, competition, and efficiency in six Asian countries from 2005 to 2012. The Stochastic Frontier Analysis (SFA) was employed to measure efficiency, and the LI was used to gauge the level of competition; the findings revealed that competition negatively influences efficiency, whereas banking concentration improves it. Attia and Alber (2022) have analyzed the association between banking concentration, competition, and efficiency in the MENA from 2008 to 2018. They conclude that it is concentration, not competition, that leads to banking efficiency.

Empirical studies generally support a negative correlation between competition and bank efficiency, consistent with the BSH hypothesis, which assumes that competition can lead to increasing costs for banks trying to sustain economies of scale. As a result, competition can hinder banks' cost efficiency. Based on the literature review, the following research hypothesis was formulated:

Hypothesis I: *Banking market structure affects technical efficiency in the MENA region.*

The hypothesis can be further divided into two separate hypotheses, as outlined below:

Hypothesis Ia: *Banking market power positively affects technical efficiency in the MENA region.*

Hypothesis Ib: *Banking concentration positively affects technical efficiency in the MENA region.*

Hypothesis II: *The joint influence of market power and banking concentration positively affects technical efficiency in the MENA region.*

1.3 METHODOLOGY AND DATA

This section presents the methodology and empirical model used to investigate the influence of market structure on bank efficiency. Furthermore, it provides an overview of the measures used to assess market structure and bank efficiency.

1.3.1 Dependent variable: Banking efficiency

The study of banking efficiency can be performed in several ways: (1), by running a traditional analysis of accounting ratios, or (2), by using the distance function approach, where best practice production is represented by a "production frontier" and each "production point" corresponds to a firm that is compared to this frontier. Efficiency is usually calculated using two methods: the DEA and the SFA. This paper applies the DEA (non-parametric approach) as it is the most commonly used technique to analyze banking efficiency (Nguyen et al., 2014).

The DEA is a mathematical method developed to estimate the efficiency of a set of similar decision making units (DMUs) that can use multiple inputs to produce multiple outputs. The CCR (Charnes, Cooper & Rhode, 1978) model considers the constant returns-to-scale (CRS) assumption in the definition of the production possibility set, and the BCC (Banker, Charnes & Cooper, 1984) model variable returns-to-scale (VRS). The CCR model assumes that all DMUs operate at an optimal scale and the BCC model is appropriate when not all DMUs are operating at this capacity (the efficiency of each DMU

being calculated by comparing it with respect to the frontier represented by the units that exhibit best practices and have a similar operational scale). Perfect competition in banks is unlikely, so the BCC model is more appropriate, hence rejecting the assumption that all banks analyzed operate at their optimal capacity (Banna et al., 2022).

Both DEA models can measure efficiency in output and input orientation alike. The output-oriented approach measures efficiency by determining how to increase outputs with fixed inputs. In contrast, the input-oriented method reduces input resources to attain a specific output level.

To calculate the technical efficiency of banks, the output-oriented BCC model has been employed, because economic units typically aim to maximize profits with an appropriate set of productive factors (inputs).

We have 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 produce $Y_{it} = \{y_{rit}\}$ and j inputs ($s = 1, 2, \dots, j$) that consume $X_{it} = \{x_{sit}\}$:

$$Max \theta_{0t}: x_{s0t} - \sum_{i=1}^{n_t} \lambda_{it} x_{sit} \geq 0; \sum_{i=1}^{n_t} \lambda_{it} y_{rit} - \theta_{0t} y_{r0t} \geq 0; \sum_{i=1}^{n_t} \lambda_{it} = 1; \lambda_{it} \geq 0 \quad (1.1)$$

where θ_0 is the efficiency score for DMUs and λ is the weight. θ_0 ranges from one to infinity. The DMU is efficient if θ_0 is equal to 1, and the DMU is inefficient if θ_0 is greater than 1.

According to the banking literature, the intermediation method is better for gauging overall bank efficiency levels, while the production method is more appropriate for assessing the efficiency of different branches of the same bank. As a result, the current study selects input-output variables using the intermediation method (Sealey & Lindley, 1977). Following the literature (Apergis & Polemis, 2016; Dong et al., 2014b), Staff expenses, Fixed assets, and Deposits are selected as inputs. In contrast, Gross loans, Other earning assets and Non-interest income are chosen as outputs.

The suggested models meet the isotonicity requirement, which requires outputs not to decrease when inputs increase, in that the correlation coefficient must be statistically significant and positive between inputs and outputs (Bowlin, 1998). Furthermore, the correlation coefficients between the selected input and output variables must be less than 0.9 (Lee & Seo, 2017).

1.3.2 Independent variables: market structure - the HHI and the LI

Generally, the literature regarding market structure measurement is classified into two principal branches:

The structural approach, based on the SCP paradigm, infers the degree of competition from the structure of the market. In this paradigm, market structure is represented by market concentration indicators, and the HHI is often employed by researchers (Leon, 2015). The SCP paradigm argues that in a highly concentrated market, it is easier for companies to act non-competitively.

HHI is calculated as the sum of the market shares (assets) squared in the banking sector of the given period and given country. It is written as follows:

$$HHI = \sum_{i=1}^N S_i^2$$

where N is the number of banks participating in the industry, and S_i denotes the market share of the bank i. The HHI index ranges between 0 and 1, the value equal to zero being perfect competition, and one indicating perfect monopoly, the higher figure indicating more concentration.

However, some authors have doubts about the reliability of the SCP model. According to Demsetz (1973), the issue with using concentration metrics as proxies for competition is that when some banks become more competitive, they force less efficient ones out of the marketplace ('efficient-structure' hypothesis). Thus, a shift in market concentration may indicate variations in efficiency rather than a change in how competitive the market is. This indicates that competition and concentration are not necessarily directly related to each other (Peltzman, 1977).

HHI provides some information about the market's level of competition, but more detail is needed regarding monopolistic power.

The non-structural approach assesses the level of competition by using different models and assumptions; to do this, the behavior of companies is observed without explicitly using information on market structure. Given the problems presented by the Boone indicator and H-statistic (Cruz-García et al., 2021), the LI has been chosen as a proxy for the level of competition in our study (the difference between the price of banking products and their marginal cost as a proportion of the price of banking products) as a direct measure of market power based on the elasticity of demand regarding price. More specifically, this metric indicates the extent of a bank's monopoly power in its industry by its rate of profit, taking a value between 0 and 1; the closer it is to 0, the less ability it has to charge a price above marginal cost and the more competitive market conditions become.

The clear advantage of utilizing the LI as a direct indicator of market power over other measures of competition is that it can be assessed at the bank-specific level and over time,

thus identifying various behavioral patterns in the respective market and/or period (Chaffai & Coccorese, 2023). Furthermore, it does not demand the bank's geographical market to be defined (Beck et al., 2013).

Specifically, the LI for a bank i in year t is written as follows:

$$Lerner_{it} = \frac{P_{it} - MC_{it}}{P_{it}}$$

where P_{it} is the price of total assets proxied by total revenues over total assets, where MC_{it} is the marginal cost.

To acquire MC_{it} , this study applies the intermediation approach. Hence, the MC is computed from a trans-log cost function (TCF) with a single output and three inputs.

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

where TC_{it} represents total costs (financial and operating costs), TA_{it} represents the bank's output (total assets), w_{it}^j , for $j = 1, 2, 3$, denotes the prices of the inputs as w_{it}^1 , which is interest paid on deposits (interest expenses over total deposits), w_{it}^2 is labor price (personnel expenses to total assets), and w_{it}^3 is other operating expenses (other operating expenses to total assets); T is a trend variable that collects the variations in the cost function over time and ε_{it} is an error term.

The following restrictions are imposed on regression coefficients to ensure the homogeneity of degree one in the input prices: $\sum_{j=1}^3 \alpha_j = 1$, $\sum_{j=1}^3 \phi_j = 0$ and $\sum_{j=1}^3 \sum_{k=1}^3 \theta_{jk} = 0$.

The estimated coefficients of the TCF are used to calculate the MC using the observations from each bank i at year t :

$$MC_{it} = \frac{\partial TC_{it}}{\partial TA_{it}} = \left[\beta_1 + \beta_2 \ln TA_{it} + \sum_{j=1}^3 \phi_j \ln w_{it}^j + \gamma_3 T \right] \frac{TC_{it}}{TA_{it}}$$



We have also developed an interaction term between the HHI and the market power indicator to examine how market competition affects efficiency.

1.3.3 Control variables

Several control variables have been added to the regression to limit omitted variable bias. First, bank-specific characteristics have been examined. Following El Moussawi and Mansour (2022), the logarithm of total assets has been used as a proxy for bank size. Large banks are expected to operate more efficiently due to economies of scale and scope. Following Guo et al. (2020), the net interest margin has been used as a proxy for profitability. Banks with higher profitability are likely to be more efficient. The liquidity ratio has also been used as an indicator of liquidity risk, following Ruziqa (2013). A low level of liquidity may force banks to increase cash reserves to reduce liquidity risk. As a result, they might need to use outside funding, which could affect their efficiency. A higher liquidity ratio is expected to lead to improvements in banking efficiency. In addition, the capital ratio has been taken into account as a proxy of capitalization, following Banna et al. (2020). The capital ratio may well positively affect banking efficiency because banks with greater levels of capital have lower funding costs and lower bankruptcy risk as a consequence. Lastly, Non-interest income to Total revenue has been used as a proxy of revenue diversification, following Alhassan and Ohene-Asare (2016). Greater diversification of a bank's income is expected to enhance banking efficiency.

Macroeconomic factors have been considered, including inflation and gross domestic product (GDP) growth. A negative link between inflation and banking efficiency and a positive one for economic growth are likely to occur (Phan et al., 2018). Lastly, domestic credit provided to the private sector as a proportion of GDP has been used as a proxy of financial development, following Sarpong-Kumankoma et al. (2017). It is supposed that financial development contributes to enhancing bank efficiency.

The influence of the institutional framework has also been also studied. To do so, government spending and monetary freedom have been used as indicators of economic freedom in each country belonging to the Heritage Foundation's database. Higher levels of government spending and monetary freedom indicate, respectively, that there is lower burden imposed by government expenditures and higher price stability and reliability in the absence of government intervention (Chortareas et al., 2013). Higher levels of economic freedom are assumed to improve bank efficiency. Secondly, voice and accountability is included as a proxy for the quality of institutional development for each country (Worldwide Governance Indicators). It is likely that countries with higher civil liberties, political rights, and media independence have more efficient banks (Lensink & Meesters, 2014; Chortareas et al., 2013).

According to Banna et al. (2022), automated teller machines (ATMs) per 100,000 adults and commercial bank branches (CBBs) per 100,000 adults are specifically considered indicators of financial inclusion. Higher levels of financial inclusion are expected to enhance bank efficiency.

1.3.4 The relationship between market structure and efficiency

At the methodological level, Simar and Wilson's two-stage bootstrap approach (2007) has been employed. One of the problems with DEA is that it can produce biased estimates of θ . In the first stage, the bias corrected efficiency scores $\hat{\theta}_{it}$ were estimated combining DEA with the bootstrap procedure proposed by Simar and Wilson (2000); in the second stage, we used a truncated regression with bootstrap to analyze the effect of competition, concentration and other control variables on banking efficiency. It is written as follows:

$$\hat{\theta}_{it} = \delta CP_{it} + \alpha CC_{it} + \beta Z_{it} + \eta D_t + \varepsilon_{it} \quad (1.2)$$

where $\hat{\theta}_{it}$ is our dependent variable, the bias-corrected bootstrapped efficiency score for DMU_i of each year t, CP_{it} is a variable measuring the level of competition of bank i in year t, CC_{it} is a variable measuring concentration and Z_{it} is a vector of control variables which is used to explain banking efficiency. D_t is a year dummy vector (from 2011 to 2020). δ , α , β , and η are the parameters to be estimated; ε_{it} is a disturbance normally distributed with a zero mean and σ_ε^2 variance with left-truncation at $(1 - \delta CP_{it} - \alpha CC_{it} - \beta Z_{it} - \eta D_t)$.

1.3.5 Data

Our investigation uses an unbalanced panel data set based on twenty MENA countries (Algeria, Bahrain, Djibouti, Egypt, Iraq, the Islamic Republic of Iran, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, the Syrian Arab Republic, Tunisia, the United Arab Emirates, and Yemen), which covers the period 2011-2020. After discarding banks lacking data and all unplausible data values that have arisen from our variables, we have acquired a final sample containing an unbalanced panel data set for 239 banks. Before discussing the empirical results, the descriptive statistics of all the study variables must be summarized. This descriptive analysis compares CBs and IBs. The bank data in the current study has been obtained from the Orbis BankFocus database (Bureau Van Dijk), and the data on the macroeconomic factors is from the World Bank's World Development Indicators.

Tables (1) and (2) report the descriptive statistics of the variables included in the study, covering the years 2011-2020. The values vary between banks and countries; however, there are a few essential general observations.

To measure technical efficiency in percentage points we have inverted the efficiency scores ($1/\hat{\theta}_{it}$), so that values less than one indicate inefficiency; the average technical efficiency in MENA banks was 60.61 %, categorized as moderately efficient; this means that MENA banks, with the same input levels, would have to increase outputs by 39.39% to catch up with the best practice banks; overall, IBs surpassed CBs in technical efficiency; the results show that banks in MENA improved their technical efficiency in 2020.

In terms of market structure, the average value for the LI in MENA banks was 0.315 during the study period, thus showing a relatively high level of market power, with results similar to previous studies by Polemis, (2015), and Issa et al, (2022b). The average LI for CBs was 0.326, higher than for IBs (0.279), which is consistent with Meslier et al. (2017). MENA banks experienced an increase in market power between 2019–2020, indicating a decline in the market's competitive conditions during the Covid19 crisis. The average HHI assets score in MENA banks was 0.212, considered to be "moderately concentrated" (Leon, 2015), while in the CBs it was higher than for their Islamic counterparts, in line with the findings of Mateev et al. (2022). In 2020, MENA banks became more concentrated.

Regarding bank-specific factors, for MENA banks, the average bank size, measured as the logarithm of total assets, was 8.46. Moreover, CBs had larger banks on average than IBs. During the Covid19 crisis, the size of MENA banks decreased. Based on performance, the average net interest margin was 3.19% for MENA banks, where IBs were less profitable than their conventional counterparts. In 2020, during the abovementioned health crisis, MENA banks were less profitable. With an overall average liquidity of 29.24% for both types of banks, CBs held more liquidity than IBs. During the emergency phase of the pandemic, MENA banks had a higher percentage of liquidity than in 2019. The mean of capitalization was 14.39%, which was higher in CBs than in IBs. It is observed that during the critical period, MENA banks had a higher capitalization ratio than in 2019. In terms of diversification, the mean was 28.76%, higher in IBs than in CBs. MENA banks increased their diversification in 2020, showing their ability to take advantage of the crisis to diversify their revenues.

Concerning macroeconomic variables, the average GDP growth was around 1.16%, and the standard deviation was 6.08%, showing a large difference in GDP growth among the countries in the sample. The Covid19 crisis resulted in a sharp decline in GDP growth in the MENA countries, while the average inflation rate was relatively high, at 4.83 %. In addition, this unprecedented period caused a steep rise in the inflation rate of the MENA countries. The average ratio of domestic credit for the private sector to GDP during the study period was 62.28%.

Regarding institutional framework, average government spending was 65.48%, average monetary freedom was 73.82%, and average voice and accountability was 22.08 %; these values show significant differences between the most and least developed economies.

Concerning financial inclusion during the study period, on average the sample countries had 42.07 ATMs and 13.99 CBBs per 100,000 adults. We have noted that the number of CBBs decreased in the more developed countries. This decline may be due to these countries adopting ATM technology and online services to deliver accessible banking services to everyone, replacing conventional ones.

1. Market Structure and Technical Efficiency of Banks in the MENA Region

Table 1: Descriptive statistics of study variables

| Variable | All banks | | | Conventional banks | | | Islamic banks | | |
|--|-----------|-------|----------|--------------------|-------|----------|---------------|-------|----------|
| | Obs. | Mean | Std.Dev. | Obs. | Mean | Std.Dev. | Obs. | Mean | Std.Dev. |
| Efficiency (%) | 2090 | 60.61 | 18.99 | 1590 | 59.62 | 18.28 | 500 | 63.76 | 20.44 |
| Lerner index | 2024 | 0.315 | 0.213 | 1548 | 0.326 | 0.203 | 476 | 0.279 | 0.239 |
| HHI assets | 2090 | 0.212 | 0.149 | 1590 | 0.214 | 0.155 | 500 | 0.207 | 0.133 |
| Size | 2090 | 8.46 | 1.61 | 1590 | 8.44 | 1.65 | 500 | 8.55 | 1.48 |
| Net interest margin (%) | 2085 | 3.19 | 1.81 | 1586 | 3.27 | 1.68 | 499 | 2.93 | 1.15 |
| Equity to assets ratio (%) | 2090 | 14.39 | 10.58 | 1590 | 14.67 | 10.97 | 500 | 13.48 | 9.21 |
| Liquid assets to total assets ratio (%) | 2084 | 29.24 | 18.80 | 1585 | 29.83 | 19.10 | 499 | 27.38 | 17.70 |
| Non-interest income to total revenue ratio (%) | 2089 | 28.76 | 20.95 | 1589 | 27.25 | 20.51 | 500 | 33.58 | 21.46 |
| Government spending | 1906 | 65.48 | 15.85 | 1443 | 64.74 | 15.00 | 463 | 67.80 | 18.08 |
| Monetary freedom | 1997 | 73.82 | 9.19 | 1516 | 74.55 | 8.60 | 481 | 71.51 | 10.51 |
| Voice and accountability | 2090 | 22.08 | 15.40 | 1590 | 24.17 | 16.30 | 500 | 15.43 | 9.43 |
| Inflation | 1904 | 4.83 | 10.27 | 1462 | 4.79 | 10.73 | 442 | 4.94 | 8.57 |
| GDP growth | 2057 | 1.16 | 6.08 | 1568 | 1.17 | 6.13 | 489 | 1.13 | 5.92 |
| Domestic credit to private sector (% of GDP) | 1491 | 62.28 | 27.10 | 1191 | 62.41 | 27.69 | 300 | 61.78 | 24.64 |
| Automated teller machines (per 100,000 adults) | 1701 | 42.07 | 27.63 | 1354 | 40.14 | 28.44 | 347 | 49.59 | 22.76 |
| Commercial bank branches (per 100,000 adults) | 1722 | 13.99 | 6.92 | 1370 | 14.12 | 6.75 | 352 | 13.50 | 7.55 |

Source: Own calculations, Orbis BankFocus database, Heritage Foundation's database, World Bank.

Table 2: Mean of variables year-wise

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Efficiency (%) | 56.50 | 57.39 | 57.42 | 58.89 | 59.20 | 59.57 | 64.07 | 63.05 | 63.50 | 63.78 |
| Lerner index | 0.315 | 0.326 | 0.354 | 0.346 | 0.368 | 0.344 | 0.262 | 0.268 | 0.268 | 0.314 |
| HHI assets | 0.222 | 0.224 | 0.217 | 0.219 | 0.209 | 0.208 | 0.207 | 0.204 | 0.206 | 0.213 |
| Size | 8.42 | 8.42 | 8.37 | 8.30 | 8.41 | 8.41 | 8.44 | 8.51 | 8.61 | 8.71 |
| Net interest margin (%) | 3.04 | 3.21 | 3.14 | 3.08 | 3.30 | 3.20 | 3.19 | 3.19 | 3.29 | 3.24 |
| Equity to assets ratio (%) | 14.51 | 14.36 | 14.82 | 15.19 | 14.81 | 14.96 | 14.58 | 13.57 | 13.43 | 13.68 |
| Liquid assets to total assets ratio (%) | 25.83 | 26.78 | 28.32 | 28.31 | 28.33 | 29.44 | 29.92 | 31.20 | 30.52 | 32.00 |
| Non-interest income to total revenue ratio (%) | 26.43 | 27.78 | 31.01 | 32.00 | 31.64 | 31.80 | 26.61 | 24.77 | 24.24 | 31.41 |
| Government spending | 71.07 | 65.88 | 68.61 | 66.12 | 65.88 | 64.90 | 63.63 | 62.46 | 62.98 | 65.38 |
| Monetary freedom | 72.71 | 73.54 | 73.46 | 73.91 | 74.11 | 72.96 | 75.82 | 74.92 | 74.21 | 72.17 |
| Voice and accountability | 22.07 | 22.14 | 21.87 | 22.60 | 22.31 | 23.23 | 22.34 | 21.94 | 21.25 | 21.08 |
| Inflation | 4.20 | 6.95 | 4.70 | 3.65 | 2.56 | 2.92 | 5.40 | 4.93 | 4.02 | 9.22 |
| GDP growth | 4.52 | 1.53 | 1.46 | 1.66 | 1.54 | 2.70 | 1.68 | 1.69 | 1.07 | -5.78 |
| Domestic credit to private sector (% of GDP) | 53.92 | 54.61 | 55.21 | 57.00 | 64.03 | 70.64 | 69.24 | 60.79 | 63.86 | 73.29 |
| Automated teller machines (per 100,000 adults) | 35.41 | 36.41 | 39.28 | 38.59 | 39.57 | 43.55 | 45.77 | 47.18 | 47.38 | 46.76 |
| Commercial bank branches (per 100,000 adults) | 13.78 | 13.50 | 16.64 | 14.23 | 14.19 | 14.85 | 14.60 | 14.67 | 12.86 | 13.08 |

Source: Own calculations, Orbis BankFocus database, Heritage Foundation's database, World Bank.

1.4 EMPIRICAL RESULTS AND DISCUSSION

In this section, we investigate whether market structure (LI and HHI) influences our dependent variable, which is bank efficiency.

1.4.1 Simar and Wilson model for banking efficiency

The result of the truncated regression is presented in Table (3), which allows us to analyze the impact of several factors on the efficiency of banks, including those associated with concentration (the HHI) and market power (the LI).

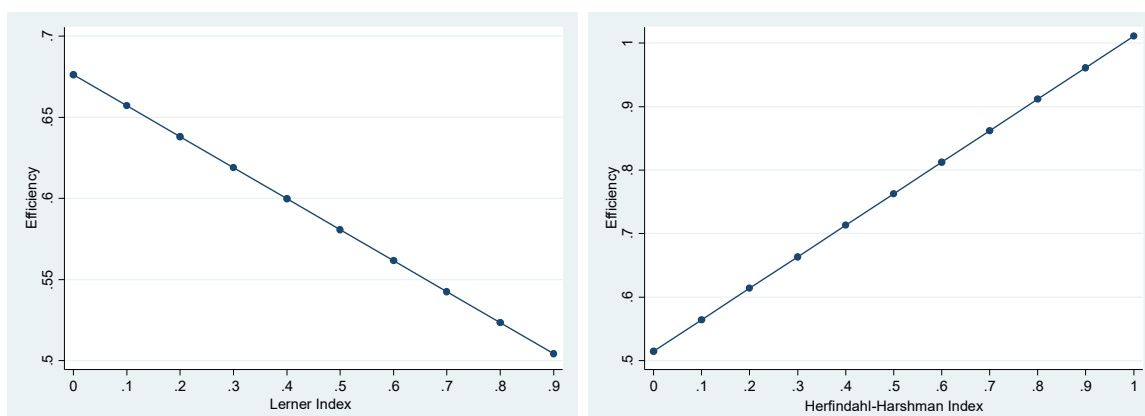
Column (1) displays the outcomes of estimating Eq. (2), including the variables of bank-specific characteristics and macroeconomic condition, and column (2) shows the interaction term between concentration and market power. Columns (3) to (8) contain the variables of financial inclusion (the number of CBBs and ATMs), institutional framework (government spending, voice and accountability, and monetary freedom) and financial development (domestic credit provided to the private sector as a proportion of GDP). Finally, in columns (9) to (12), bank type characteristics (Islamic, Gulf, domestic, and listed) can be seen.

When interpreting the results, it must be remembered that the higher the value of $\hat{\theta}_{it}$, the more inefficient banks are, whereas a negative sign in the estimated coefficients implies a positive effect on efficiency.

Thus, the association between the LI and efficiency is negative and statistically significant at the 5% level, i.e., the greater a bank's market power, the less efficient it is. Therefore, we can rule out Hypothesis Ia. The QLH is fulfilled, in line with El Moussawi and Mansour (2022), and Alhassan and Ohene-Asare (2016). The more concentrated a country's banking sector is when it has a high HHI, the more efficient its banks are, supporting Hypothesis Ib, thus refuting the SCP paradigm and the QLH. These results are in line with Attia and Alber (2022) and Thi My Phan et al. (2016), who point out that increased banking concentration can help banks enhance their management quality in terms of efficiency.

Figure (1) shows the linear relationship between LI or the HHI and banking efficiency, as assumed in our model.

Figure 1: Relationship between banking efficiency and competition indices: predictive margins



Source: Own production

Interestingly, the coefficient of the interaction between market power and high concentration (column 2) is positive and statistically significant. This suggests that banks with great market power in a highly concentrated market are more efficient, confirming Hypothesis H2; thus, our results reject the QLH.

Regarding the control variables, the results show that the coefficient of bank size is statistically significant and positive, indicating that the larger the bank, the more efficient it is, in line with El Moussawi and Mansour (2022). The higher the net interest margin ratio, the more efficient it is, as its estimated coefficient is positive. The more profitable banks tend to reduce production costs, thus improving efficiency (Guo et al., 2020). In most regressions, the relationship between the liquidity ratio and efficiency is not significant. Better-capitalized banks are usually more efficient, because the coefficients are positive and significant, albeit only slightly. The outcome is consistent with previous research by Banna et al. (2020), which shows that higher capital reduces potential future losses. El Moussawi and Mansour (2022) mention that because shareholders monitor managers, banks can be driven to run efficiently and limit excessive risk-taking. Higher levels of revenue diversification lead to higher bank efficiency, in line with Alhassan and Ohene-Asare (2016).

Regarding macroeconomic variables, a negative association between GDP growth and bank efficiency can be observed. The negative effect of economic growth on efficiency could be explained by the fact that certain banks choose to invest in riskier assets; the negative correlation could also be attributed to the unstable growth rates in the MENA region. Such volatility reduces demand for banking services, worsens information asymmetry, increases defaults on payments and bank operating costs, and lowers efficiency (El Moussawi & Mansour, 2022). The influence of inflation on technical efficiency in the MENA countries is negative in some models, similar to Onen and Tunik (2017), while financial development leads to more efficient banks, in unison with Sarpong-

1. Market Structure and Technical Efficiency of Banks in the MENA Region

Kumankoma et al. (2017). Columns 3 and 4 show that financial inclusion (measured by the variables ATMs and CBBs) positively and significantly affects banking efficiency (Banna et al., 2022).

Estimates have been made including different institutional variables, but only the estimated coefficient results for variables with significant influence on banking efficiency are shown. Improving the institutional environment -voice and accountability, and government spending- implies better banking efficiency. Like with the study of Chortareas et al. (2013), banks operating in countries with high degrees of economic freedom and proper governance tend to show higher levels of efficiency.

Finally, several dummy variables have been incorporated into the equations to determine whether banks are Islamic, domestic, listed or from the Gulf region, taking a value equal to 1 if true, or zero otherwise. IBs and domestic banks have positive and significant effects on efficiency. For banks that are listed or that are in the Gulf region, efficiency is negatively affected. In addition, Covid19 has no significant effect on levels of banking efficiency.

Our results show that IBs tend to be more efficient than CBs, which is consistent with the findings of Bitar et al. (2018). The same goes for Azzam and Rettab (2022), who also note that IBs are more innovative than their conventional counterparts due to their ability to adapt and make effective use of new technology, as well as having better standards of management, and higher levels of competition in the IB sector. While both IBs and CBs exercise market power, the latter may prioritize revenue from market power over efficiency and are therefore more likely to adopt "quiet life" behavior.

Our paper also reveals that banks in the Gulf region tend to be less efficient than their counterparts elsewhere. This finding is aligned with the results of previous research conducted by Bahrini (2017), which has indicated that the majority of non-Gulf banks were operating under increasing returns to scale, enabling them to achieve cost reductions. In contrast, most Gulf banks were running under decreasing or constant returns to scale, constraining their ability to lower costs. One possible explanation for this disparity is that Gulf banks are typically larger in size compared to non-Gulf banks, which may limit their cost-saving potential.

In addition, it suggests that domestic banks tend to be more efficient than foreign ones, which is consistent with previous research by Chaffai and Hassan (2019). The authors argue that domestic banks may benefit from organizational home advantages, including their knowledge of local market conditions and practices, which can enable them to better serve the needs of local businesses, and give them an edge over their foreign counterparts.

Finally, it indicates that unlisted banks exhibit greater efficiency than listed ones, as also noted by Ghosh (2014). This could be due to the lower agency costs faced by unlisted banks, which cover conflicts of interest that can arise between a company's management

team and its shareholders, and which may outweigh the benefits of market discipline and equity liquidity associated with listed banks.

1.4.2 Robustness analysis

In this section we perform additional checks to verify the robustness of our empirical evidence. Firstly, given that one of the main problems in calculating efficiency using the DEA methodology is making the correct choice of outputs and inputs, we have modified them in the efficiency calculation. Hence, initially, we have incorporated non-performing loans (NPLs), which are measured by loan loss provisions, as an input [see column (9) in Table (4)]. The inputs are Staff expenses, Fixed assets, Deposits, and Loan loss provisions, and the outputs Gross loans, Other earning assets and Non-interest income have been chosen. Finally, we have calculated cost efficiency (CE) according to the hybrid approach and with inputs and outputs similar to those defined by El Moussawi and Mansour (2022), who consider deposits as outputs and financial costs as inputs [see column (10) in Table (4)]. In addition, we have incorporated non-performing loans as an input. As for the outputs, we have selected Gross loans, Other earning assets, Non-interest income and Deposits, while the inputs are Staff expenses, Operating expenses, Interest expenses and Loan loss provisions.

Secondly, the static panel data models are suitable for strictly exogenous variables. Because of the likelihood of ‘reverse causation’ under the efficient structure paradigm, banking efficiency may affect market concentration and bank market power, which may therefore give inconsistent estimates. To prevent these endogeneity problems and to take the persistence of dependent variables into account, the GMM system, proposed by Arellano and Bover (1995) and Blundell and Bond (1998), has been applied with Windmeijer corrected standard errors in a two-step estimation.

Table (4) displays the estimated coefficients of the GMM system. The dependent variable of each column from (1) to (8) is the inverted bootstrapped efficiency score obtained by implementing the output orientation of the BCC model in the first stage.

All test prerequisites (Hansen, AR(1), AR(2)) are fulfilled as can be seen by the p-values; the results confirm the consistency of our dynamic panel data model. The outcome of the GMM system estimation is consistent with the previous findings and estimations both in terms of the coefficient signs and the level of significance between efficiency and market structure. Additionally, most of the control variables show results that are in line with the truncated regression model. Only income diversification and inflation show no significant effect. This implies that the results of the model are robust to change in empirical models. Of note is the positive and significant influence of the lagged dependent variable, which affirms the persistence of banking efficiency in the MENA region.

1. Market Structure and Technical Efficiency of Banks in the MENA Region

Table 3: Results of truncated regressions of market structure on banking efficiency using Simar and Wilsons Algorithm II (2011 -2020)

| Variables | Inefficiency | | | | | | | | | | | |
|--------------------------|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|----------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Lerner index | 3.369** | 1.751** | 1.597** | 1.789** | 1.706** | 1.763** | 1.736** | 1.766** | 1.735** | 2.263** | 1.729** | 1.696** |
| HHI assets | -1.794** | -1.189** | -1.195** | -1.007** | -1.031** | -1.180** | -0.932** | -1.013** | -0.932** | -0.103 | -0.890** | -0.954** |
| Size | -0.088** | -0.058** | -0.065** | -0.091** | -0.082** | -0.078** | -0.101** | -0.077** | -0.098** | -0.074** | -0.074** | -0.081** |
| Net interest margin | -0.173** | -0.177** | -0.190** | -0.173** | -0.170** | -0.179** | -0.176** | -0.174** | -0.169** | -0.178** | -0.177** | -0.171** |
| Liquidity | -0.006 | -0.001 | -0.002 | -0.001 | -0.001 | -0.001 | 0.000 | -0.001 | -0.000 | -0.000 | -0.0024** | 0.000 |
| Equity to assets ratio | -0.0003** | -0.000** | -0.000** | -0.000** | -0.000** | -0.000** | -0.000** | -0.000** | -0.000** | -0.000** | -0.000** | -0.000** |
| Revenue diversification | -0.008** | -0.007** | -0.008** | -0.008** | -0.008** | -0.008** | -0.009** | -0.008** | -0.008** | -0.008** | -0.008** | -0.008** |
| Real GDP growth | 0.018** | 0.019** | 0.017** | 0.019** | 0.015** | 0.015** | 0.016** | 0.018** | 0.017** | 0.017** | 0.016** | 0.017** |
| Inflation | 0.006** | 0.003 | 0.001 | 0.007** | 0.002 | 0.001 | 0.009** | 0.006** | 0.007** | 0.004 | 0.004 | 0.006** |
| Year 2020 | 0.072 | 0.110 | 0.069 | 0.080 | 0.059 | 0.094 | 0.068** | 0.076 | 0.068 | 0.067 | 0.061 | 0.086 |
| Lerner × HHI assets | | -2.351** | | | | | | | | | | |
| ATMs | | | -0.004** | | | | | | | | | |
| CBBs | | | | -0.030** | | | | | | | | |
| Monetary freedom | | | | | -0.002 | | | | | | | |
| Voice and accountability | | | | | | -0.007** | | | | | | |
| Government spending | | | | | | | -0.003** | | | | | |
| Domestic credit/GDP | | | | | | | | -0.003** | | | | |
| Islamic | | | | | | | | | -0.100** | | | |
| Gulf | | | | | | | | | | 0.085** | | |
| Domestic | | | | | | | | | | | -0.225** | |
| Listed | | | | | | | | | | | | 0.137** |
| Constant | 3.370** | 3.318** | 3.803** | 3.247** | 3.546** | 3.547** | 3.311** | 3.308** | 3.407** | 3.091** | 3.477** | 3.209** |
| Sigma | 0.661** | 0.658** | 0.647** | 0.659** | 0.654** | 0.658** | 0.656** | 0.660** | 0.657** | 0.655** | 0.645** | 0.658** |
| Number of Obs. | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 | 1,846 |

Note: The table shows the results of Algorithm II by Simar and Wilson (2007) applied to truncated regressions. The dependent variable is the efficiency score obtained by the bootstrap method in the first stage applying the BCC model with output orientation. The inputs are Staff expenses, Fixed assets and Deposits. The outputs are Gross loans, Other earning assets and Non-interest income. The regressions have been estimated with 1,846 observations. We have applied the missForest package in R to impute missing values. Time dummies are included. 2,000 bootstrap replications have been used for the bias correction of the DEA scores and for the estimation confidence intervals of the regression coefficients. ** indicates a statistical significance at 5% levels.

Source: Own production

Table 4: Results of GMM regressions of relation between market structure and banking efficiency (2011-2020)

| Variables | Efficiency | | | | | | | | | |
|-------------------------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| L1. Efficiency | 0.7150*** | 0.7266*** | 0.6823*** | 0.7459*** | 0.6833*** | 0.7842*** | 0.7515*** | 0.7139*** | 0.6899*** | 0.4249*** |
| Lerner index | -0.1911*** | -0.3049*** | -0.1701** | -0.1624** | -0.1547** | -0.1595*** | -0.1107** | -0.1280* | -0.2048*** | -0.3747*** |
| HHI assets | 0.4964*** | 0.1408 | 0.7279*** | 0.4388** | 0.4834*** | 0.3632*** | 0.4814*** | 0.4025** | 0.5448*** | 0.1662 |
| Size | 0.0491*** | 0.0386*** | 0.0491*** | 0.0429*** | 0.0489*** | 0.0381*** | 0.0439*** | 0.0348*** | 0.0478*** | 0.0605*** |
| Net interest margin | 0.0233** | 0.0126 | 0.0174* | 0.0215* | 0.0230** | 0.0215** | 0.0213*** | 0.0196 | 0.0194* | 0.0358*** |
| Liquidity | 0.0017* | 0.0019* | 0.0022*** | 0.0015* | 0.0015* | 0.0014* | 0.0014** | 0.0007 | 0.0021** | 0.0003 |
| Equity to assets ratio | 0.0064*** | 0.0042*** | 0.0059*** | 0.0056*** | 0.0062*** | 0.0054*** | 0.0056*** | 0.0033* | 0.0067*** | 0.0038 |
| Revenue diversification | -0.0002 | -0.0002 | -0.0011 | -0.0005 | -0.0001 | 0.0001 | -0.0003 | -0.0004 | -0.0004 | 0.0040*** |
| Real GDP growth | -0.0038** | 0.0029* | -0.0046** | -0.0035** | -0.0038** | -0.0033** | -0.0034*** | -0.0005 | -0.0044*** | -0.0039** |
| Inflation | 0.0002 | 0.0004 | -0.0001 | 0.0003 | 0.0003 | 0.0003 | 0.0004 | -0.0015 | 0.0005 | 0.0008 |
| Year 2020 | -0.0259 | -0.0237 | -0.0361** | -0.0193* | -0.0252 | -0.0369*** | -0.0312** | -0.0331* | -0.0291* | -0.0232 |
| Lerner × HHI assets | | 0.8202*** | | | | | | | | |
| ATMs | | | 0.0006** | | | | | | | |
| CBBs | | | | 0.0050*** | | | | | | |
| Monetary freedom | | | | | 0.0021** | | | | | |
| Voice-accountability | | | | | | 0.0017*** | | | | |
| Government spending | | | | | | | 0.0021*** | | | |
| Domestic credit/GDP | | | | | | | | 0.0009** | | |
| Constant | -0.4897*** | -0.2872** | -0.6199*** | -0.5877*** | -0.5163*** | -0.4192*** | -0.5323*** | -0.3450** | -0.4651*** | -0.4909*** |
| AR (1), p-value | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 |
| AR (2), p-value | 0.252 | 0.295 | 0.264 | 0.221 | 0.258 | 0.436 | 0.532 | 0.268 | 0.397 | 0.586 |
| Hansen test | 57.34 | 69.28 | 48.70 | 54.17 | 52.95 | 51.58 | 48.41 | 69.26 | 49.10 | 66.58 |
| Prob. Hansen test | 0.317 | 0.245 | 0.642 | 0.430 | 0.476 | 0.530 | 0.653 | 0.066 | 0.627 | 0.100 |
| Number of Obs. | 1614 | 1614 | 1575 | 1578 | 1614 | 1420 | 1426 | 1238 | 1614 | 1614 |

Note: The dependent variable of regressions 1 to 8 is the bootstrapped efficiency score acquired by implementing the output orientation of the BCC model. Regression 9 incorporates non-performing loans (measured by Loan loss provisions) as an input, and in regression 12, the dependent variable is cost efficiency. Time dummies are included. AR(1) and AR(2) are the coefficients of first and second order correlation and applied on residual in differences. The joint validity of the instruments has been tested using the Hansen test of overidentifying restrictions. *, ** and *** indicate statistical significance at 10%, 5% and 1% levels respectively.

Source: Own production



1. Market Structure and Technical Efficiency of Banks in the MENA Region

We have used another alternative estimation method for instrumental variables regressions with several levels of fixed effects proposed by Correia (2015). The results are presented in Table (5) correspond only to the base model that in the Tables (3) and (4) is collected in the first column.

We have included fixed effects to control for unobserved heterogeneity across cross-sections and over time (Otero-González et al., 2023). Additionally, we estimate standard errors by clustering firms, years, and countries.

Table 5: Results of year fixed effects regressions of relation between market structure and banking efficiency (2011-2020)

| Dependent | Efficiency |
|-------------------------|----------------------|
| Lerner Index | -0.319*** (0.081) |
| HHI assets | 0.185* (0.086) |
| Size | 0.068*** (0.011) |
| Net interest margin | 0.044*** (0.008) |
| Liquidity | 0.001 (0.001) |
| Equity to assets ratio | 0.002 (0.001) |
| Revenue diversification | 0.004*** (0.001) |
| Real GDP growth | -0.007* (0.003) |
| Inflation | -0.001 (0.003) |
| Constant | -0.183* (0.096) |
| Year fixed effect | yes |
| Number of Obs. | 1,846 |
| R2 | 0.2869 |
| cluster banks | 231 |
| cluster countries | 19 |
| cluster year | 10 |

Note: Data enclosed in () are standard error. Dummy variables for time have been used. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) levels.

Source: Own production

The robustness analysis presented in Table (5) indicates that increased market power has a negative impact on banking efficiency, which further supports the earlier findings and thus supports the QLH. On the other hand, market concentration has a positive influence on efficiency, which confirms the previous results and contradicts the QLH.

In addition, based on the StarMine 1Y default probability, we divided our sample of countries into advanced countries¹ and less advanced countries². The "StarMine 1Y Default Probability" from the London Stock Exchange Group (LSEG) Data & Analytics company database (formerly Thomson Reuters' Refinitiv database) estimates the likelihood of a country defaulting on its debt by utilizing the nation's macroeconomic, market-based, and political data.

Table 6: Results of truncated regressions of market structure on banking efficiency: advanced and less advanced countries

| | Advanced countries | Less advanced countries |
|-------------------------|----------------------|-------------------------|
| Dependent | Efficiency | Efficiency |
| Lerner index | -0.231*** (0.027) | -0.453*** (0.037) |
| HHI assets | 0.108 (0.078) | 0.230*** (0.042) |
| Size | 0.082*** (0.004) | 0.058*** (0.005) |
| Net interest margin | 0.047*** (0.003) | 0.043*** (0.004) |
| Liquidity | -0.001* (0.000) | 0.001*** (0.000) |
| Equity to assets ratio | 0.005*** (0.001) | -0.001 (0.001) |
| Revenue diversification | 0.003*** (0.000) | 0.004*** (0.000) |
| Real GDP growth | -0.002 (0.002) | -0.008*** (0.001) |
| Inflation | -0.000 (0.003) | -0.003*** (0.001) |
| Constant | -0.395*** (0.057) | -0.053 (0.049) |
| Sigma | 0.136*** (0.003) | 0.161*** (0.004) |
| Year fixed effect | yes | yes |
| Number of Obs. | 881 | 965 |

Note: Data enclosed in () are standard error. Dummy variables for time have been used. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) levels.

Source: Own production

1 Algeria, Bahrain, Israel, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

2 Djibouti, Egypt, Iraq, the Islamic Republic of Iran, Jordan, Lebanon, Libya, Morocco, Palestine, the Syrian Arab Republic, Tunisia, and Yemen.

The results from the truncated regressions in Table (6) indicate that the Lerner index has a significant negative impact on banking efficiency in both advanced and less advanced countries. This suggests that increased market power is associated with reduced banking efficiency in both groups of nations. Conversely, the HHI positively affects banking efficiency significantly only in less advanced countries, implying that higher market concentration in these nations may allow banks to benefit from economies of scale and scope, leading to higher efficiency. In advanced countries, the HHI's impact on efficiency is not significant, which may be due to the mature regulatory environment in these economies neutralizing the potential efficiency gains from market concentration.

1.4.3 Granger causality analysis between competition and efficiency

Since competition can cause efficiency, and efficiency can also cause competition, resulting in reverse causality, we will perform a Granger causality test to clarify this issue.

The relationship between competition and efficiency in the banking sectors of MENA countries is investigated using a Granger-type causality test to panel data. Following Casu and Girardone (2009), we use an autoregressive distributed lags (ADL) linear model to analyze Granger causality between competition and efficiency.

$$Y_{it} = \alpha_0 + \alpha_1 Y_{i,t-1} + \alpha_2 Y_{i,t-2} + \beta_1 X_{i,t-1} + \beta_2 X_{i,t-2} + \gamma_i + \mu_t + \varepsilon_{it} \quad (1.3)$$

where $Y_{i,t}$ and $X_{i,t}$ are alternatively competition and bank efficiency measures. The $\alpha_0, \alpha_1, \alpha_2, \beta_1, \beta_2$ are parameters to be estimated, γ_i is an individual bank specific effect, μ_t a time effect and ε_{it} is an error term.

We employ the system GMM method to estimate equation (1.3), and the joint null hypothesis $\beta_1 = \beta_2 = 0$ is equivalent to a panel data test for Granger causality. If the null hypothesis is accepted, there is no Granger causality from the variable X_t to Y_t .

Table 7: The null hypothesis of the contrast is competition is not a Granger-cause of cost efficiency

| Dependent | Efficiency |
|------------------|---------------------|
| L1.Efficiency | 0.757*** (0.126) |
| L2.Efficiency | 0.130 (0.146) |
| L1. Lerner index | 0.117 (0.076) |
| L2.Lerner index | 0.114** (0.049) |
| Year | 0.004** (0.002) |
| Constant | -7.194** -3.314 |
| Number of Obs. | 1547 |
| Banks | 230 |
| F-Test | 6940.56 |
| P-value (F) | 0.000 |
| AR(1) Test | -3.192 |
| AR(1) P-value | 0.001 |
| AR(2) Test | 0.769 |
| AR(2) P-value | 0.442 |
| Instruments | 38 |
| J-Hansen | 39.896 |
| J-Hansen P-value | 0.159 |
| B1=B2=0 | |
| F(2, 229) | 4.92 |
| Prob F | 0.0081 |

Source: Own production

Table 8: The null hypothesis of the contrast is cost efficiency is not a Granger-cause of competition

| Dependent | Lerner index |
|------------------|----------------------|
| L1. Lerner | 0.229 (0.162) |
| L2.Lerner | 0.005 (0.109) |
| L1.Efficiency | -0.261 (0.263) |
| L2.Efficiency | 0.593** (0.256) |
| Year | -0.016*** (0.004) |
| Constant | 31.436*** -7.170 |
| Number of Obs. | 1529 |
| Banks | 230 |
| AR(1) Test | -4.246 |
| AR(1) P-value | 0.000 |
| AR(2) Test | 0.945 |
| AR(2) P-value | 0.345 |
| Instruments | 38 |
| J-Hansen | 49.273 |
| J-Hansen P-value | 0.026 |
| B1=B2=0 | |
| F(2, 229) | 2.67 |
| Prob F | 0.0711 |

Source: Own production

Tables (7) and (8) report the results of the Granger causality tests. In Table (7), the Granger causality is assessed as the joint test of the two lags of competition on efficiency as follows: $\beta_1 = \beta_2 = 0$. A p-value of 0.008 rejects, at the 5% significance level, the null hypothesis of no causality between competition and efficiency. Table (8) analyzes the Granger causality of efficiency on competition. The results of the joint test of the two lags of efficiency do not reject the null hypothesis at the 5% significance level, with a p-value of 0.07. At a significance level of 5%, there is only unidirectional causality from competition to efficiency.

1.5 CONCLUSION

This paper analyzes the relationship between market structure, i.e., market power and banking concentration, and the efficiency of banks in the MENA region by studying the Quiet Life Hypothesis (QLH) and the Bank Specificity Hypothesis (BSH). To do so, firstly, we have calculated the bias-corrected efficiency of MENA banks using the DEA, we have estimated bank-level LIs as a proxy for market power and done the same for the HHI for market concentration.

Our results indicate that the level of concentration positively affects efficiency, which refutes the QLH. As for market power, it negatively influences efficiency, thus supporting the QLH. When it comes to the combined effect of both variables, the coexistence of higher concentration and market power increases bank efficiency, supporting the BSH hypothesis.

The structural and non-structural approaches reveal different results that may help to design policies related to banking efficiency; if market concentration positively affects it, policymakers should not be concerned. If the QLH is fulfilled, measures to improve efficiency and competition are necessary (Otero-González et al., 2019).

Regarding bank-specific variables, size, profitability, capitalization, and liquidity positively affect efficiency in most of the models analyzed. Moreover, an effective institutional framework and adequate financial development, as proposed by economic theory, contribute to higher levels of efficiency. The results also show a strong relationship between banking efficiency and financial inclusion. IBs and domestic banks have positive and statistically significant effects on efficiency. Conversely, it is negatively affected in listed banks and those in the Gulf region.

This study's impact is not limited to academic circles as our findings provide several contributions to the vision of policymakers, bank managers, regulators, and governments for improving the efficiency of the MENA banking system. Therefore, the paper supports the concentration-increasing policies implemented by regulators in several countries to boost efficiency. However, regulators in the MENA region must be careful when trying to increase the level of concentration in the banking industry to avoid creating excessive

market power, which can harm efficiency. Consequently, it would be more advisable for them to encourage mergers or acquisitions of smaller banks with less market power.

For MENA nations, which have a comparatively high level of banking sector concentration, this topic is especially crucial. The existence of larger financial institutions may not always imply less competition, based on the low degree of association between the LI and market share, which calls into question the ideal size of financial institutions.

As with all papers, ours has some limitations, which should be the basis for future research and must therefore be mentioned. The main issue is that it is limited to the MENA region, thereby making it difficult to generalize its results. Despite this, the number of countries and the size of the sample analyzed make it relevant to a notable number of countries around the world, which in general, have institutional environments similar to those of many emerging countries. Future research could look at other developing countries, efficiency measures, and new variables such as Environmental, Social, and Governance (ESG), or globalization.

2

COMPETITION'S IMPACT ON BANK PROFITABILITY AND STABILITY IN THE MENA REGION

2. COMPETITION'S IMPACT ON BANK PROFITABILITY AND STABILITY IN THE MENA REGION

ABSTRACT

We empirically examine the relationship between competition, profitability, and bank stability in 239 banks operating within the Middle Eastern and North African (MENA) banking sector between 2011 and 2020. The Generalized Method of Moments (GMM) estimation results indicate that engaging in price competition could detrimentally impact banks' profitability and solvency while positively influencing the credit quality of their loan portfolios. Banks with higher levels of market power exhibit greater overall financial stability, demonstrating their ability to safeguard franchise values from riskier portfolios through measures such as increasing equity capital or employing other risk management strategies. Furthermore, our findings provide empirical support for the nexus between competition-stability and competition-fragility theories. The evidence reveals an inverse U-shaped relationship between market power and bank solvency and a U-shaped association between market power and bank credit risk. However, we did not find evidence to confirm a nonlinear relationship between market power and profitability. We also study the role moderating of Islamic banks (IBs) and Gulf Cooperation Council (GCC) banks on the effect of competition on bank profitability and stability. Empirical evidence shows that increased market power leads to lower profitability and solvency in conventional banks (CBs) than in IBs. The same is true when analyzing the moderating effect of GCC banks; increased market power has a negative effect on profitability, solvency, and credit risk in GCC banks compared with non-GCC banks.

Keywords: MENA countries, bank competition, market power, bank profitability, bank stability.

2.1 INTRODUCTION

In the last few decades, there has been a notable shift toward more liberalized financial systems in the economies of the MENA region (Jreisat & Hassan, 2016). This transformation has been driven by reforms aimed at promoting competition and reducing the public sector's involvement within the banking sector (Naceur & Omran, 2011; Zoghلامي & Bouchemia, 2021). These changes in the market structure of the banking sector have had a significant impact on the competitive landscape, ultimately influencing the performance and stability of the sector (Kouki & Al-Nasser, 2017). As a result, the connection between competition among banks and the financial system's profitability and stability has been extensively discussed in both empirical and theoretical research.

The competition fragility or "charter value" theory argues that intensified competition erodes market power, resulting in lower profit margins. This can incentivize a willingness to take risks, potentially destabilizing the banking sector. On the other hand, the competition-stability theory suggests that increased competition encourages banks to offer lower interest rates to borrowers, thereby enhancing borrowers' ability to fulfill their obligations and reducing risks for the banks. Many authors, such as Adu (2022a), Berger et al. (2009), and Saif-Alyousfi et al. (2020), argue that the viewpoints of "competition-fragility" and "competition-stability" should not be seen as mutually exclusive theories but can coexist within the banking system. Banks with higher levels of market power exhibit greater overall financial stability, indicating that they safeguard their franchise values from riskier portfolios by increasing the capital buffer or employing other risk management strategies.

The geographical region examined in this study is the Middle Eastern and North African (MENA) region. In this area, weak domestic stock markets and limited availability of equity financing have positioned MENA banks as the primary source of external finance for both firms and individuals (Awartani et al., 2016). In this context, the banking industry in MENA countries plays a central role in supporting economic growth by providing financial intermediation services and channeling savings into productive investments. This means that the impact of banking competition in these countries is of significant interest, particularly considering the vulnerability of investments to changes in loan rates (El Moussawi & Mansour, 2022).

The region is characterized by a low level of competition and high barriers to new bank entry (Almarzoqi et al., 2015). Existing studies have generally found that MENA banks operate under a monopolistic competition regime (Issa et al., 2022b; Polemis, 2015; Almarzoqi et al., 2015). The banking system in the region exhibits robust financial stability with respect to banks' solvency and credit quality. By examining data from the World Bank's Global Financial Development Database (GFDD)³, we observe that the banking sector in MENA demonstrates solvency denoted by a Z-Score value exceeding the global average during 2011–2021, the most recent year of available data (23.76 vs. 16.83).

³ <https://databank.worldbank.org/source/global-financial-development>

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

Furthermore, in MENA banks, the level of non-performing loans (NPLs) falls below the global average during 2011–2022 (6.13 vs. 6.88) (GFDD)⁴.

There are several reasons why the MENA region is an interesting place for investigating the impact of market power on bank profitability and stability. First, global financial regulators have introduced numerous initiatives to reduce the probability of future banking collapses in response to the financial crisis. In the MENA region, significant progress has been made in strengthening prudential regulations and adopting international standards such as Basel III requirements and International Financial Reporting Standards (IFRS) (Pacter, 2016; Prasad et al., 2016; World Bank, 2020). These efforts aim to enhance capital sufficiency, liquidity management, disclosure, transparency, and the estimation of credit losses and provisions (Ozili & Outa, 2017) to improve the stability and profitability of the banking system (Bitar et al., 2016). Second, there is widespread existence of Islamic banks (IBs) within the MENA region banking system, as they operate on a different business model and principles than conventional banks (CBs). Their growth has been significant in the global financial industry, with assets expanding from \$195 billion in 2000 to \$3.06 trillion in 2021 (IFSB, 2022). Third, the region includes the Gulf Cooperation Council (GCC), which is rich in both capital and petroleum resources, and the banking industry within the GCC is the main source of finance for investments in the oil and gas sectors (Mohammad, 2020). In addition, the nations comprising the GCC collectively possess more than 42% of the total assets within the global Islamic banking industry (IFSB, 2019). Banks in this GCC region may have other characteristics that differentiate them from non-GCC banks. They are more competitive, as almost all of them are state-owned (Al-Khoury & Arouri, 2016; Chaffai & Coccorese, 2023).

We have made several contributions to the existing literature. First, previous literature mostly uses industry-level concentration as a proxy for competition in banks because it is easy to calculate. However, higher market concentration does not necessarily indicate low competition. To assess the influence of competition on bank profitability and stability in the MENA banking sector, we measure banking competition using the bank-level Lerner Index (LI) as a direct measure of market power. We examined profitability ratios, specifically the return on assets (ROA), along with commonly employed indicators of bank stability, namely the Z-score (solvency) and the Loan Loss Provision (LLP) ratio (credit risk), to determine whether more competition in the MENA region intensifies banks' propensity to assume greater insolvency and credit risks because of their profitability erosion. Second, we expand the existing literature by exploring potential nonlinearity in the relationship between competition, bank profitability, and stability. Third, we enrich the previous literature by exploring the moderating influence of the business model (Islamic or conventional) and geographic characteristics (GCC versus non-GCC) on the way the market power affects bank profitability and stability.

This paper proposes that elevated market power within the banking sector can lead to more precarious loan portfolios. However, it does not necessarily imply that overall bank risk will increase. In fact, increasing capital or implementing risk mitigation strategies may lead to a higher bank Z-score. Thus, this paper provides strong support for employing multiple indicators of bank risk to explore the connection between competition and risk and offers more robust and reliable results. Regarding profitability, the study finds that market power significantly positively impacts ROA. Furthermore, the evidence reveals an inverse U-shaped relationship between market power and bank solvency and a U-shaped connection between market power and bank credit risk. We did not find evidence confirming a nonlinear relationship between market power and profitability. Additionally, banks that are more efficient, have lower leverage, have greater revenue diversification, and are smaller in size tend to be more profitable and solvent. Banks with higher leverage and smaller size, and those with greater revenue diversification, face a higher level of credit risk. Furthermore, empirical evidence reveals a negative impact on profitability and solvency for CBs compared with IBs when there is an increase in market power, as measured by the Lerner index. This negative impact on profitability, solvency, and credit risk is also observed in GCC banks compared with non-GCC banks.

The rest of the chapter is arranged as follows: the literature and previous experience (section 2), the methodological approach adopted (section 3), data description (section 4), empirical analysis, and the results (section 5). In the final section, the conclusions are presented.

2.2 LITERATURE REVIEW AND RESEARCH HYPOTHESIS

In this section, we briefly overview the literature on the correlation between competition and bank profitability and stability.

2.2.1 Theoretical Literature Review

The nexus of banking competition, profitability, and stability has garnered extensive attention within both theoretical and empirical realms, manifesting divergent perspectives.

The traditional standpoint, known as the “competition fragility” hypothesis, posits that banks earn lower monopoly rents in competitive markets, leading to decreased profit margins as stability declines (Keeley, 1990). According to this viewpoint, increased competition could encourage banks to take on higher risks in pursuit of better returns and compensation, which could lead to a deterioration in the quality of their loan portfolio. Supporters of this perspective also argue that in more concentrated financial systems, large banks can reap advantages from greater economies of scale and, consequently, are better equipped to diversify their portfolios both economically and geographically through cross-border activities compared with smaller banks (Beccalli et al., 2015). It is also possible that banks receive lower informational rents from their relationships with borrowers in more

competitive banking environments, thus reducing their incentive to screen borrowers adequately and increasing the fragility of banking systems (Allen & Gale, 2004; Marquez, 2001).

Conversely, the “competition-stability” perspective contends that banks in low-competition markets have incentives to set higher lending rates, which increases the probability of customers defaulting on loans and intensifies problems of asymmetric information, where less efficient projects are financed (Boyd & De Nicoló, 2005). In addition, the potential moral hazard issues associated with government bailouts of large banks in highly concentrated markets, known as “too big to fail” (Mishkin, 1999), may encourage bank managers to take more risks and contribute to the vulnerability of the financial system, resulting in high costs for governments to bail them out in the event of their failure, particularly in the presence of financial conglomerates that are harder to monitor and supervise (Demirgüç-Kunt & Huizinga, 2013).

Recently, Martinez-Miera and Repullo (2010), as an extension of Boyd and De Nicoló (2005) model, investigated the potential presence of a nonlinear U-shaped link between competition and risk of bank failure. They establish that there may indeed be two separate effects in operation: the first effect is the “risk-shifting effect”, where increased competition leads to lower interest rates, thus reducing the risk of default by borrowers and lowering banking risk. The second effect is the “margin effect”, whereby increased competition results in lower interest rates and thus lower returns that banks receive from good loans, ultimately having a negative impact on banking stability. Whether any of these influences appear depends on the level of competition and other market conditions. Their results indicate that the risk-shifting effect tends to be dominant in monopolistic markets, where increased competition reduces banking risks. In contrast, the margin effect tends to dominate in highly competitive markets; therefore, more competition increases the probability of default. Consequently, the link between competition and risk is a nonlinear U-shaped relationship.

2.2.2 Empirical Literature Review

To explore the influence of competition on bank profitability and stability, empirical studies have examined different geographical regions, analyzed distinct periods, and employed various estimation techniques [refer to Tables (9) and (10)].

Table 9: Main studies that examined the connection between competition and bank profitability

| Author (s) | Context | Period analysis | Bank profitability | Competition | Methodology |
|--------------------------------|-----------------------------|-----------------|--------------------------|----------------------|------------------|
| Positive Relationship | | | | | |
| Tan (2016) | China | 2003-2011 | ROA, NIM | Lerner | GMM |
| Bolarinwa et al. (2019) | Nigeria | 2005-2015 | ROA | HHI | GMM |
| Khattak and Ali (2021) | MENA-6 | 2006-2017 | ROA, ROE | Lerner | GMM |
| Khattak et al. (2022) | Malaysia | 2008-2020 | ROA, ROE | EA Lerner | GMM |
| Negative relationship | | | | | |
| Albaity et al. (2019) | MENA-18 | 2006-2015 | ROA | Lerner | GMM |
| Le and Ngo (2020) | 23 developing and developed | 2002-2016 | ROA, NIM | C3 | GMM |
| Zoghلامي and Bouchemia (2021) | MENA-11 | 2011-2018 | ROA, ROE | HHI, Lerner | OLS |
| Mixed results | | | | | |
| Yuanita (2019) | Indonesia | 2000-2015 | ROA | C4, HHI | GMM |
| Moudud-Ul-Huq et al. (2020b) | MENA-21 | 2011-2017 | ROA, ROE, and NIM | C3, Lerner | GMM, LS, and GLM |
| Rakshit and Bardhan (2022) | India | 1996-2016 | ROA, ROE, and NIM | Lerner, HHI, and CR3 | GMM |
| Non-linear relationship | | | | | |
| Nguyen (2019) | Vietnam | 2006-2016 | ROAA, ROAE, PBT, and NIM | Lerner, EA Lerner | GMM |

Note: The literature is categorized into four panels (positive correlation, negative correlation, mixed results, and non-linear relationship) depending on how competition affects banks' profitability. In this context, the bank's profitability measures are defined as follows: ROA represents return on assets, NIM represents net interest margin, ROE represents return on equity, ROAA represents net income to average assets, ROAE represents net income to average equity, and PBT represents profit before tax to average assets. The market competition gages are denoted as follows: Lerner represents the Lerner index, HHI denotes the Herfindahl-Hirschman index, EA Lerner represents the efficiency-adjusted Lerner index, and CR3 and CR4 refer to the concentration ratios of the three and four largest banks. The methodology regression technique GMM signifies Generalized Method of Moment, OLS represents ordinary least squares, LS represents least squares, and GLM signifies Generalized Linear Model.

Source: Own production

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

Table 10: Main studies that examined the connection between competition and bank stability

| Author (s) | Context | Period analysis | Bank stability | Competition | Methodology |
|-------------------------------------|---|-----------------|--|---------------|-------------|
| Competition-stability view | | | | | |
| Soedarmono and Tarazi (2016) | Asia-Pacific-12 | 1994-2009 | LLP | Lerner | GMM, WLS |
| Zoghلامي and Bouchemia (2020) | MENA-11 | 2011-2018 | NPL | Lerner, HHI | OLS |
| Santoso et al. (2021) | Asian-11 | 2000-2016 | LLP | Lerner | GMM |
| Bektaş et al. (2022) | Dual banking countries-9 | 2011-2017 | Z-score | HHI | GMM |
| Mateev et al. (2022) | MENA-18 | 2005-2018 | LLR, NPL | Lerner | GMM |
| Competition-fragility view | | | | | |
| Almarzoqi et al. (2015) | MENA | 1999-2013 | Z-score, NPL | Lerner | GLS |
| Azmi et al. (2019) | Dual banking countries-14 | 2005-2016 | Z-score | HHI | GMM |
| Louhichi et al. (2019) | Dual banking countries-10 | 2005-2014 | Z-score | Lerner | GMM |
| Moudud-Ul-Huq (2021) | BRICS (Brazil, Russia, India, China and South Africa) | 2000-2015 | Z-scores, NPL | Lerner, HHI | GMM |
| Khattak and Ali (2021) | MENA-6 | 2006-2017 | Z-score | Lerner | GMM |
| Kabir et al. (2020) | Bangladesh | 2001-2018 | NPL, Z-score, and Marton's Distance to the Default | Lerner | GMM |
| Azmi et al. (2022) | Dual banking countries-17 | 2005-2020 | Z-score | Lerner | GMM |
| Risfandy et al. (2022) | Dual banking countries-29 | 2010-2018 | Z-score | EA Lerner | FE |
| Khattak et al. (2022) | Malaysia | 2008-2020 | Z-score | EA Lerner | GMM |
| Mixed results | | | | | |
| Saif-Alyousfi et al. (2020) | GCC-6 | 1998-2016 | Z-score, NPL | Lerner, HHI | GMM |
| Ali et al. (2021) | Dual banking countries-15 | 2006-2017 | NPL, Z-score | Lerner, HHI | GMM |
| Adu (2022a) | Sub-Saharan African countries-16 | 2007-2018 | Z-score, NPL, and LLP | Lerner, H | GMM, 2SLS |
| Alnabulsi et al. (2022) | MENA-11 | 2005-2020 | NPL | Lerner, C3 | GMM |
| Non-statistical significance | | | | | |
| Naili and Lahrichi (2022) | MENA-5 | 2000-2019 | NPL | C3 | GMM |
| Non-linear relationship | | | | | |
| Otero-González et al. (2017) | MENA-19 | 2005-2012 | Z-score, NPL | HHI, H | GMM |
| Albaity et al. (2019) | MENA-18 | 2006-2015 | Z-score, NPL | Lerner | GMM |
| Hussain and Bashir (2020) | China | 2000-2012 | NPL | Lerner | GMM |
| Albaity et al. (2021) | GCC-6 | 2006-2016 | Z-score, NPL | Boone, Lerner | GMM |
| El Moussawi and Mansour (2022) | MENA-16 | 1999-2008 | Z-score | Lerner | GMM |

Note: The literature is categorized into five panels (Competition-stability view, Competition-fragility view, mixed results, non-statistical significance, and non-linear relationship) depending on how competition affects banks' stability. In this context, the bank's stability measures are defined as follows: LLP represents a loan loss provision, NPL represents non-performing loans, Z-score represents insolvency risk, and LLR represents a loan loss reserve. The market competition gages are denoted as follows: Lerner represents the Lerner index, HHI denotes the Herfindahl-Hirschman index, EA Lerner represents the efficiency-adjusted Lerner index, H denotes the Panzar-Rosse-H-statistic, and Boone represents the Boone indicator. CR3 refers to the concentration ratios of the three largest banks. The methodology regression technique GMM signifies Generalized Method of Moment, WLS signifies Weighted Least Squares, OLS represents ordinary least squares, GLS signifies generalized least square, FE signifies fixed effect, and 2SLS denotes two-stage least squares.

Source: Own production

Empirical evidence on the influence of competition on bank profitability is inconclusive, particularly in emerging nations [see Table (9)]. The review of empirical studies is categorized into four strands. Some studies have found a positive relationship between competition and bank profitability (Bolarinwa et al., 2019; Khattak & Ali, 2021; Khattak et al., 2022; Tan, 2016), whereas others have found a negative relationship (Albaity et al., 2019; Le & Ngo, 2020; Zoghlami & Bouchemia, 2021). Some studies have reported mixed results (Moudud-Ul-Huq et al., 2020b; Rakshit & Bardhan, 2022; Yuanita, 2019). Furthermore, other studies suggest a nonlinear link (Nguyen, 2019).

With regard to the impact of competition on bank stability, the current empirical investigations, particularly in developing countries, have yielded disparate findings [see Table (10)]. The review of empirical studies is categorized into five strands. Some studies support the competition-stability perspective (Bektaş et al., 2022; Mateev et al., 2022; Santoso et al., 2021; Soedarmono & Tarazi, 2016; Zoghlami & Bouchemia, 2020), whereas others support the competition-fragility view (Almarzoqi et al., 2015; Azmi et al., 2019, 2022; Kabir et al., 2020; Khattak & Ali, 2021; Khattak et al., 2022; Louhichi et al., 2019; Moudud-Ul-Huq, 2021; Risfandy et al., 2022). Some studies have found mixed results (Adu, 2022a; Ali et al., 2021; Alnabulsi et al., 2022; Saif-Alyousfi et al., 2020). We should note that studies use different measures of competition or stability, and the results may differ depending on them, which is why we have the possibility of mixed outcomes, while another study found no significant relationship (Naili & Lahrichi, 2022). Furthermore, other studies suggest that there is a non-linear relationship (Albaity et al., 2019, 2021; El Moussawi & Mansour, 2022; Hussain & Bashir, 2020; Otero-González et al., 2017).

According to Turk-Ariss (2009) and Naceur and Omran (2011), the banking sector in MENA nations has witnessed a wave of mergers alongside other banking reform initiatives. A trend toward consolidation within the banking sector has resulted in higher concentration, with an increase in the number of large banks. In line with this trend, the banking system in this region demonstrates strong performance in terms of profitability and financial stability. It can be perceived as a potential paradigm of the competition-fragility view, which posits that more profitable and stable banking systems are less susceptible to competitive pressures. Therefore, the following hypothesis can be formulated:

Hypothesis I: *Bank market power positively influences the profitability and stability of the banking sector in the MENA region.*

It should be noted that previous studies in the MENA region have yielded inconclusive results. Based on these findings, it can be inferred that heightened competition generally leads to reduced financial profitability and solvency, while simultaneously increasing credit risk. Consequently, Hypothesis I can be further divided into two separate hypotheses, as outlined below:

Hypothesis Ia: *Bank market power positively influences the profitability and solvency of the banking sector in the MENA region.*

Hypothesis Ib: *Bank market power positively influences the credit risk of the banking sector in the MENA region.*

In addition, within the MENA banking context, despite differences in banking market power (Chaffai & Coccoresse, 2023) and bank concentration ratio⁵ between nations, various market structures continue to coexist. Thus, the variety of market structures within the MENA banking sector allows the co-existence of competition-stability and competition-fragility theories, depending on the level of concentration and market power. Moreover, a nonlinear examination could offer valuable insights for policymakers by identifying the ideal inflection point for bank competition at which bank profitability and stability are at their highest. Based on this and on recent studies in the region, we hypothesized the following:

Hypothesis II: *There is a non-linear relationship between market power, profitability, solvency, and credit risk in the banking sector in the MENA region.*

2.2.3 Link between business model (Islamic versus conventional), geographical characteristics (GCC versus non-GCC), and bank profitability and stability

The difference between the two business models (Islamic or conventional) lies in the manner in which they generate income. While CBs rely on interest-based transactions and offer a more comprehensive range of investment options, participating in more profitable investments (Albaity et al., 2019; Alqahtani & Mayes, 2018), IBs adhere to Shariah principles. These principles prohibit charging or paying interest (riba) and involvement in unethical or speculative activities, which limits the activities to be financed. Conversely, CBs often generate more consistent and predictable income streams (Ali et al., 2021; Hassan et al., 2019; Kabir et al., 2015). In addition, IBs typically have higher operating costs due to compliance with Sharia principles, such as screening investments for compliance by the "Sharia Committee"; these additional costs can reduce the profitability of IBs compared with their conventional counterparts (Harkati et al., 2019). Additionally, the restricted use of risk management techniques in their operations could contribute to their higher credit risk potential and decrease profits compared with CBs that have access to a wider range of financial instruments (Kabir et al., 2015; Othman & Mersni, 2014). Considering the arguments and literature presented above, we hypothesized the following:

Hypothesis III: *The Islamic business model has a significant negative impact on profitability and stability in the banking sector in the MENA region.*

GCC nations heavily rely on oil and gas export revenues, which makes their economies vulnerable to fluctuations in oil and gas prices. Therefore, when oil prices fall, it can weaken economic activity and lead to loan defaults (Khandelwal et al., 2016; Mabkhot &

⁵ <https://databank.worldbank.org/source/global-financial-development>

Al-Wesabi, 2022). Additionally, Gulf banks tend to have higher operating costs than non-GCC banks (Hakimi et al., 2023; Issa et al., 2022b), which can put pressure on their profitability margins. As we pointed out, GCC banks exhibit more competitive behavior with significant state ownership than non-GCC banks (Al-Khoury & Arouri, 2016; Chaffai & Coccorese, 2023), where higher competition from banks ultimately leads to a decline in margins, erodes the charter value of banks, and prompts them to take on more risks. Accordingly, we hypothesized the following:

Hypothesis IV: *Banks operating in GCC countries have a significant negative impact on profitability and stability in the MENA region.*

A moderating variable can alter the way an independent variable affects a dependent variable by influencing the direction or strength of their relationship. By introducing this variable, we gain a clearer understanding of the interaction between the two primary variables. In our case, an interesting question is whether market power influences profitability and stability differently depending on the business model (Islamic or conventional) and geographic characteristics (GCC versus non-GCC) of banks. This aspect is particularly novel, as no previous research has analyzed these effects.

According to Risfandy et al. (2019), when IBs gain a significant increase in market power, they can charge higher prices for their banking services because their customer base (Muslims) is willing to pay higher prices for banking services that align with their religious values, thus achieving greater profitability and stability than CBs. Bollen (2007) suggests that borrowers from IBs may be willing to incur higher costs due to the intangible benefits associated with the "psychic dividend." This willingness can enable IBs to effectively exercise their market power.

Hypothesis V: *The positive effect of market power on profitability and stability is stronger in Islamic banks than in conventional banks.*

As mentioned earlier, banks in the GCC have a higher degree of state ownership than banks outside the GCC (Al-Khoury & Arouri, 2016). The positive relationship between market power, profitability, and stability is likely influenced by bank ownership (Claessens et al., 2001; Ehsan & Javid, 2018; Jeon et al., 2017). To explain this, 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. Similarly, a study by Yusgiantoro et al. (2019) found that state-owned banks, in particular, experience a decrease in Z-score when they possess greater market power than other ownership types, stating that state-owned banks may take advantage of their "too big to fail" status in response to the increased charter value resulting from greater market power. On the other hand, in terms of credit risk, a study by Srivastava et al. (2022) suggests that as state-owned banks gain more market power, they are less likely to engage in risky activities, possibly due to the implicit sovereign guarantees associated with state-owned banks.

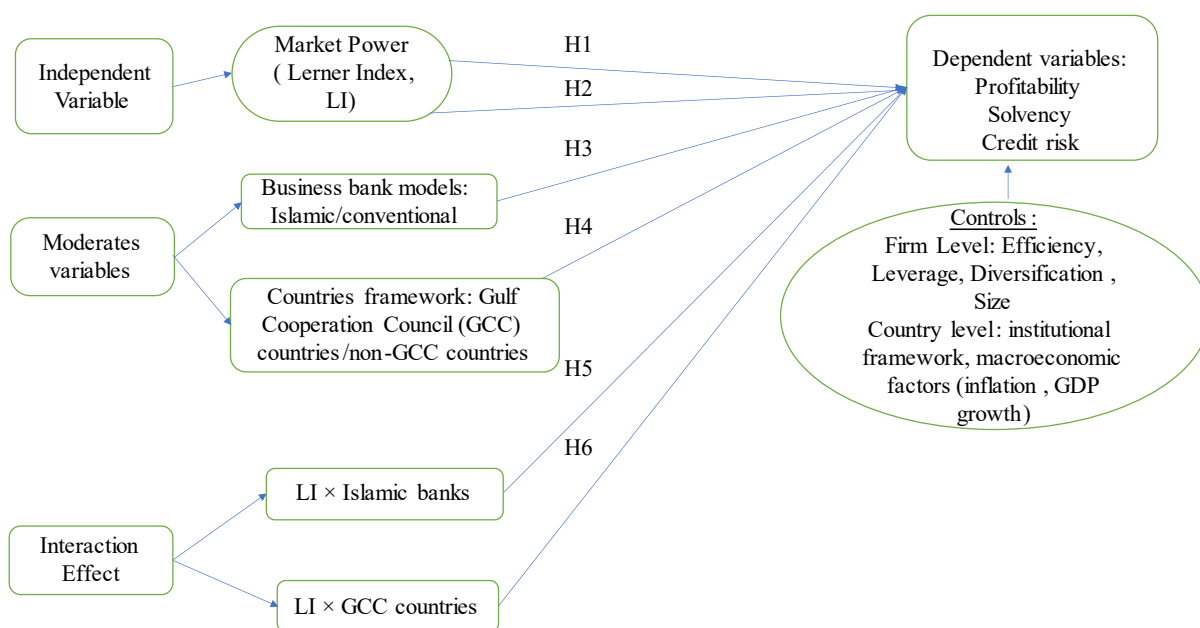
2. Competition's Impact on Bank Profitability and Stability in the MENA Region

In general, GCC banks exhibit robust regulatory frameworks, political stability, regional cooperation, and limited exposure to global financial turmoil, making them less likely to exert their monopoly power (Mabkhot & Al-Wesabi, 2022).

Hypothesis VI: *The positive effect of market power on profitability, solvency, and credit risk is less pronounced in GCC banks than in non-GCC banks.*

The proposed research model is graphically shown in Figure (2).

Figure 2: Conceptual model



Source: Own production

2.3 METHODOLOGY AND DATA

First, this section presents the methodology and empirical model used to investigate the influence of competition on both profitability and financial stability. Furthermore, it provides an overview of the measures used to assess competition, profitability, and financial stability.

A comprehensive set of variables presented in Table (11) is considered in the analysis to control for the effect of other factors on the relationship between competition, profitability, and risk.

Table 11: Variable explanations

| Dependent variables | Symbol | Definition | Source | Expected sign | Main references |
|------------------------------|-------------------------|--|---|---------------|---|
| Profitability | ROA | Calculated by dividing the net income of banks by their total assets. | Orbis Bank Focus | | Hassan and Bashir (2005), Moudud-UL-Huq (2015), and Yuanita (2019) |
| Solvency | Z-score | Calculated by dividing the sum of ROA and equity to total assets ratio by the standard deviation of ROA. | Authors' calculations based on the Orbis Bank Focus | | Azmi et al. (2019, 2022) and Bektaş et al. (2022) |
| Credit risk | LLP | Measured by the ratio of loan loss provision to gross loans. | | | Adu (2022a), Santoso et al. (2021), and Soedarmono and Tarazi (2016) |
| Explanatory variable | | | | | |
| Lerner index | LI | Calculated using the trans-log cost function with one output and three inputs. | Author's own calculations | (-/+) | Mateev et al. (2022), Moudud-UL-Huq et al. (2020b), and Saif-Alyousfi et al. (2020) |
| Moderating variables | | | | | |
| Business model | ISL | A dummy variable is equal to 1 if the bank is Islamic and 0 otherwise. | Orbis Bank Focus | (-) | Albaity et al. (2019) and Alqahtani and Mayes (2018) |
| Geographical characteristics | GCC | A dummy variable is equal to 1 if the bank is located in the Gulf region and 0 otherwise. | | (-) | Khan and Zahid (2020) |
| Control variables | | | | | |
| Efficiency | Efficiency | Cost efficiency was calculated using data envelopment analysis (DEA). | Author's own calculations | (+) | Alber (2017) and El Moussawi and Mansour (2022) |
| Credit risk | LLP | Measured by the ratio of loan loss provision to gross loans. | Authors' calculations based on the Orbis Bank Focus | (-) | Bolarinwa et al. (2019) and Pham et al. (2021) |
| Leverage | Leverage | Measured by the ratio of total liabilities to total assets. | | (-) | Al-Homaidi et al. (2018) and Moudud-UL-Huq et al. (2020a) |
| Revenue diversification | Revenue diversification | Measured by the ratio of non-interest income to total revenue. | | (+) | Nisar et al. (2018) |
| Size (LNA) | Size | Gauged as the logarithm of total assets. | | (-/+) | Adusei (2015), Ali and Puaah (2019), Fu et al. (2014), Rakshit and Bardhan (2022), and Soedarmono and Tarazi (2016) |



2. Competition's Impact on Bank Profitability and Stability in the MENA Region

| Dependent variables | Symbol | Definition | Source | Expected sign | Main references |
|--|------------|---|-----------------------------------|---------------|---|
| Control variables at the country level | | | | | |
| Overall economic freedom | EF | Measures overall economic freedom based on 12 economic liberties: property rights, judicial effectiveness, government integrity, tax burden, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom. | Heritage Foundation | (-/+) | Defung and Yudaruddin (2022), Djalilov and Piesse (2016), Harkati et al. (2019), Ovi et al. (2014), Sarpong-Kumankoma et al. (2018), and Sufian and Habibullah (2010) |
| Inflation | Inflation | Annual inflation rate. | World Bank Development Indicators | (-) | Brahmaiah (2018) and Khan et al. (2016) |
| GDP growth | GDP growth | Annual GDP growth rate. | | (+) | Bolarinwa et al. (2019), Kabir (2020), and Soedarmono and Tarazi (2016) |

Source: Own production

2.3.1 Dependent variables

For the dependent variable, different indicators were used as proxies for profitability and bank stability.

2.3.1.1 Bank profitability

In this regard, in line with different publications, we have used return on average assets (ROA) as the best measure of performance (Hassan and Bashir, 2005; Moudud-Ul-Huq, 2015; Yuanita, 2019), which is calculated by dividing the bank's net income by its total assets.

Examining a bank's performance is essential for decision markets to evaluate its profitability. Previous studies on bank profitability commonly employ key indicators such as ROA, NIM, and ROE. Among these metrics, ROA is widely regarded as the most reliable measure because it is unaffected by high equity multipliers and provides an accurate portrayal of the bank's ability to generate earnings from its asset portfolio (Rivard & Thomas, 1997).

2.3.1.2 Bank stability

To measure bank stability and given that some of the banks analyzed are not listed on the stock exchange, two proxies based on accounting data were utilized: the Z-Score as an inverse measure of distance to default and the LLP ratio to capture the credit risk of banks.

The risk of insolvency pertains to the potential that a financial institution may be unable to meet its forthcoming financial obligations because of having more liabilities than assets, resulting in a negative net worth. This situation may arise when a banking institution incurs losses from asset depreciation, such as loans, securities, or other operational activities, and the bank's capital base is insufficient to offset these losses. In such cases, the inability of the bank to fulfill its obligation leads to default, causing a decline in franchise value. To mitigate this risk, banks must maintain an adequate capital buffer. This ensures that in the event of losses, the bank can diminish its capital holdings and thereby preserve financial stability.

Following Azmi et al. (2019, 2022), Bektaş et al. (2022), and Khattak and Ali (2021), we use the Z-Score, which is commonly employed to measure banks' solvency in empirical analysis, as delineated below:

$$Z - score_{it} = \frac{ROA_{it} + E_{it}/A_{it}}{\sigma_{ROA,i}}$$

where E_{it}/A_{it} is the equity-to-asset ratio, the return on assets, ROA_{it} , is approximated by the ratio of net income to total assets, and the $\sigma_{ROA,i}$ is standard deviation of ROA across the sample. A higher Z-Score value indicates greater banking stability, which makes it less vulnerable.

We examine the credit risk associated with loans given to borrowers to assess how competition in pricing impacts the quality of bank loans, since banking business primarily revolves around providing credit. The possibility that a creditor may be unable to pay back their debt to a bank is referred to as credit risk.

Following Adu (2022a), Santoso et al. (2021), and Soedarmono and Tarazi (2016), this study considered using LLPs as a measure of credit risk by assessing the likelihood of NPL. It reflects a bank's loan portfolio's overall credit quality and ability to absorb expected credit losses. A higher percentage of LLPs indicates higher credit risk. The LLP ratio is a reliable indicator of asset portfolio risk because loans comprise the majority of on-balance-sheet assets.

2.3.2 Independent variables

2.3.2.1 Lerner index

In contrast to the approach taken by Bektaş et al. (2022), Bolarinwa et al. (2019), Le and Ngo (2020), and Naili and Lahrichi (2022), which used industry-level concentration as a proxy for competition in banks due to its simplicity in calculations, this study distinguishes between market concentration and competition at the individual banks' levels by using the Lerner index, to gauge a bank's ability to establish prices exceeding its marginal cost. In our paper, we have chosen to employ LI as a direct measure of market power, considering the problems presented by the Boone indicator and H-statistic (Cruz-García et al., 2021). Recent empirical literature on market competition has widely relied on this index for analysis (Mateev et al., 2022; Moudud-UI-Huq et al., 2020b; Saif-Alyousfi et al., 2020). 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). One of the distinguishing features of LI is its ability to provide bank-level measurements for each year, allowing for the identification and assessment of variations in behavior trends within a specific market and/or period (Chaffai & Coccorese, 2023). Furthermore, the geographical market of the bank does not demand to be define (Haghnejad et al., 2020).

In the banking industry context, LI is calculated as the ratio of the markup (subtracting the marginal cost of banking products from their price) divided by the same price:

$$Lerner_{it} = \frac{P_{it} - MC_{it}}{P_{it}}$$

where P_{it} represents the price of output (total assets), measured through total revenues over total assets, and MC_{it} is the marginal cost.

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 occur when banks lower their prices below the marginal cost.

Given the lack of available direct information on marginal costs from financial data, this study obtained the marginal cost MC_{it} , by estimating a trans-log cost function (TCF) at the bank level for each country that incorporates one output and three input prices:

$$\ln TC_{it} = \alpha_0 + \beta_1 \ln TA_{it} + \frac{1}{2} \beta_2 (\ln TA_{it})^2 + \sum_{j=1}^3 \alpha_j \ln w_{it}^j + \sum_{j=1}^3 \phi_j \ln TA_{it} \ln w_{it}^j + \frac{1}{2} \sum_{j=1}^3 \sum_{k=1}^3 \theta_{jk} \ln w_{it}^j \ln w_{it}^k + \gamma_1 T + \frac{1}{2} \gamma_2 T^2 + \gamma_3 T \ln TA_{it} + \sum_{j=4}^6 \gamma_j T \ln w_{it}^j + \varepsilon_{it}$$

where TC_{it} represents total costs (financial and operating costs). TA_{it} represents the bank's output (total assets). w_{it}^j , for $j = 1, 2, 3$, denotes the prices of the inputs: w_{it}^1 is the cost of funds (interest expenses over total deposits), w_{it}^2 is labor price (personnel expenses over total assets), w_{it}^3 is other operating expenses (other operating expenses over total assets), T is a trend variable that collects the variations in time of the cost function and ε_{it} is an error term.

The following restrictions are imposed on regression coefficients to ensure the homogeneity of degree one in the input prices: $\sum_{j=1}^3 \alpha_j = 1$, $\sum_{j=1}^3 \phi_j = 0$ and $\sum_{j=1}^3 \sum_{k=1}^3 \theta_{jk} = 0$.

$$MC_{it} = \frac{\partial TC_{it}}{\partial TA_{it}} = \left[\beta_1 + \beta_2 \ln TA_{it} + \sum_{j=1}^3 \phi_j \ln w_{it}^j + \gamma_3 T \right] \frac{TC_{it}}{TA_{it}}$$

Calculating the marginal cost (MC) using individual bank observations i for a given year t involves using the estimated coefficients from the Trans-Log Cost Function (TCF).

2.3.2.2 Moderating variables

A moderating variable can alter the way market power affects bank profitability and stability by influencing the direction or strength of its relationship. We include several dummy variables, one to control for potential differences in the business model (ISL) and another for the geographical characteristics of banks (GCC), with a value of one assigned to Islamic banks or those in the GCC region, and zero otherwise.

2.3.2.3 Control variables

Following the recent literature, bank efficiency, credit risk, leverage, size, and revenue diversification are considered as bank-specific control variables.

Efficiency. Cost efficiency is measured using the Data Envelopment Analysis (DEA) technique with the Banker, Charnes, and Cooper (BCC) approach and an output-oriented perspective. Following El Moussawi and Mansour (2022), staff expenses, operating

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

expenses, and interest expenses were used as inputs, whereas gross loans, other earning assets, non-interest income, and deposits were used as outputs. The efficiency values range from 0 to 1, with higher values indicating higher efficiency. Following the literature (Alber, 2017; Le and Ngo, 2020; El Moussawi and Mansour, 2022), we expect that bank efficiency positively influences bank profitability and stability, where efficient banks achieve lower production costs because of managerial abilities and advanced production technology. Credit risk, measured by loan loss provision to gross loans. In line with Bolarinwa et al. (2019) and Pham et al. (2021), we expect higher levels of credit risk to negatively influence both bank profitability and stability. Leverage, measured by the ratio of total liabilities to total assets. In line with Al-Homaidi et al. (2018) and Moudud-Ul-Huq et al. (2020a), we expect leverage ratio to negatively influence bank profitability and stability. Revenue diversification is measured by non-interest income over total revenue. Following Nisar et al. (2018), we expect revenue diversification to positively influence bank profitability and stability, where revenue diversification is an effective method for mitigating portfolio risks, especially in volatile economic conditions (Sanya & Wolfe, 2011). Bank size (LNA) is gauged as the logarithm of total assets. We use this variable to explore the correlation between bank size, profitability, and stability. Some research suggests a negative association between bank size and profitability and stability (Fu et al., 2014; Rakshit & Bardhan, 2022), based on the presumption that larger banks leverage their market power to impose higher interest rates on deposits, which can lead borrowers to engage in riskier investments to meet their obligations with the bank. Ultimately, this may increase the risk of default. On the other hand, other research suggests that larger banks are more profitable and stable (Adusei, 2015; Ali & Puah, 2019; Soedarmono & Tarazi, 2016), based on the assumption that large banks benefit from economies of scale or scope, which helps to lower their marginal costs.

We also consider several control variables at the country level.

The influence of institutional quality as captured by overall economic freedom (EF) has been studied using the Heritage Foundation's Index⁶. A country's overall score is calculated as an equally weighted index of the 12⁷ indicators of economic freedom, each of which is graded on a scale of 0–100, with higher values signifying a greater degree of liberty. Some research suggests a positive association between economic freedom and bank profitability and stability (Defung and Yudaruddin, 2022; Sarpong-Kumankoma et al., 2018; and Sufian and Habibullah, 2010) because greater economic freedom to conduct business creates a more favorable environment for business operations, ultimately increasing the debtor's capacity to repay their loan. On the other hand, other research suggests a negative relationship between economic freedom and bank profitability and stability (Djalilov and Piesse, 2016; Harkati et al., 2019; and Ovi et al., 2014), based on the

⁶ <https://www.heritage.org/index/>

⁷ Property rights, judicial effectiveness, government integrity, tax burden, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom.

idea that more economic freedom incentivizes banks to invest in riskier asset portfolios, which negatively impacts their profitability and stability.

Macroeconomic factors have also been considered, specifically inflation and gross domestic product (GDP) growth. As higher inflation decreases the ability of borrowers to repay their loans, in line with Brahmaiah (2018) and Khan et al. (2016), we assume a negative correlation between bank profitability, stability, and inflation. On the other hand, GDP growth, indicative of a rise in overall income within an economy, is expected to exert a positive influence on both bank profitability and stability, in accordance with the findings of Almarzoqi et al. (2015), Bolarinwa et al. (2019), Kabir (2020), and Soedarmono and Tarazi (2016).

2.3.4 Empirical model and estimation method

We study how market power (the inverse of competition) influences bank profitability and stability using bank-level data from 2011 to 2020.

The dynamic panel data model is described as follows with equation (2.1) to estimate bank profitability and stability for each bank i in year t as dependent variables.

$$Y_{it} = \alpha + \varphi Y_{it-1} + \beta Z_{it} + \gamma LI_{it} + \delta LI_{it}^2 + \rho X_{it} + \theta ISL_i + \tau GCC_i + \eta D_t + \varepsilon_{it} \quad (2.1)$$

where the dependent variable Y_{it} denotes the profitability of bank i at time t (ROA) and the stability measures are Z-Score and LLP. LI_{it} , the Lerner index, is used as a direct gauge of market power. Z_{it} is a matrix of control variables representing the following important firm characteristics: bank efficiency, leverage, size, and revenue diversification. ISL_i is equal to one if the bank is Islamic and zero otherwise; GCC_i is a dummy that takes the value of 1 when country i is included in the GCC and 0 otherwise. X_{it} is a matrix of these country-level control variables (macro and economic freedom). D_t is a year dummies matrix from 2012 to 2020. α , β , γ , δ , ρ , θ , τ and η are the parameters to be estimated; ε_{it} and μ_{it} are an error terms.

The moderator role of business models or geographical characteristics on the relationship between market power on profitability and stability has been captured through interaction terms between the moderating variables (Islamic and GCC) and market power (LI).

To examine the interaction effects of ISL and competition on profitability and stability, we run the following equation:

$$Y_{it} = \alpha + \varphi Y_{it-1} + \beta Z_{it} + \gamma LI_{it} + \delta (LI_{it} \times ISL_i) + \rho X_{it} + \theta ISL_i + \eta D_t + \varepsilon_{it} \quad (2.2)$$

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

To explore whether the results on the impact of competition on profitability and stability are different when we consider whether the country is included in the GCC, we run the following regression:

$$Y_{it} = \alpha + \varphi Y_{it-1} + \beta Z_{it} + \gamma LI_{it} + \delta(LI_{it} \times GCC_i) + \rho X_{it} + \tau GCC_i + \eta D_t + \varepsilon_{it} \quad (2.3)$$

The coefficients of the interaction between these variables $LI_{it} \times GCC_i$; $LI_{it} \times ISL_i$ tell us there are an additional change in the effect of LI_{it} on the ROA, Z-Score, and LLP scores when GCC and ISL moderate these effects, respectively.

We apply a system GMM estimation for panel regression suggested by Arellano & Bover (1995) and Blundell and Bond (1998), which is applied with Windmeijer-corrected standard errors in a two-step estimation. Using Windmeijer-corrected standard errors is recommended because without this correction, standard errors tend to be downwardly biased (Windmeijer, 2005). This choice is based on preventing endogeneity problems, reverse causality, and considering the persistence of dependent variables. The presence of independent variables that are not strictly exogenous results in that they are correlated with past and possibly current errors. In addition, unobservable bank characteristics are likely to be correlated with the lagged-dependent variable (either Z-score, ROA or LLP ratio).

The consistency of the GMM estimator is guaranteed only if there is no serial correlation in the idiosyncratic errors and if the instrumental variables are valid. We checked the former condition using the Arellano-Bond test and the latter using the Hansen test. The Arellano-Bond test for first- and second-order correlation is applied to the residuals in the differences in the estimated system GMM. The presence of autocorrelation in the mentioned residuals renders some lags invalid as instruments. On the other hand, the Hansen tests test the joint null hypothesis that the instruments are valid and therefore uncorrelated with the error term.

To check for possible problems of multicollinearity between the independent variables of the study models, we calculated the correlation matrix (Pearson's coefficients). In this study, the correlations between the independent variables are low, so there is no multicollinearity.

2.3.5 Data

Bank-level data were obtained from the Orbis BankFocus database (Bureau Van Dijk), and data on macroeconomic factors were sourced from the World Bank's World Development Indicators database. To ensure the reliability of our findings, we meticulously filtered the data to eliminate any missing or implausible entries. Our investigation focused on a final sample containing an unbalanced panel dataset for 239 banks operating in 20 MENA nations, covering the period 2011-2020.

In terms of specialization, the dataset includes both conventional and Islamic banks. Specifically, for analytical purposes, a comparison will be drawn between conventional and Islamic banks. As shown in Table (12), 74.48% are conventional banks and 25.52% are Islamic. The countries where the percentage of the number of Islamic banks is equal to or higher than 50% of the total are: Bahrain, Islamic Republic of Iran, and Yemen. Those countries that do not have any Islamic banks are: Israel, Lebanon, Libya, Morocco, and Djibouti.

Table 12: Sample distribution

| Country | Conventional | Islamic | No. banks |
|--------------------------|--------------|---------|-----------|
| Algeria | 3 | 1 | 4 |
| Bahrain | 8 | 9 | 17 |
| Djibouti | 1 | 0 | 1 |
| Egypt | 20 | 2 | 22 |
| Iraq | 6 | 2 | 8 |
| Islamic Republic of Iran | 1 | 12 | 13 |
| Israel | 10 | 0 | 10 |
| Jordan | 13 | 3 | 16 |
| Kuwait | 8 | 5 | 13 |
| Lebanon | 22 | 0 | 22 |
| Libya | 3 | 0 | 3 |
| Morocco | 11 | 0 | 11 |
| Oman | 10 | 3 | 13 |
| Palestine | 4 | 1 | 5 |
| Qatar | 5 | 4 | 9 |
| Saudi Arabia | 7 | 4 | 11 |
| Syrian Arab Republic | 11 | 3 | 14 |
| Tunisia | 12 | 1 | 13 |
| United Arab Emirates | 19 | 7 | 26 |
| Yemen | 4 | 4 | 8 |
| Total | 178 | 61 | 239 |
| In percentage | 74.48% | 25.52% | 100% |

Source: Own production

Tables (13) and (14) present the descriptive statistics of the variables used in the study from 2011 to 2020. Figure (3) shows the variation over time of the dependent variables and the explanatory variable.

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

Figure 3: Evolution of the main variables



Source: Own production

We can highlight the following key observations.

In terms of performance ratios, MENA banks have an average ROA of 1.24%. It is noteworthy that CBs (1.36%) tended to exhibit higher profitability than IBs, aligning with the findings of Albaity et al. (2019) and Alqahtani and Mayes (2018).

Regarding banks' risk-taking behavior, the average Z-score in the MENA region is 5.868. CBs, on average, have a higher Z-score than IBs. This finding aligns with the results of previous research conducted by Khattak and Ali (2021) and Louhichi et al. (2019).

Additionally, MENA banks have an average LLP ratio of 1.289%. On average, CBs have a lower LLP than IBs. Consistent with previous research by Othman and Mersni (2014).

Concerning the market power of MENA banks, the average LI is 0.315. This suggests that banks price their products at approximately 31.5% over their marginal cost, indicating a relatively high level of market power. These results align with those of previous studies by Almarzoqi et al. (2015) and Polemis (2015). Furthermore, CBs possess a higher market power than IBs. Consistent with Meslier et al. (2017).

Turning to bank-specific factors, MENA banks demonstrate an average efficiency of 49.33%. Moreover, IBs exhibit higher efficiency than CBs. The average leverage of

MENA banks is 86.39%, with IBs tending to have higher leverage than CBs. MENA banks have an average income diversification of 28.76%, with IBs demonstrating a higher income diversification level than CBs. In terms of size, the average bank size in the MENA region is 8.46, with IBs having larger average sizes than CBs.

Regarding the institutional framework in MENA countries, the average overall economic freedom is 63.19%, which indicates a moderately free degree of liberty for owning and using capital in these nations. This finding is similar to that of Hamadi and Awdeh (2020), with an EF of 60.93%, for a similar sample in MENA countries. In terms of macroeconomic indicators, the average GDP growth rate is approximately 1.16%, with a standard deviation of 6.08%, highlighting significant disparities in GDP growth rates among the countries in the sample. On the other hand, the average inflation rate is relatively high at 4.83%.

Table 13: Descriptive statistics of the study variables

| Variables | All banks | | | Conventional banks | | | Islamic banks | | |
|--|-----------|-------|-----------|--------------------|-------|-----------|---------------|-------|-----------|
| | Obs. | Mean | Std. Dev. | Obs. | Mean | Std. Dev. | Obs. | Mean | Std. Dev. |
| ROA (%) | 2090 | 1.236 | 1.745 | 1590 | 1.359 | 1.745 | 500 | 0.845 | 1.500 |
| Z-score | 2090 | 5.868 | 4.127 | 1590 | 6.019 | 4.279 | 500 | 5.38 | 3.561 |
| LLP ratio | 2013 | 1.289 | 2.435 | 1564 | 1.281 | 2.557 | 449 | 1.317 | 1.957 |
| Lerner index | 2024 | 0.315 | 0.213 | 1548 | 0.326 | 0.203 | 476 | 0.279 | 0.239 |
| Efficiency (%) | 2090 | 49.33 | 0.232 | 1590 | 49.00 | 0.219 | 500 | 50.39 | 0.236 |
| Leverage (%) | 2090 | 86.39 | 7.25 | 1590 | 86.22 | 7.54 | 500 | 86.97 | 7.44 |
| Non-interest income to total revenue ratio (%) | 2089 | 28.76 | 20.95 | 1589 | 27.25 | 20.51 | 500 | 33.58 | 21.46 |
| LNA (Size) | 2090 | 8.46 | 1.61 | 1590 | 8.44 | 1.65 | 500 | 8.55 | 1.48 |
| EF | 1821 | 63.19 | 8.23 | 1385 | 62.99 | 7.76 | 436 | 63.80 | 9.57 |
| Inflation | 1904 | 4.83 | 10.27 | 1462 | 4.79 | 10.73 | 442 | 4.94 | 8.57 |
| GDP growth | 2057 | 1.16 | 6.08 | 1568 | 1.17 | 6.13 | 489 | 1.13 | 5.92 |

Source: Orbis BankFocus database, own calculations, Heritage Foundation's database, World Bank.

Table 14: Mean of variables year-wise

| Variables | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ROA (%) | 1.129 | 1.269 | 1.323 | 1.345 | 1.605 | 1.612 | 0.946 | 0.972 | 1.009 | 1.186 |
| Z-score | 5.860 | 5.984 | 6.039 | 6.200 | 6.138 | 6.185 | 5.811 | 5.475 | 5.420 | 5.678 |
| LLP ratio | 1.124 | 1.506 | 1.838 | 1.163 | 1.263 | 1.132 | 0.854 | 0.988 | 1.067 | 2.073 |
| Lerner index | 0.315 | 0.326 | 0.354 | 0.346 | 0.368 | 0.344 | 0.262 | 0.268 | 0.268 | 0.314 |
| Efficiency (%) | 45.63 | 46.19 | 46.44 | 47.14 | 46.75 | 47.18 | 52.44 | 52.52 | 54.61 | 51.73 |
| Leverage (%) | 86.088 | 86.074 | 86.092 | 85.829 | 86.158 | 86,095 | 86.485 | 86.970 | 87.030 | 86,859 |
| Non-interest income to total revenue ratio (%) | 26.43 | 27.78 | 31.01 | 32.00 | 31.64 | 31.80 | 26.61 | 24.77 | 24.24 | 31.41 |
| LNA (Size) | 8.42 | 8.42 | 8.37 | 8.30 | 8.41 | 8.41 | 8.44 | 8.51 | 8.61 | 8.71 |
| EF | 64.36 | 63.40 | 64.07 | 63.57 | 63.51 | 63.89 | 62.62 | 62.42 | 61.97 | 62.46 |
| Inflation | 4.20 | 6.95 | 4.70 | 3.65 | 2.56 | 2.92 | 5.40 | 4.93 | 4.02 | 9.22 |
| GDP growth | 4.52 | 1.53 | 1.46 | 1.66 | 1.54 | 2.70 | 1.68 | 1.69 | 1.07 | -5.78 |

Source: Orbis BankFocus database, own calculations, Heritage Foundation's database, World Bank.

2.4 EMPIRICAL RESULTS AND DISCUSSION

In this section, we investigate whether competition (the inverse of LI) influences our dependent variables, namely bank profitability (ROA), solvency (Z-score), and credit risk (LLP), respectively.

The results of the estimation of equation (2.1) without including the quadratic term of the Lerner Index and with the quadratic term are presented in Tables (15) and (16), respectively

Table (15) presents the results of the linear model, which reveal that LI has a positive and significant influence on ROA, thus supporting Hypothesis Ia. This means that greater market power allows banks to control prices and consequently earn higher profits. This result is consistent with those of previous studies by Khattak and Ali (2021) and Tan (2016).

Looking at the effect of bank-specific characteristics, bank efficiency and ROA show a positive correlation, in line with Le and Ngo (2020). The relationship between LLP and profitability is negative and significant, in line with the findings of Bolarinwa et al. (2019). An increase in bank leverage has a negative effect on profitability, which is consistent with the results reported by Al-Homaidi et al. (2018). Banks that generate higher non-interest income are more profitable. This result aligns with the conclusion drawn by Nisar et al. (2018), which may be attributed to reduced reliance on interest income helping mitigate risks linked with interest rate fluctuations compared with banks that depend more on interest revenues. Regarding the impact of bank size on profitability, the analysis indicates that bank size negatively influences ROA. This finding aligns with Rakshit and Bardhan (2022), where the negative coefficient suggests that larger banks earn lower profits because of agency costs, bureaucratic expenses, and other management-related costs.

In terms of institutional quality, the study shows that the institutional framework negatively impacts ROA, in line with Djalilov and Piesse (2016). In the same vein, Mateev et al. (2019) concluded that the poor institutional environment in MENA nations and the absence of robust prudential regulation and oversight offer abundant opportunities for banks to augment their profits.

Concerning the impact of macroeconomic factors, we observed a positive and significant impact of GDP growth on ROA, aligning with the findings of Bolarinwa et al. (2019). Economic growth plays a crucial role in driving bank profitability because it creates more lending and investment opportunities. With regard to the inflation rate, we find that inflation rates positively influence ROA. This finding contradicts our expectations. In line with the findings of Alhassan et al. (2016), inflation can increase interest rates, thereby enhancing banks' profitability.

Columns (2) and (3) of Table (15) show the effect of the ISL and GCC dummies on profitability, respectively. The negative estimated coefficient obtained for IBs shows that the average profitability of IBs is lower than that of CBs, supporting Hypothesis III, which aligns with Albaity et al. (2019) and Alqahtani and Mayes (2018). The negative estimated coefficient associated with the dummy variable GCC indicates that average profitability is lower in these countries than in the non-Gulf region, supporting the conclusion by Khan and Zahid (2020) that non-GCC banks exhibit higher ROA than GCC banks, thereby supporting Hypothesis IV.

Columns (4) (5), and (6) of Table (15) present the estimation results for the dependent variable Z-score. Regarding bank solvency, our analysis indicates that LI positively correlates with the Z-score, thereby supporting Hypothesis Ia. This implies that banks facing reduced competition are less likely to become insolvent as they can set prices monopolistically, thus supporting the competition-fragility theory, that increased competition erodes the value of a bank's franchise and incentivizes banks to elevate their overall risk exposure. These findings are consistent with those of previous studies conducted by Adu (2022a), Almarzoqi et al. (2015), Azmi et al. (2022), Louhichi et al. (2019), Moudud-Ul-Huq (2021), and Khattak and Ali (2021), which argue that an increase in market power can improve bank solvency by increasing profit margins.

In addition, the results reveal that bank efficiency is positively correlated with the Z-score. This agrees with Alber (2017) and El Moussawi and Mansour (2022), who suggest that efficient banks are better equipped to withstand shocks. LLP negatively affects the Z-score. This result agrees with that of Pham et al. (2021), who suggested that banks with higher credit risk have a higher probability of incurring losses, leading to lower Z-scores.

With respect to other bank-specific characteristics, such as leverage, diversification, and size, the effect is similar to that obtained for profitability. In terms of the Z-score, banks with higher levels of leverage are less stable. This result is consistent with the findings of Moudud-Ul-Huq et al. (2020a), which suggest that higher leverage can lead to an increase in banks' risk positions. In contrast, higher levels of income diversification are associated with

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

greater bank stability, aligning with the findings of Nisar et al. (2018). Contrary to expectations, bank size negatively influences the Z-score. This implies that larger banks exhibit lower levels of stability, which agrees with the findings of Fu et al. (2014).

In terms of institutional quality, the study shows that the institutional framework negatively impacts the Z-score, which is in agreement with Harkati et al. 2019 and Ovi et al. (2014). However, macroeconomic variables do not have a statistically significant effect on stability. Finally, the dummy of Islamic banking has a negative effect on solvency, confirming Hypothesis III, which is consistent with previous findings by Khattak and Ali (2021) and Louhichi et al. (2019). In addition, the dummy Gulf countries have the same negative effect on solvency, thereby supporting Hypothesis IV, which agrees with the findings of Khan and Zahid (2020).

Columns (7), (8), and (9) of Table (15) summarize the effects of the variables on credit risk (LLP). The analysis reveals that LI is positively correlated with LLP. This finding supports the competition stability hypothesis, thereby supporting Hypothesis Ib, indicating that increased competition in the banking sector is associated with a decrease in credit risk.

When price competition decreases, banks often increase the interest rates they charge lenders, which may negatively affect borrowers' ability to repay loans and thus increase the probability of default, prompting them to make additional provisions for these risks. These results are consistent with those of Adu (2022a), Santoso et al. (2021), and Soedarmono and Tarazi (2016).

Regarding the effect of control variables, revenue diversification is linked with higher LLP. This finding contradicts our expectations. Consistent with the research by Soedarmono and Tarazi (2016), this result reflects that banks with higher revenue diversification also have a higher level of risk exposure to generate additional income.

Bank size and economic growth negatively influence credit risk. According to Berger et al. (2009), larger banks have a higher quality loan portfolio than smaller banks, possibly due to better supervisory systems, which allows them to manage credit risk more effectively and consequently incur lower levels of LLP. The fact that GDP growth negatively influences LLP is consistent with the fact that a stronger economy reduces the probability of bank default, which translates into lower LLP (Soedarmono and Tarazi, 2016).

According to our analysis, the inflation rate had a positive impact on LLP in terms of credit risk, which is consistent with Adu (2022a). This relationship may arise from inflation affecting borrowers' ability to repay their loans, especially those with variable interest rates. The Gulf dummy variable has a positive and significant effect, indicating that the average expected credit risk is higher in Gulf banks than in non-Gulf banks, confirming Hypothesis IV. The other variables had no statistically significant effects.

Table 15: System GMM estimation of the relationship between market power, bank profitability, and financial stability

| Dependent variables | ROA (1) | ROA (2) | ROA (3) | Z_Score (4) | Z_Score (5) | Z_Score (6) | LLP ratio (7) | LLP ratio (8) | LLP ratio (9) |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| L1.ROA | 0.272*** (0.089) | 0.110** (0.049) | 0.107** (0.050) | | | | | | |
| L1.Z-score | | | | -0.067 (0.063) | 0.208*** (0.043) | 0.208*** (0.044) | | | |
| L1.LLP ratio | | | | | | | 0.377*** (0.023) | 0.379*** (0.023) | 0.358*** (0.023) |
| Lerner index | 4.076*** (0.402) | 4.520*** (0.258) | 4.525*** (0.258) | 1.720*** (0.400) | 1.330*** (0.192) | 1.368*** (0.189) | 0.886*** (0.222) | 0.887*** (0.223) | 0.860*** (0.228) |
| Efficiency | 0.767*** (0.215) | 0.998*** (0.148) | 0.940*** (0.148) | 0.756*** (0.232) | 0.766*** (0.126) | 0.772*** (0.127) | 0.170 (0.207) | 0.174 (0.207) | 0.321 (0.229) |
| LLP ratio | -0.289*** (0.032) | -0.287*** (0.024) | -0.288*** (0.024) | -0.115*** (0.021) | -0.111*** (0.022) | -0.106*** (0.022) | | | |
| Leverage | -0.033*** (0.011) | -0.036*** (0.007) | -0.042*** (0.007) | -0.445*** (0.033) | -0.352*** (0.018) | -0.357*** (0.018) | 0.008 (0.007) | 0.008 (0.007) | 0.017** (0.009) |
| Revenue diversification | 0.011*** (0.004) | 0.008*** (0.002) | 0.008*** (0.002) | 0.010*** (0.004) | 0.008*** (0.002) | 0.007*** (0.002) | 0.005** (0.002) | 0.005** (0.002) | 0.005** (0.002) |
| Size | -0.156*** (0.030) | -0.147*** (0.024) | -0.128*** (0.025) | -0.068*** (0.024) | -0.044** (0.020) | -0.033 (0.020) | -0.104*** (0.028) | -0.104*** (0.028) | -0.147*** (0.034) |
| EF | -0.018*** (0.006) | -0.019*** (0.005) | -0.016*** (0.005) | -0.010** (0.005) | -0.011*** (0.003) | -0.009*** (0.003) | 0.008 (0.006) | 0.008 (0.006) | 0.002 (0.005) |
| GDP growth | 0.014** (0.007) | 0.011* (0.006) | 0.011** (0.006) | 0.004 (0.005) | 0.004 (0.004) | 0.004 (0.005) | -0.084*** (0.014) | -0.084*** (0.014) | -0.084*** (0.014) |

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

| Dependent variables | ROA (1) | ROA (2) | ROA (3) | Z_Score (4) | Z_Score (5) | Z_Score (6) | LLP ratio (7) | LLP ratio (8) | LLP ratio (9) |
|---------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|--------------------|--------------------|---------------------|
| Inflation | 0.012*** (0.004) | 0.008** (0.004) | 0.007** (0.003) | 0.003 (0.003) | 0.003 (0.002) | 0.002 (0.002) | 0.015** (0.007) | 0.015** (0.007) | 0.016** (0.007) |
| ISL | | -0.105* (0.054) | | | -0.122*** (0.046) | | | -0.025 (0.073) | |
| GCC | | | -0.159** (0.068) | | | -0.115** (0.052) | | | 0.302*** (0.099) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 4.636*** -1.011 | 4.889*** (0.673) | 5.098*** (0.712) | 44.635*** (-3.091) | 35.130*** (-1.755) | 35.343*** (-1.766) | -0.053 (0.787) | -0.057 (0.775) | -0.357 (0.804) |
| Number of Obs. | 1502 | 1502 | 1502 | 1502 | 1502 | 1502 | 1494 | 1494 | 1494 |
| Banks | 211 | 211 | 211 | 211 | 211 | 211 | 210 | 210 | 210 |
| AR(1) Test | -2.905 | -2.409 | -2.399 | -1.783 | -1.858 | -1.832 | -3.059 | -3.056 | -3.045 |
| AR(1) P-value | 0.004 | 0.016 | 0.016 | 0.075 | 0.063 | 0.067 | 0.002 | 0.002 | 0.002 |
| AR(2) Test | 1.102 | 0.713 | 0.693 | -1.282 | -0.158 | -0.236 | -0.887 | -0.884 | -0.932 |
| AR(2) P-value | 0.270 | 0.476 | 0.488 | 0.200 | 0.874 | 0.813 | 0.375 | 0.377 | 0.351 |
| Hansen Test | 3.632 | 26.007 | 25.962 | 3.074 | 18.246 | 19.745 | 25.128 | 24.922 | 24.533 |
| Hansen P-value | 0.163 | 0.166 | 0.167 | 0.215 | 0.571 | 0.474 | 0.197 | 0.204 | 0.220 |

Note: Year fixed effects are included. Robust standard errors clustered at the bank level are reported below their coefficient estimates. AR(1) and AR(2) are the coefficients of first- and second-order correlation and are applied on residual differences. The joint validity of the instruments was tested using the Hansen test for overidentifying restrictions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. L1. indicate that a lag is applied to this variable.

Source: Own production

Table 16: System GMM estimation of the quadratic relationship between market power, bank profitability, and financial stability

| Dependents variables | ROA (1) | Z_Score (2) | LLP ratio (3) |
|---------------------------|----------------------|-----------------------|----------------------|
| L1.ROA | 0.101** (0.048) | | |
| L1.Z_Score | | 0.209*** (0.044) | |
| L1.LLP ratio | | | 0.362*** (0.023) |
| Lerner index | 5.656*** (0.328) | 2.133*** (0.228) | -0.128 (0.334) |
| Lerner index*Lerner index | -2.610*** (0.490) | -1.724*** (0.333) | 1.967*** (0.605) |
| Inflection Point | Ext.outside interval | 0.618 | 0.032 |
| Efficiency | 0.947*** (0.141) | 0.777*** (0.120) | 0.246 (0.209) |
| LLP ratio | -0.280*** (0.025) | -0.110*** (0.023) | |
| Leverage | -0.046*** (0.007) | -0.358*** (0.019) | 0.014* (0.008) |
| Revenue diversification | 0.008*** (0.002) | 0.007*** (0.002) | 0.004* (0.002) |
| Size | -0.113*** (0.023) | -0.027 (0.020) | -0.125*** (0.032) |
| EF | -0.017*** (0.005) | -0.010*** (0.003) | 0.009 (0.006) |
| GDP growth | 0.012** (0.006) | 0.004 (0.005) | -0.085*** (0.014) |
| Inflation | 0.009*** (0.003) | 0.003 (0.002) | 0.015** (0.007) |
| Year dummies | Yes | Yes | Yes |
| Constant | 5.290*** (0.726) | 35.358*** (-1.809) | -0.422 (0.778) |
| Number of Obs. | 1502 | 1502 | 1494 |
| Banks | 211 | 211 | 210 |
| AR(1) Test | -2.276 | -1.795 | -3.091 |
| AR(1) P-value | 0.023 | 0.073 | 0.002 |
| AR(2) Test | 0.847 | 0.236 | -0.932 |
| AR(2) P-value | 0.397 | 0.814 | 0.351 |
| Hansen Test | 22.646 | 21.598 | 25.796 |
| Hansen P-value | 0.307 | 0.363 | 0.173 |

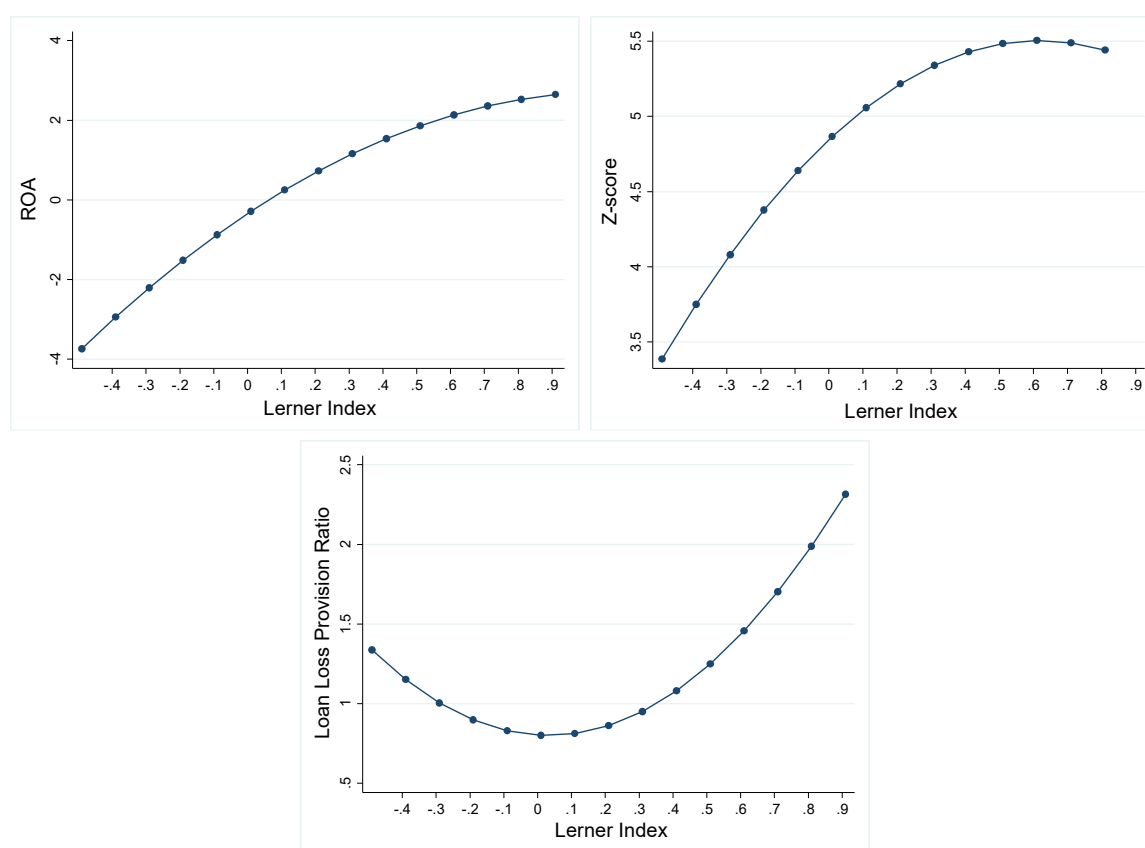
Note: Year fixed effects are included. Robust standard errors clustered at the bank level are reported below their coefficient estimates. AR(1) and AR(2) are the coefficients of first- and second-order correlation and are applied on residual differences. The joint validity of the instruments was tested using the Hansen test for overidentifying restrictions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. L1. indicate that a lag is applied to this variable.

Source: Own production

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

We also examined the potential existence of a quadratic relationship between the lack of competition and the dependent variables. To this end, we included the squared term of the Lerner index and tested whether this term is significant. This nonlinear investigation is useful because it allows us to obtain an optimal threshold beyond which bank competition, or conversely, lack of competition, becomes dangerous for the profitability or stability of the banking sector. For each equation, we report the turning point, which represents the optimal threshold in a nonlinear relationship between LI and the dependent variables. If the estimated extreme point lies within the data range, a nonlinear relationship is usually concluded.

Figure 4: Nonlinear relationship between market power and banking profitability, solvency, and credit risk



Source: Own production

Table (16) shows the results of the quadratic estimation of the effect of the Lerner index on profitability, solvency, and credit risk. We did not find a significant nonlinear relationship between the Lerner index and ROA; thus, we can rule out Hypothesis II [see column (2)]. However, the results of columns (3) and (4) reveal an inverse U-shaped relationship between the Lerner index and solvency and an U-shaped relationship between the Lerner index and credit risk, respectively, thereby supporting Hypothesis II. Figure (4)

graphically presents the shape functional of the relationships between the Lerner index and the dependent variables.

The solvency turning point is 0.61, indicating that solvency increases when the Lerner index rises to this threshold. However, beyond this threshold, increases in market power tend to escalate the fragility of the banking sector. With respect to credit risk (LLP), the turning point is 0.03, suggesting that beyond this threshold, increases in market power tend to increase the fragility of the banking sector by increasing its credit risk. This turning point is at 4.8 percent of the data, which means that only in banks with very little market power is the effect of market power negative with respect to credit risk. From this turning point onwards, the conclusions that higher market power leads to higher credit risk are confirmed.

Although the influence of competition on bank stability can have two contrasting effects, our findings indicate that a nonlinear correlation exists between competition and bank stability, supporting Hypothesis II. Therefore, in the context of MENA banks, both the views of competition fragility and competition stability can be confirmed.

2.4.1 Moderating effects

A moderating variable can alter the way market power affects a dependent variable by influencing the direction or strength of their relationship. The following estimations include the dummy variables ISL and GCC, along with interaction terms between these dummy variables and market power, and examine their impact on profitability and stability. The objective of this study was to analyze whether there is an additional change in the effect of LI on ROA, Z-Score, and LLP scores when ISL and GCC moderate these effects.

Table 17: Moderating role of the Islamic model and operating in a GCC country on the relationship between market power, bank profitability, and financial stability

| Dependent variables | ROA (1) | Z_Score (2) | LLP ratio (3) | ROA (4) | Z_Score (5) | LLP ratio (6) |
|---------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
| L1.ROA | 0.100* (0.053) | | | 0.106** (0.047) | | |
| L1.Z_Score | | 0.260*** (0.043) | | | 0.326*** (0.044) | |
| L1.LLP ratio | | | 0.378*** (0.023) | | | 0.349*** (0.024) |
| Lerner index | 4.118*** (0.274) | 0.976*** (0.213) | 0.926*** (0.283) | 5.249*** (0.429) | 1.792*** (0.264) | 1.431*** (0.506) |
| ISL | -0.450*** (0.118) | -0.373*** (0.079) | 0.025 (0.150) | | | |



2. Competition's Impact on Bank Profitability and Stability in the MENA Region

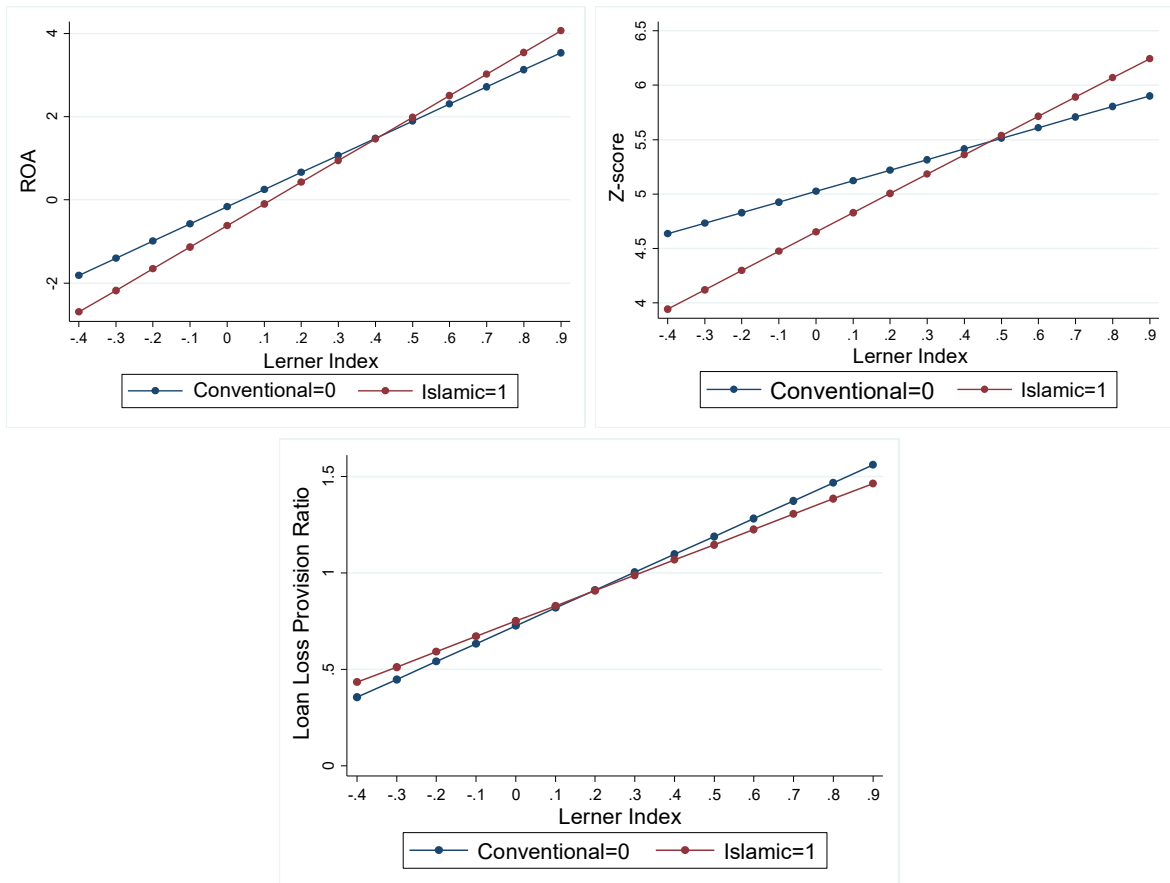
| Dependent variables | ROA (1) | Z_Score (2) | LLP ratio (3) | ROA (4) | Z_Score (5) | LLP ratio (6) |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Lerner index*ISL | 1.082*** (0.309) | 0.796*** (0.223) | -0.133 (0.413) | | | |
| GCC | | | | 0.226 (0.156) | 0.168 (0.112) | 0.690*** (0.242) |
| Lerner index*GCC | | | | -1.126*** (0.417) | -1.039*** (0.299) | -1.113* (0.600) |
| Efficiency | 0.966*** (0.142) | 0.754*** (0.129) | 0.176 (0.205) | 0.968*** (0.155) | 0.588*** (0.129) | 0.300 (0.232) |
| LLP ratio | -0.286*** (0.024) | -0.114*** (0.023) | | -0.300*** (0.024) | -0.144*** (0.024) | |
| Leverage | -0.036*** (0.007) | -0.335*** (0.018) | 0.008 (0.007) | -0.040*** (0.007) | -0.316*** (0.018) | 0.020* (0.010) |
| Revenue diversification | 0.009*** (0.002) | 0.008*** (0.002) | 0.005** (0.002) | 0.008*** (0.002) | 0.006*** (0.001) | 0.005** (0.002) |
| Size | -0.140*** (0.023) | -0.042** (0.020) | -0.105*** (0.030) | -0.129*** (0.025) | -0.010 (0.020) | -0.141*** (0.034) |
| EF | -0.018*** (0.005) | -0.010*** (0.003) | 0.008 (0.006) | -0.018*** (0.005) | -0.007** (0.003) | 0.000 (0.005) |
| GDP growth | 0.013** (0.006) | 0.005 (0.005) | -0.085*** (0.014) | 0.010* (0.005) | -0.001 (0.005) | -0.085*** (0.014) |
| Inflation | 0.009** (0.004) | 0.003 (0.003) | 0.015** (0.007) | 0.008** (0.003) | 0.003 (0.002) | 0.015** (0.007) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 4.923*** (0.688) | 33.389*** -1.791 | -0.081 (0.789) | 4.911*** (0.738) | 30.898*** -1.810 | -0.632 (0.949) |
| Number of Obs. | 1502 | 1502 | 1494 | 1502 | 1502 | 1494 |
| Banks | 211 | 211 | 210 | 211 | 211 | 210 |
| AR(1) Test | -2.260 | -2.004 | -3.058 | -2.440 | -2.243 | -3.046 |
| AR(1) P-value | 0.024 | 0.045 | 0.002 | 0.015 | 0.025 | 0.002 |
| AR(2) Test | 0.648 | 0.174 | -0.884 | 0.662 | 1.128 | -0.972 |
| AR(2) P-value | 0.517 | 0.862 | 0.377 | 0.508 | 0.259 | 0.331 |
| Hansen Test | 24.743 | 21.284 | 25.049 | 27.411 | 29.614 | 24.341 |
| Hansen P-value | 0.211 | 0.381 | 0.200 | 0.124 | 0.128 | 0.228 |

Note: Year fixed effects are included. Robust standard errors clustered at the bank level are reported below their coefficient estimates. AR(1) and AR(2) are the coefficients of first- and second-order correlation and are applied on residual differences. The joint validity of the instruments was tested using the Hansen test for overidentifying restrictions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. L1. indicate that a lag is applied to this variable.

Source: Own production

Table (17) shows the results of the moderating effect of the dummy variables (ISL and GCC) on the linear relationship between the Lerner index and the dependent variables considered. Figures (5) and (6) graphically represent the differences in the expected value of the dependent variables of the influence of the Lerner index if the moderating effect of ISL or GCC is introduced or not.

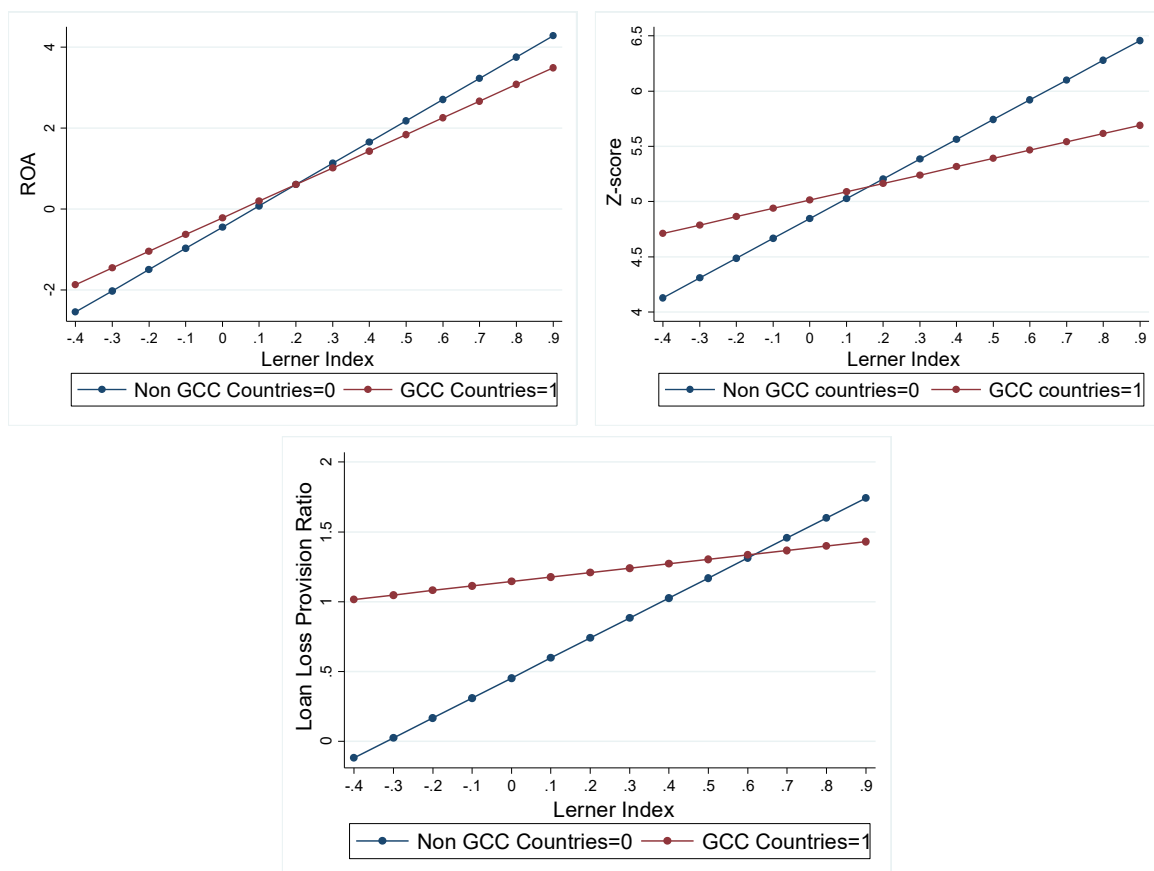
Figure 5: Interactive effect of the Islamic model and market power on bank profitability and financial stability



Source: Own production

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

Figure 6: Interactive effect of operating in a GCC country and market power on bank profitability and financial stability



Source: Own production

The difference of the effect market power in average profitability is positive for IBs, indicating that the marginal effect of market power on profitability is higher if the bank is Islamic, thereby supporting Hypothesis V. The same is true for solvency; the influence of the Lerner index on solvency is higher for IBs, confirming Hypothesis V. In contrast, the moderating effect of IBs is not statistically significant when the dependent variable is credit risk, showing that there are no differences in the effect of market power on LLPs due to the Islamic nature. Thus, in terms of credit risk, we can rule out Hypothesis V.

This can be explained by the fact that IBs have niche markets where competition is limited, as they can satisfy consumers' financial needs without interfering with their religious values. As Bollen (2007) points out, borrowers of IBs might be willing to pay higher costs for the intangible benefits related with the concept of the "psychic dividend," allowing IBs to effectively exercise their market power. Moreover, IBs would be able to increase their fees and interest rates while still attracting a loyal clientele and would be less inclined to take on more risk than their conventional counterparts, thereby increasing their stability.



On the other hand, the moderating effect of the GCC dummy with the Lerner index is negative on all dependent variables, indicating that the effect of market power mitigates, to

some extent, the increase in dependent variables in GCC banks. Thus, the positive effect of market power on profitability, solvency, and credit risk is less pronounced when banks operate within the Gulf region, aligning with Hypothesis VI. Therefore, higher market power in the GCC banking sector leads to lower profitability, solvency, and credit risk compared with non-GCC banking systems.

This can be interpreted by the higher level of state ownership in banks within the GCC than those outside the GCC (Al-Khoury & Arouri, 2016). The connection between market power, profitability, solvency, and credit risk is likely affected by bank ownership (Claessens et al., 2001; Ehsan & Javid, 2018; Jeon et al., 2017). Saragih and Achsanta (2022) explain this, suggesting that government-owned banks are less inclined to exercise their monopoly power due to their focus on social or political factors rather than maximizing profits. Likewise, a study by Yusgiantoro et al. (2019) found that state-owned banks with more market power experience a decrease in solvency compared to other ownership types, referring to the fact that state-owned banks may exploit their "too big to fail" status in response to the increased charter value. On the other hand, when it comes to credit risk, a study by Srivastava et al. (2022) indicates that state-owned banks acquiring more market power may reduce credit risk due to sovereign guarantees.

2.4.2 Robustness analysis

A robustness analysis 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 at the bank level into Islamic (ISL) and Conventional (CBs). Subsequently, we categorize by country GCC banks and non-GCC banks.

To corroborate our findings and address potential endogeneity concerns, we re-estimated the models using a system GMM estimation for panel regression. The results are presented in Table (18). The diagnostic tests once again affirm the validity of the estimated model and confirm that the instruments are valid, with no issues of serial autocorrelation.

The results obtained from these sub-samples did not exhibit significant differences compared with the results from the full sample. Moreover, these findings suggest that IBs may encounter a dynamic similar to that of CBs. These conclusions apply to both GCC and non-GCC nations.

We used the Herfindahl-Hirschman Index (HHI), which serves as a measure of market concentration and an indicator of competition. The results indicate that the HHI for assets or loans are not significant effect on profitability and solvency⁸. Thus, high market concentration does not necessarily imply low competitiveness.



⁸ Results are available upon request.

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

Table 18: Relationship between market power, bank profitability, and financial stability (Islamic-conventional and GCC-non-GCC subsamples)

| Dependent variables | ROA | ROA | ROA | ROA | Z_Score | Z_Score | Z_Score | Z_Score | LLP ratio | LLP ratio | LLP ratio | LLP ratio |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Subsamples | ISL | CBs | GCC | non-GCC | ISL | CBs | GCC | non-GCC | ISL | CBs | GCC | non-GCC |
| L1.ROA | 0.112*** (0.020) | 0.164*** (0.034) | 0.278*** (0.033) | 0.117*** (0.038) | | | | | | | | |
| L1.Z_Score | | | | | -0.038*** (0.014) | 0.350*** (0.037) | 0.283*** (0.030) | 0.030*** (0.025) | | | | |
| L1.LLP ratio | | | | | | | | | 0.076*** (0.007) | 0.292*** (0.021) | 0.259*** (0.014) | 0.118*** (0.027) |
| Lerner index | 5.622*** (0.154) | 4.007*** (0.295) | 3.686*** (0.347) | 3.949*** (0.402) | 2.018*** (0.076) | 0.709** (0.345) | 1.632*** (0.232) | 1.407*** (0.145) | 8.343*** (0.339) | 3.706*** (0.436) | 4.601*** (0.440) | 5.000*** (0.640) |
| Efficiency | 1.441*** (0.147) | 1.248*** (0.447) | 1.114** (0.475) | -1.306*** (0.445) | 0.240** (0.102) | 0.973** (0.450) | 2.411*** (0.293) | -0.868*** (0.228) | | | | |
| ROA | | | | | | | | | -1.527*** (0.044) | -0.837*** (0.061) | -1.121*** (0.045) | -0.720*** (0.070) |
| LLP ratio | -0.332*** (0.011) | -0.312*** (0.025) | -0.345*** (0.016) | -0.271*** (0.013) | -0.145*** (0.008) | -0.092*** (0.021) | -0.173*** (0.024) | -0.083*** (0.012) | | | | |
| Leverage | -0.004 (0.007) | -0.043*** (0.008) | -0.025*** (0.008) | -0.044*** (0.009) | -0.394*** (0.006) | -0.313*** (0.017) | -0.321*** (0.018) | -0.420*** (0.009) | 0.000 (0.009) | -0.041*** (0.012) | -0.054*** (0.010) | -0.018 (0.016) |
| Revenue diversification | 0.008*** (0.001) | 0.011*** (0.002) | 0.013*** (0.002) | 0.001 (0.001) | 0.004*** (0.001) | 0.010*** (0.003) | 0.008*** (0.003) | 0.002** (0.001) | 0.018*** (0.003) | 0.015*** (0.003) | 0.023*** (0.002) | 0.009*** (0.002) |
| Size | -0.265*** (0.032) | -0.142*** (0.031) | -0.164*** (0.038) | 0.027 (0.044) | -0.063*** (0.011) | -0.004 (0.034) | -0.120*** (0.045) | 0.043** (0.021) | -0.432*** (0.052) | -0.155*** (0.036) | -0.243*** (0.073) | -0.137*** (0.030) |
| EF | 0.002 (0.004) | -0.020*** (0.005) | -0.008 (0.005) | -0.042*** (0.007) | -0.004** (0.002) | -0.008* (0.004) | -0.009 (0.007) | -0.021*** (0.003) | -0.016** (0.008) | -0.016* (0.009) | 0.005 (0.007) | -0.038*** (0.008) |

| Dependent variables | ROA | ROA | ROA | ROA | Z_Score | Z_Score | Z_Score | Z_Score | LLP ratio | LLP ratio | LLP ratio | LLP ratio |
|---------------------|---------------------|---------------------|----------------------|---------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|
| Subsamples | ISL | CBs | GCC | non-GCC | ISL | CBs | GCC | non-GCC | ISL | CBs | GCC | non-GCC |
| GDP growth | -0.012** (0.006) | 0.015** (0.007) | 0.020** (0.008) | 0.032*** (0.008) | -0.007** (0.003) | 0.004 (0.006) | -0.015** (0.008) | 0.021*** (0.004) | 0.001 (0.013) | -0.049*** (0.013) | -0.001 (0.016) | -0.043*** (0.011) |
| Inflation | 0.005 (0.004) | 0.007 (0.005) | -0.042*** (0.013) | 0.021*** (0.003) | 0.000 (0.002) | 0.002 (0.004) | -0.013 (0.012) | 0.009*** (0.002) | 0.032*** (0.005) | 0.030*** (0.007) | -0.026 (0.019) | 0.025*** (0.005) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 1.302** (0.643) | 5.295*** (0.900) | 3.169*** (0.851) | 6.893*** (0.935) | 39.901*** (0.705) | 30.466*** (-1.695) | 31.925*** (-2.047) | 43.059*** (0.960) | 4.146*** (-1.258) | 6.073*** (-1.240) | 6.208*** (0.818) | 4.879*** (-1.745) |
| Number of Obs. | 321 | 1181 | 672 | 830 | 321 | 1181 | 672 | 830 | 315 | 1179 | 665 | 829 |
| Banks | 50 | 161 | 86 | 125 | 50 | 161 | 86 | 125 | 49 | 161 | 85 | 125 |
| AR(1) Test | -2.785 | -2.019 | -2.797 | -2.341 | -2.365 | -2.018 | -1.653 | -1.787 | -2.090 | -2.978 | -2.233 | -2.024 |
| AR(1) P-value | 0.005 | 0.044 | 0.005 | 0.019 | 0.018 | 0.044 | 0.098 | 0.074 | 0.037 | 0.003 | 0.026 | 0.043 |
| AR(2) Test | -1.068 | 1.190 | 0.047 | 1.474 | -1.967 | 0.190 | 0.360 | -1.080 | -0.159 | -0.479 | -0.429 | 0.401 |
| AR(2) P-value | 0.285 | 0.234 | 0.962 | 0.140 | 0.049 | 0.849 | 0.719 | 0.280 | 0.874 | 0.632 | 0.668 | 0.688 |
| Hansen Test | 23.586 | 38.155 | 18.024 | 25.439 | 24.957 | 20.799 | 20.278 | 25.187 | 20.887 | 24.872 | 21.881 | 24.336 |
| Hansen P-value | 0.261 | 0.008 | 0.586 | 0.185 | 0.203 | 0.409 | 0.441 | 0.194 | 0.404 | 0.206 | 0.347 | 0.228 |

Note: Year fixed effects are included. Robust standard errors clustered at the bank level are reported below their coefficient estimates. AR(1) and AR(2) are the coefficients of first- and second-order correlation and are applied on residual differences. The joint validity of the instruments was tested using the Hansen test for overidentifying restrictions. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. L1. indicate that a lag is applied to this variable.

Source: Own production

2.5 CONCLUSION

The banking industry within the MENA region exhibits distinct characteristics, namely, relatively low market competition and significant state ownership. Simultaneously, it has demonstrated robust financial stability compared with financial sectors in other regions with respect to both solvency and credit quality. With this motivation in mind, we examine the link between competition, profitability, and stability in the MENA banking industry. We also consider the unique aspects of banks' business models and geographical characteristics by exploring the moderating influences of IBs and GCC countries on the relationship between competition, profitability, and stability. This allows for the formulation of specific recommendations for both groups of business models and countries.

To achieve the aims of this study, we use three accounting-based proxies: ROA (profitability), Z-Score (solvency), and LLPs ratio (credit risk). In addition, we use the bank-level Lerner Index (LI) as a direct measure of market power and to avoid problems such as omitted variable bias, simultaneity, and endogeneity, we use a two-step system GMM model.

The findings from the empirical application indicate that the effect of bank competition on stability can vary depending on the proxy used to measure stability. While it might exert an adverse influence on bank solvency, it concurrently exhibits positive effects on credit risk, showing that various types of risks can account for the heterogeneous effects previously observed in the literature. Our findings suggest that an increase in banks' pricing power, as measured by LI, is associated with higher bank stability (solvency), thus supporting the competition-fragility theory. On the other hand, the study also reveals a positive association between LI and LLP (credit risk), thus providing supportive evidence for the competition-stability hypothesis. We contend that the viewpoints of "competition-fragility" and "competition-stability" should not be seen as mutually exclusive theories but can coexist within the banking system. Banks with greater market power and, therefore, a higher franchise value are more likely to charge higher interest rates on loans, which in turn increases the level of risk associated with their loan portfolios (Berger et al., 2009).

Furthermore, our findings provide evidence of a non-linear relationship that supports the possibility of coexistence between the two theories. The evidence reveals an inverse U-shaped relationship between market power and bank solvency, and a U-shaped connection between market power and bank credit risk.

Moreover, the findings indicate that banks with higher efficiency, lower leverage, more revenue diversification, and smaller size are more profitable and solvent. In terms of credit risk, banks with higher leverage, smaller size, and greater revenue diversification face elevated risk.

Upon examining the moderating role of Islamic banks on the effect of the market power on profitability and solvency, the evidence indicates that this impact will be more positive for IBs than for CBs. On the other hand, when considering the interaction term between banks' geographical characteristics (GCC) and the Lerner index, the evidence suggests that the impact of the market power on profitability, solvency, and credit risk will be less positive in GCC countries than in non-GCC countries.

Our findings indicate that the variation in the relationship between bank market power and profitability and stability across countries can be explained by market and institutional framework factors. To mitigate risks in the banking sector and enhance financial stability, regulators and policymakers in several MENA nations should carefully formulate banking policies. The significant variations between IBs and CBs, alongside differences in the institutional contexts and competition levels across nations, must all be considered in these policies.

Our study has significant implications for the future of banking in countries with dual markets, where both conventional and Islamic banks coexist, particularly in nations where IBs are constantly acquiring market shares. In this context, as IBs continue to grow in the MENA region, CBs should establish Sharia-compliant Islamic banking windows that would enable them to better leverage their market power and achieve greater profitability and solvency. Bank supervisors and regulators need to closely observe both conventional and Islamic financial institutions in dual markets to prevent excessive competition that could have more detrimental effects on the profitability and solvency of IBs.

As market power increases, GCC banks experience lower profitability, solvency, and credit risk than non-GCC banks. These findings have significant policy implications for the banking industry in GCC nations. First, to improve profitability and stability, regulators and policymakers should focus on enhancing the competitive environment in the banking industry by reducing barriers to entry for new players, privatization, lowering restrictions on activities, and encouraging innovation in the banking sector. Second, it is important to pay proper attention to banking regulations. More specifically, any efforts to enhance the competitive environment must be accompanied by reinforcement of supervision and regulations to mitigate any potential adverse effects on stability.

Policies and reforms in the MENA banking industry should improve the quality and autonomy of prudential oversight while reducing governmental influence over the financial sector. This will help address the negative impact of incentives that distort bank behavior. When banks have significant market power, robust supervisory oversight can encourage them to adopt better risk management practices, thereby preventing excessive and risky lending driven solely by profit. Additionally, reducing government ownership in the sector could decrease the incentive for banks with market power to engage in risky management practices, as they would no longer rely on public sector support and may be less likely to make imprudent decisions regarding the quality of their assets.

2. Competition's Impact on Bank Profitability and Stability in the MENA Region

The unique characteristics of the MENA banking system could have significant implications for the policy recommendations derived from this study at both regional and global levels. The banking industry in the MENA region can be seen as an illustration of a financial system within developing markets characterized by high market power. Given the similarities between the MENA banking system and those in other emerging regions/nations, reform implementation in the MENA region may hold applicability for these regions/nations.

Like any academic paper, ours also has limitations that should be mentioned, as it can provide a foundation for future research. The main limitation of this research is its reliance on accounting-based stability indicators, specifically the Z-score and LLP ratio, rather than market-based metrics, where the last necessitates stock market price information, and our dataset contains listed and unlisted banks. In terms of bank competition, we used a limited number of measures, mainly the Lerner index. Future studies can incorporate market-based risk indicators and use alternative competition measurements to obtain a more comprehensive picture of the relationship between competition and stability.

3

THE IMPACT OF COMPETITION ON CORPORATE ENVIRONMENTAL AND SOCIAL PERFORMANCE IN THE MENA BANKING SECTOR

3. THE IMPACT OF COMPETITION ON CORPORATE ENVIRONMENTAL AND SOCIAL PERFORMANCE IN THE MENA BANKING SECTOR

ABSTRACT

The present study contributes to the literature on sustainable development in business by examining the impact of competition on environmental and social performance. Subsequently, it seeks to determine the extent to which this relationship is moderated by factors such as board gender diversity (BGD), the institutional environment, the state-private ownership structure, and the Islamic-conventional nature of banks. Based on data collected from 82 banks in the banking industry across 11 emerging Middle Eastern and North African (MENA) countries over the period from 2015 to 2021, the results indicate that heightened competitive pressure compels banks to enhance their efforts in environmental and social initiatives. This strategic approach is aimed at building trust with various stakeholders and gaining a competitive advantage over other banks. Additionally, a positive correlation is observed between greater 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. The aspects outlined above carry significant implications for both theoretical considerations and banking practitioners. They contribute to the ongoing discourse surrounding the strategic decision-making process within the framework of sustainability, shedding light on the benefits associated with competition and gender diversity. Additionally, these findings are relevant for regulators and policymakers, offering insights that could provide guidelines for future reforms.

Keywords: MENA Countries, Bank Competition, Market Power, Corporate Social Responsibility, Environmental Performance, Social Performance.

3.1 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 and many stakeholders, including consumers, employees, members of the public, and regulators, are showing growing concern about climate change and social issues such as 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). Business communication strategies related to sustainability can take various forms (Krueger et al., 2021), ranging from the publication of non-financial or sustainability information (García et al., 2022; Turzo et al., 2022) to the incorporation of ESG-related terms into financial product names in the financial sector (Amzallag et al., 2023). Robust ESG disclosure supports enterprises in maintaining a positive image, reputation, and brand value (Ma et al., 2023; Dkhili, 2023; Helfaya et al., 2023; Liao et al., 2018), reducing compliance and supply chain risks (Sardanelli et al., 2022), 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 companies, sustainability holds particular significance for financial institutions, not only playing a pivotal role in ensuring the stable growth of the economy but also exerting considerable influence on the environment and society via their lending and investment practices (Lu & Herremans, 2019; Scholtens & Van't Klooster, 2019; Galletta et al., 2022; Saif-Alyousfi et al., 2023). In this regard, the '2021 Report on Responsible Banking' by the United Nations Principles (UNEP Finance Initiative) emphasizes that banks must, on the one hand, address the growing sustainability preferences of their customers and consumers and, on the other hand, redirect savings from the financial system towards sustainable businesses and investments (UNEP FI, 2022). A stable financial sector can promote the adoption and development of green technology, 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 at the same time as 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 change⁹ at the top of the list. Other significant concerns include financing environmental impact¹⁰,

⁹ Banking 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 climate-related financial risks (Basel Committee on Banking Supervision, 2022, 2023).

¹⁰ Despite 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).

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; Esposito & Cecchin, 2022; Galletta et al., 2022; Gangi et al., 2019; El Khoury et al., 2023a)¹¹. 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 (HSBC, 2020; Buelow et al., 2023; Cheng et al., 2023; 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). 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 (Buelow et al., 2023; Farah et al., 2021), while it lags behind other regions in terms of ESG reporting (Kreston Global, 2023; KPMG, 2022, 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 Corporate Social

¹¹ Wu 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.

Responsibility (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, 2022b; Buallay et al., 2022; Deloitte, 2022; Endrikat et al., 2021; Majumder et al., 2017; OECD, 2023; Paolone et al., 2023; Wasiuzzaman & Mohammad, 2020). While some MENA¹² countries have recently initiated reforms, such as quotas for women directors or voluntary measures like Corporate Governance 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 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 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 is characterized by a low level of competition and high barriers to entry (Almarzoqi et al., 2015; Elfeituri & Vergos, 2019; Issa et al., 2022b; Polemis, 2015). Low gender diversity on corporate boards has also been observed (Deloitte, 2022), and a significant degree of state ownership in nations such as the United Arab Emirates, Saudi Arabia and Oman (El-Chaarani et al., 2022; Ghosh, 2017; IMF, 2021). Moreover, the region features a dual banking market in which Islamic and conventional banks coexist (Almarzoqi et al., 2015).

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. Firstly, understanding the impact of market competition on Corporate Social Responsibility (CSR) performance 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 Forgiione 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

¹² Israel, Morocco, Tunisia, Turkey and United Arab Emirates (Deloitte, 2022).

discerning how selected explanatory variables influence their behavior and whether they exhibit similar patterns. Secondly, 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 et al., 2022a). Thirdly, 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). This complexity complicates the task of drawing definitive inferences (Buallay et al., 2020; Çek & Eyupoglu, 2020). These factors do not only directly influence firms' ESG practices (Baldini et al., 2018) but also indirectly shape the perspectives of investors and other stakeholders, thereby pushing firms into adopting them (Clementino & Perkins, 2020; Dyck et al., 2019). 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. Fourthly, 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 focuses on the direct impact of market power on environmental and social performance but also enriches previous literature by exploring whether this effect may be moderated by factors such as gender diversity, the institutional environment of the MENA region, the state-private ownership structure, or the Islamic-conventional nature of banks.

Our study confirms that in the MENA banking sector, competition serves as a driver of environmental and social performance. Additionally, companies with greater gender diversity in top management exhibit greater capacities to act effectively and align their practices with advanced environmental and social strategies. Furthermore, our findings suggest that corporate governance mechanisms, such as gender diversity, state ownership of banks, and a robust institutional environment, mitigate the negative influence of market power on environmental and social performance. However, the negative impact is more pronounced in Islamic banks compared to conventional ones in the MENA countries. This indicates that sustainability performance in the banking sector depends on the market structure, BGD, ownership structures, the type of bank, and the institutional framework.

The remainder of the paper is organized as follows: the next section offers a review of the relevant literature and formulates the hypotheses; section 3 outlines the methodological approach; section 4 presents the empirical results; finally, section 5 discusses the conclusions.

3.2 LITERATURE REVIEW AND RESEARCH HYPOTHESIS

In this section, we briefly overview the literature on the correlation between competition and CSR.

3.2.1 Competition and CSR

From a theoretical perspective, neoclassical literature defends the role of competition in markets as a factor that compels managers to lower costs, enhance efficiency, and foster innovation to improve business performance (Leong & Yang, 2020). Often viewed as an alternative to Corporate Governance (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). Contrary to this expectation, existing research, aligned with Stakeholder Theory, suggests that as competition intensifies, companies enhance their ESG commitments to strengthen relationships with 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). This strategic perspective on CSR implies that in competitive markets, socially responsible initiatives do not only contribute to public welfare but also have positive effects on 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 the 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. 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 U.S. 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 manifests itself more significantly in economies grounded in social values and environmental preservation, where CSR strategies can build stronger affinity with stakeholders in the form of loyalty and trust.

Nonetheless, other papers have suggested that the greater competition is, the less involvement in CSR is implied, due to the strategy of reducing non-essential costs derived from the decrease in profit margins. Bagnoli and Watts (2003) found an inverse correlation between CSR and competition, and Martins (2022), in a sample of companies in emerging countries, 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.

We are not aware of there being any previous studies of this kind on the banking sector in emerging countries, but following the arguments above, we have hypothesized the following:

Hypothesis I: *Market power negatively influences the environmental or social performance of the banking sector in the MENA region.*

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

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, 2022b; 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 and 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 an increase in BGD increases the gamut of insights and points of view for decision-making (Hillman et al., 2000), notably concerning ESG initiatives (Husted & de Sousa-Filho, 2019).

Most of the previous research has focused on the role of female directors from the Stakeholder Theory (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 et al. (2022a) have noted a negative link between BGD and the level of voluntary ESG disclosure among a sample of banks from GCC countries¹³.

Agency Theory, Resource Dependence Theory and Stakeholder Theory posit that the greater the gender diversity a company has, the 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 II: *Board gender diversity has a significant impact on the 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? As we have highlighted, competition serves as an external regulatory mechanism that strengthens board discipline (Sheikh, 2018) and is often viewed as an alternative to CG

¹³ See Laique et al. (2023) for possible explanations for the negative or insignificant influence of BGD on firm performance.

mechanisms (Ammann et al., 2013; Giroud & Mueller, 2011). In addition, sustainable initiatives and CG mechanisms can operate as alternatives or complement each other (Adu, 2022b). Prior literature has indicated that BGD is an option that can strengthen the environmental and social performance of banks. Consequently, we have hypothesized that the positive impact of BGD moderates the negative effect of market power on environmental and social performance.

Hypothesis III: *The negative effect of market power on environmental and social performance is less pronounced in banks the greater the gender diversity on their board of directors is.*

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; 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.

Hypothesis IV: *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.*

In terms of potential differences in business models, it is essential to note that ESG investing and Islamic finance are two complementary approaches for capital raising and investing, sharing many similar features (CFA Institute, 2019). However, comparative studies examining the importance of CSR between conventional and Islamic banks are scarce and inconclusive. Kolsi and Al-Hiyari (2023) have demonstrated that Islamic banks outperform conventional banks for both environmental (14.02 vs. 6.55) and social (29.42 vs. 25.85) scores in the GCC area for the period 2009-2019. Conversely, Tasnia et al. (2023), in a literature review, have argued that in spite of the few studies on Islamic banks, they seem to indicate that CSR disclosure is still in a growth stage and not a significant concern for most of these banks. In this context, Alam et al. (2021) have shown that Islamic banks registered a mean environmental score of 4.63, substantially lower than the 10.28 average for conventional banks. Moreover, when assessing the social score, conventional banks averaged 29.10, surpassing the mean score of 18.97 for Islamic banks. Ellili and Nobanee (2023) have offered a tentative explanation for these discrepancies, stating that Islamic banks exhibit lower leverage and face fewer financial constraints than their conventional counterparts. Additionally, Islamic banks need to comply with Shari'ah guidelines, which places less pressure on them regarding disclosure transparency. In

contrast, stakeholders and the government have more power over conventional banks to report on ESG issues. Accordingly, we have posited that Islamic banks may negatively correlate with a company's CSR performance.

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 increased scrutiny they face 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-Garcia & Ahmadova, 2023), demonstrating a greater willingness to allocate surplus resources to environmental conservation (Zhang et al., 2023), and reduce greenwashing (Bose et al., 2021).

State-owned banks, compared to their private counterparts, exhibit a higher level of environmental and social performance, consistent with Chi et al. (2022), Dong et al. (2014a), Liu and Anbumozhi (2009), and Lopatta et al. (2017). Consequently, we expect that state ownership is positively correlated with the CSR performance of companies.

As a result, the negative influence of market power on environmental or social aspects should be less pronounced for state-owned banks, while the Islamic character of banks in this region strengthens the negative effect of market power.

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

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

3.3 METHODOLOGY

This section presents the methodology and empirical model used to investigate the influence of competition on CSR. In addition, it provides an overview of the measures used to assess competition, environmental, and social performance.

3.3.1 Data

For both financial and non-financial (ESG) data pertaining to banks in MENA¹⁴ countries for the period under study (2015-2021), we utilized the Eikon Refinitiv database (Thomson Reuters). This study encompasses data from banks operating in 11 nations (Bahrain, Egypt, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia,

¹⁴ According 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.

and the United Arab Emirates). Other nations in the MENA region either did not have any listed banks or did not report ESG information. After excluding banks with incomplete data, the final sample consisted of 82 banks and 330 observations. Our analysis was confined to banks that were listed and reported their environmental and social scores in the Eikon Refinitiv database. Country-level data was sourced from the World Bank, and the globalization index is from the KOF Swiss Economic Institute.

3.3.2 Empirical methodology

3.3.2.1 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 econometric model is described as follows, with Equation (3.1) used to estimate the environmental and social scores:

$$ENV(SOC)_{it} = \alpha_1 + \gamma_1 LI_{it} + \delta_1 BGD_{it} + \tau_1 WGI_{it} + \rho_1 STA_i + \theta_1 ISL_i + \beta_1 Y_{it} + \omega_1 KOF_{it} + \eta_1 D_t + \varepsilon_{it} \quad (3.1)$$

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.

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 at the country level. 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, $STAi$ equals 1 if the bank is state-owned and 0 otherwise, while $ISLi$ 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. These include technical efficiency, liquidity, stock returns, market risk (beta), market capitalization over total assets, free float (percentage of shares outstanding), ownership concentration, size, and age. Additionally, $KOFSOC_{it}$ examines how social globalization in the MENA region may impact results, incorporating the KOF^{15} indicator of social globalization at the country level. D_t represents a vector of year dummies from 2016 to 2021. The parameters to be estimated are denoted by $\alpha, \gamma, \delta, \tau, \rho, \theta, \beta, \omega$ 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.

3.3.2.2 Moderating effects

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

$$ENV(SOC)_{it} = \alpha_2 + \gamma_2 LI_{it} + \delta_2 BGD_{it} + \omega_2 (LI_{it} \times BGD_{it}) + \beta_2 Y_{it} + \tau_2 KOF_{it} + \eta_2 D_t + \varepsilon_{it} \quad (3.2)$$

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

$$ENV(SOC)_{it} = \alpha_3 + \gamma_3 LI_{it} + \tau_3 WGI_{it} + \vartheta_3 (LI_{it} \times WGI_{it}) + \beta_3 Y_{it} + \eta_3 D_t + \varepsilon_{it} \quad (3.3)$$

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

$$ENV(SOC)_{it} = \alpha_4 + \gamma_4 LI_{it} + \theta_4 ISL_i + \pi_4 (LI_{it} \times ISL_i) + \beta_4 Y_{it} + \tau_4 KOF_{it} + \eta_4 D_t + \varepsilon_{it} \quad (3.4)$$

¹⁵ <https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>

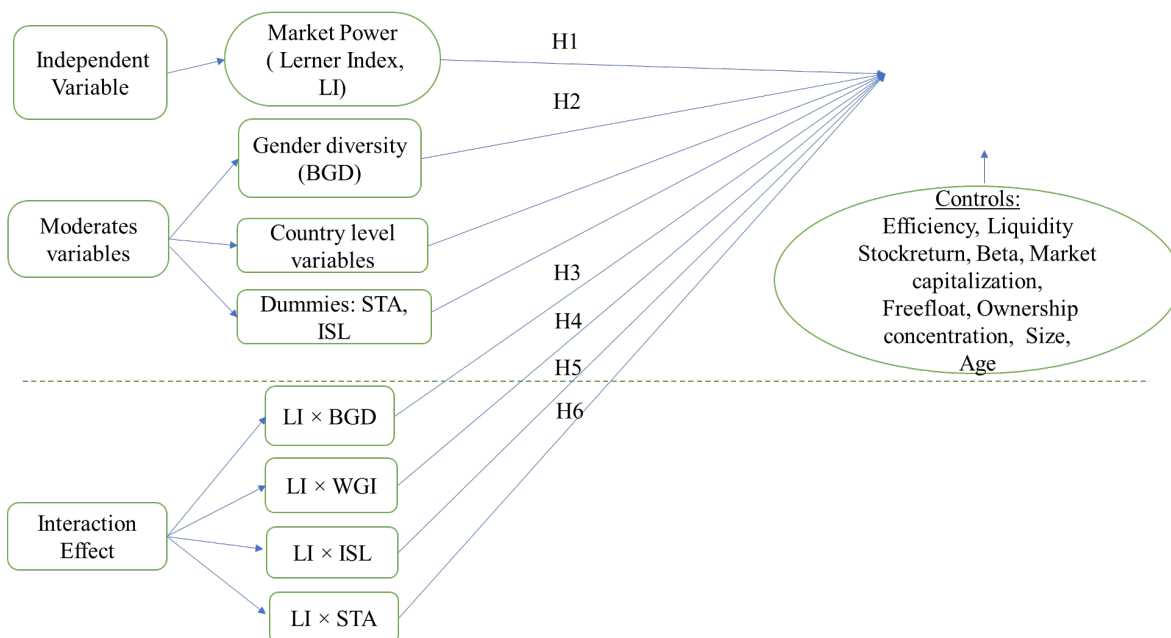
The interaction effect of STA with LI on ENV or SOC was analyzed using the following equation:

$$ENV(SOC)_{it} = \alpha_5 + \gamma_5 LI_{it} + \rho_5 STA_i + \varphi_5 (LI_{it} \times STA_i) + \beta_5 Y_{it} + \tau_5 KOF_{it} + \eta_5 D_t + \varepsilon_{it} \quad (3.5)$$

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 LIit 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 (7) below:

Figure 7: Conceptual model



Source: Own production

3.4 EMPIRICAL RESULTS

In this section, we investigate whether competition (the inverse of LI) influences our dependent variables, which are bank environmental and social performance.

3.4.1 Descriptive statistics

Table (19) provides an overview of the study variables. The mean score for SOC performance was 37.96%, while ENV performance was 28.60%. 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 6.48%, 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 operating efficiency of 82.86, liquidity at 35.90%, and an annual return per share of 7.32%. Systematic risk (BETA) was 0.95, slightly below market portfolio beta. Market capitalization to total assets averaged 0.213, free float was 52.64%, and main shareholder ownership was 30.50%.

The average size of banks in the sample was approximately \$48,736.72 million, and had an average age of 46.1 years old, covering both young and mature establishments.

Country variables showed a KOFSOC index of 74.42, indicating relatively high social integration. For the institutional framework, the average WGI score was 54.70%, with distinctions between the more advanced economies (Israel, Qatar and the UAE) and the less developed ones (Lebanon, Egypt and Morocco). However, the MENA region lagged in institutional quality compared to the global average (Sayan, 2009).

Table 19: Descriptive statistics of the study variables

| Variable | Obs. | Mean | Std.Dev. | MIN | MAX |
|-------------------------|------|-------|----------|--------|-------|
| ENV | 330 | 28.60 | 26.22 | 0.00 | 81.14 |
| SOC | 330 | 37.96 | 22.10 | 2.43 | 92.43 |
| LI | 308 | 0.18 | 0.32 | -1.36 | 0.69 |
| BGD | 329 | 6.48 | 9.58 | 0.00 | 40.00 |
| Efficiency | 323 | 0.83 | 0.13 | 0.29 | 1.00 |
| Liquidity | 330 | 0.36 | 0.13 | 0.16 | 0.89 |
| Stock return | 330 | 7.32 | 22.85 | -53.75 | 92.54 |
| BETA | 330 | 0.95 | 0.38 | -0.76 | 3.17 |
| Market-Assets | 330 | 0.21 | 0.22 | 0.01 | 1.46 |
| Free float | 330 | 52.64 | 24.64 | 0.11 | 100 |
| Ownership concentration | 330 | 30.50 | 20.06 | 2.42 | 99.89 |
| LnAsset | 330 | 10.17 | 1.18 | 6.86 | 12.61 |
| LnAge | 330 | 3.67 | 0.60 | 2.08 | 4.80 |
| KOFSOC | 330 | 74.42 | 5.81 | 61.32 | 85.90 |
| WGI | 330 | 54.70 | 13.25 | 15.86 | 72.37 |

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

Source: EIKON database, own calculations, KOF Swiss Economic Institute, World Bank.

3.4.2 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 (20) 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 (20) reveal a significant negative correlation between the LI, representing the inverse of competition, and both ENV and SOC performance, thereby supporting Hypothesis I. This outcome is in alignment with Stakeholder Theory and is consistent with prior empirical studies such as Forgione and Migliardo (2020) in the banking sector and Dupire and M'Zali (2016), Fernández-Kranz and Santaló (2010), Flammer (2015), and Leong & Wang (2020) in non-financial sectors.

Consequently, the more competitive environments are where banks are operating, the more likely they are to embrace more thorough ENV and SOC practices to meet stakeholder expectations. Over time, this commitment can differentiate their products, enhance the reputation of the companies, and potentially generate valuable intangible assets.

In terms of moderating variables, our analysis reveals a positive correlation between BGD and both ENV and SOC performance, supporting Hypothesis II. This suggests that the former positively influences the latter variables of banks in the MENA region, aligning with Agency Theory, Stakeholder Theory, and Resource Dependence Theory, and with the results of prior studies.

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 et al. (2022a), 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 & Baydauletov (2020), and Shaukat 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 toward 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. Stakeholders can accurately assess the returns of ESG-based strategies, making companies more likely to benefit from them.

As for the dummy variables, state-owned banks showed a positive effect on ENV and SOC performance, consistent with Chi et al. (2022), Dong et al. (2014a), Liu and Anbumozhi (2009), and Lopatta et al. (2017). Conversely, Islamic banks exhibited a negative influence on ENV and SOC performance, in line with Alam et al. (2021).

With respect to the control variables, 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 Forgiione 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.

3. The Impact of Competition on Corporate Environmental and Social Performance in the MENA Banking Sector

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 (20), 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 individually¹⁶.

Table 20: OLS estimation of environmental and social performance

| Dependent | ENV (1) | ENV (2) | ENV (3) | SOC (4) | SOC (5) | SOC (6) |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| LI | -7.802* (-4.070) | -7.496** (-3.769) | -9.400** (-4.309) | -11.005*** (-3.302) | -8.310*** (-3.076) | -12.448*** (-3.940) |
| BGD | 0.526*** (0.141) | 0.567*** (0.136) | 0.419*** (0.143) | 0.444*** (0.115) | 0.521*** (0.112) | 0.399*** (0.113) |
| Efficiency | -23.294*** (-8.015) | -24.281*** (-7.937) | -26.201*** (-8.033) | -23.981*** (-8.629) | -19.241** (-8.263) | -28.326*** (-9.398) |
| Liquidity | 49.869*** (-10.508) | 57.457*** (-10.516) | 39.289*** (-10.733) | 27.772*** (-9.738) | 22.878** (-10.125) | 23.862** (-10.232) |
| Stock returns | -2.989 (-6.168) | -0.709 (-6.029) | 1.890 (-6.453) | 0.345 (-5.381) | 2.494 (-5.335) | 5.327 (-5.855) |
| BETA | 4.704 (-3.772) | 4.288 (-3.617) | 7.202** (-3.006) | 7.161** (-2.763) | 6.296** (-2.566) | 8.607*** (-2.429) |
| Market-Assets | 9.329 (-6.467) | 12.789** (-5.855) | 15.783** (-6.287) | 16.846*** (-5.207) | 14.540*** (-4.810) | 23.748*** (-5.777) |
| Free Float | 20.132*** (-7.208) | 21.416*** (-6.887) | 26.167*** (-7.636) | 7.634 (-5.871) | 12.626** (-5.564) | 11.856* (-6.349) |
| Ownership concentration | 0.260*** (0.089) | 0.253*** (0.088) | 0.203** (0.100) | 0.168*** (0.063) | 0.165*** (0.062) | 0.127 (0.077) |
| LnAsset | 8.681*** (-1.353) | 8.485*** (-1.287) | 6.642*** (-1.388) | 8.674*** (-1.020) | 8.938*** (0.973) | 7.232*** (-1.160) |
| LnAge | 4.267** (-2059) | 4.720** (-1.937) | 5.832*** (-2.026) | 6.243*** (-1.904) | 7.225*** (-1.846) | 5.283** (-2.228) |
| ISL | | | -10.915*** (-2.411) | | | -12.074*** (-2.558) |
| STA | | | 18.288*** (-4.089) | | | 10.836*** (-3.800) |
| KOFSOC | 0.712** (0.285) | | 0.471* (0.285) | 1.268*** (0.259) | | 1.179*** (0.261) |
| WGI | | 0.462*** (0.114) | | | 0.435*** (0.096) | |
| Year fixed effect | YES | YES | YES | YES | YES | YES |
| Constant | -149.372*** (-20.039) | -116.874*** (-11.886) | -112.959*** (-20.246) | -183.081*** (-17.258) | -120.163*** (-11.461) | -153.374*** (-17.495) |
| Number of Obs. | 308 | 308 | 282 | 308 | 308 | 282 |
| R2 | 0.5339 | 0.5541 | 0.6071 | 0.5465 | 0.5397 | 0.6090 |

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. Dummy variables for time have been used. Data enclosed in () are standard error. Asterisks indicate significance at the 1 per cent (*), 5 per cent (**) and 10 per cent (***) levels.

Source: Own production

3.4.3 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 (3.1), introducing a lag of one 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 & Garcia-Sanchez, 2023; Khatri, 2023).

As shown in Tables (21) and (22), 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.

Table 21: Robustness: truncated regression and OLS

| Dependent | Truncated regression | | | | OLS | |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | ENV | ENV | SOC | SOC | ENV | SOC |
| LI | -8.017** (-3.855) | -7.623** (-3.675) | -11.495*** (-4.150) | -8.599** (-3.884) | -12.444** (-4.935) | -18.988*** (-3.649) |
| BGD | 0.546*** (0.131) | 0.589*** (0.135) | 0.516*** (0.137) | 0.599*** (0.134) | 0.533*** (0.162) | 0.480*** (0.133) |
| Efficiency | -24.036** (-9.912) | -24.892*** (-7.804) | -32.471*** (-11.686) | -27.059** (-11.344) | -33.259*** (-9.501) | -26.857*** (-10.188) |
| Liquidity | 50.431*** (-11.407) | 57.964*** (-10.275) | 36.044*** (-12.298) | 28.676** (-12.712) | 53.913*** (-12.657) | 38.182*** (-11.378) |
| Stock returns | -2.641 (-6.156) | -0.264 (-5.946) | 0.310 (-6.454) | 2.869 (-6.450) | -3.508 (-7.471) | 6.289 (-6.639) |
| BETA | 4.787* (-2.816) | 4.361 (-3.561) | 8.222** (-3.462) | 6.994** (-3.191) | 7.656** (-3.776) | 9.822*** (-2.892) |
| Market-Assets | 9.353 (-5.991) | 12.737** (-5.691) | 19.874*** (-5.897) | 16.837*** (-5.452) | 11.159 (-7.498) | 23.132*** (-5.549) |
| Free Float | 20.217*** (-7.294) | 21.614*** (-6.727) | 11.536 (-7.397) | 17.077** (-7.072) | 26.022*** (-8.640) | 3.679 (-6.731) |
| Ownership concentration | 0.259*** (0.079) | 0.252*** (0.085) | 0.234*** (0.080) | 0.229*** (0.080) | 0.360*** (0.113) | 0.115 (0.076) |
| LnAsset | 8.772*** (-1.303) | 8.586*** (-1.255) | 10.408*** (-1.331) | 10.758*** (-1.318) | 8.943*** (-1.662) | 9.073*** (-1.259) |
| LnAge | 4.259* (-2.328) | 4.735** (-1.884) | 7.677*** (-2.614) | 9.008*** (-2.560) | 4.854** (-2.328) | 5.805** (-2.257) |
| KOFSOC | 0.744*** (0.281) | | 1.459*** (0.300) | | 0.740** (0.341) | 1.337*** (0.284) |
| WGI | | 0.474*** (0.111) | | 0.491*** (0.111) | | |
| Year fixed effect | YES | YES | YES | YES | YES | YES |
| Constant | -156.966*** (-21.412) | -131.950*** (-11.356) | -215.287*** (-19.848) | -147.007*** (-13.846) | -147.883*** (-22.565) | -184.095*** (-18.700) |
| Sigma | 17.586*** (0.723) | 17.206*** (0.709) | 16.785*** (0.854) | 16.940*** (0.911) | | |
| Number of Obs. | 308 | 308 | 308 | 308 | 235 | 235 |
| R2 | | | | | 0.5499 | 0.5592 |
| chi2 | 335.46 | 758.80 | 380.01 | 374.11 | | |
| Prob > chi2 | 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 1 per cent (*), 5 per cent (**) and 10 per cent (***) levels.

Source: Own production

Table 22: Two-Stage Least Squares Regression (2SLS)

| Dependent: | ENV | ENV | SOC | SOC |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| LI | -15.111*** (-5.428) | -15.623*** (-5.815) | -18.659*** (-4.792) | -22.209*** (-4.942) |
| BGD | 0.582*** (0.160) | 0.535*** (0.164) | 0.578*** (0.141) | 0.500*** (0.139) |
| Efficiency | -42.937*** (-13.330) | -44.307*** (-13.919) | -28.441** (-11.770) | -36.187*** (-11.829) |
| Liquidity | 65.641*** (-13.973) | 61.555*** (-15.130) | 36.058*** (-12.338) | 47.623*** (-12.858) |
| Stock returns | -0.892 (-7.059) | -2.347 (-7.226) | 3.536 (-6.233) | 0.543 (-6.141) |
| BETA | 6.516* (-3.563) | 7.481** (-3.641) | 8.631*** (-3.146) | 10.320*** (-3.094) |
| Market-Assets | 15.774** (-6.580) | 13.172* (-6.977) | 19.440*** (-5.810) | 24.016*** (-5.929) |
| Free Float | 27.809*** (-8.383) | 25.897*** (-8.719) | 10.963 (-7.402) | 4.977 (-7.409) |
| Ownership concentration | 0.340*** (0.095) | 0.352*** (0.097) | 0.110* (0.084) | 0.121* (0.082) |
| LnAsset | 9.314*** (-1.577) | 9.375*** (-1.612) | 10.040*** (-1.392) | 9.388*** (-1.370) |
| LnAge | 4.341 (-2.754) | 3.694 (-2.831) | 6.138** (-2.431) | 4.871** (-2.405) |
| KOFSOC | | 0.868** (0.347) | | 1.513*** (0.295) |
| WGI | 0.481*** (0.124) | | 0.446*** (0.110) | |
| Year fixed effect | YES | YES | YES | YES |
| Constant | -132.332*** (-15.067) | -164.429*** (-25.109) | -120.494*** (-13.304) | -192.002*** (-21.338) |
| Number of Obs. | 235 | 235 | 235 | 235 |
| Centered R ² | 0.5655 | 0.5499 | 0.5434 | 0.5619 |
| Uncentered R ² | 0.8063 | 0.7994 | 0.8913 | 0.8957 |
| Anderson canon. corr. LM statistic | 176.280 | 172.890 | 176.280 | 172.890 |
| Chi-sq(8) P-val | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Cragg-Donald Wald F statistic | 70.381 | 65.260 | 70.381 | 65.260 |
| Stock-Yogo weak ID test critical values: 5% maximal IV relative bias | 16.10 | 16.10 | 16.10 | 16.10 |
| Sargan statistic | 4.875 | 4.585 | 5.140 | 5.394 |
| Chi-sq (7) P-val | 0.5599 | 0.5981 | 0.5260 | 0.4944 |

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 1 per cent (*), 5 per cent (**) and 10 per cent (***) levels.

Source: Own production

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 significant¹⁷.

3.4.4 Moderating effects

The findings of the moderation analysis are presented in Table (23). Introducing moderating variables into the models maintained the significant relationship between LI, BGD, WGI, STA, and ISL individually, on both ENV and SOC, in all cases.

Regarding the moderating effect of LI×BGD [see columns (1) and (5) in Table (23)], it was significant (at the 10% level) and positive in ENV and SOC, supporting hypothesis III. This suggests that the negative impact of market power on both ENV and SOC was less pronounced in companies with more women on boards. BGD is associated with enhanced decision-making and risk management, as well as fostering flexibility and adaptability in the face of market power.

The effect of the LI×WGI interaction [refer to columns (2) and (6) in Table (23)] on ENV and SOC was positive and significant, confirming hypothesis IV. This implies that in nations with high WGI, the impact of market power diminishes, indicating that a strong institutional environment may alter the relationship between market power and the environmental and social performance of banks.

Similarly, the effect on both ENV and SOC [as seen in columns (4) and (8) in Table (23)] of the LI×STA interaction was positive, supporting hypothesis VI. This suggests that the negative influence of market power on ENV and SOC appeared to be less pronounced for state-owned banks, as they are less market-oriented and prioritize social responsibility. State ownership may counteract the negative effects of a high LI, as state-owned enterprises often have dual goals of economic and societal improvement.

Finally, the effect of the LI×ISL interaction [as shown in columns (3) and (7) in Table (23)] was significant and negative only for SOC performance, partially aligning with hypothesis V. This indicates that in ISLs, the negative effect of market power on social performance was strengthened. The negative interaction effect suggests that when ISLs face greater market power, their social performance tends to be lower, maybe due to prioritizing Sharia-compliant activities over social objectives and facing fewer financial constraints and less pressure from stakeholders and the government in terms of transparency and socially responsible behavior (Ellili & Nobanee, 2023).

¹⁷ Results are available upon request.

3. The Impact of Competition on Corporate Environmental and Social Performance in the MENA Banking Sector

In conclusion, the study's results robustly confirm the moderating influence of women on boards, state ownership of banks, and a better institutional environment regarding the negative effects of market power on ENV and SOC performance. However, for ISLs, their moderating effect is negative concerning the impact of market power.

Table 23: OLS regression: Moderating variables

| Dependent | ENV (1) | ENV (2) | ENV (3) | ENV (4) | SOC (5) | SOC (6) | SOC (7) | SOC (8) |
|------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| LI | -11.422*** (-4.091) | -45.194** (-20.626) | -8.920* (-5.191) | -13.729*** (-4.048) | -16.227*** (-3.028) | -29.106 (-18.053) | -9.482** (-4.081) | -16.595*** (-3.497) |
| BGD | 0.399** (0.156) | | | | 0.260** (0.119) | | | |
| LI× BGD | 0.846* (0.475) | | | | 1.220*** (0.376) | | | |
| WGI | | 0.352** (0.141) | | | | 0.378*** (0.110) | | |
| LI× WGI | | 0.665* (0.354) | | | | 0.357 (0.311) | | |
| ISL | | | -13.459*** (-2.486) | | | | -11.674*** (-2.490) | |
| LI× ISL | | | -3.482 (-6.126) | | | | -9.924* (-5.927) | |
| STA | | | | 12.709*** (-2.711) | | | | 5.849* (-3.056) |
| LI× STA | | | | 35.658*** (-7.256) | | | | 34.366*** (-8.7049) |
| KOFSOC | 0.600** (0.280) | | 0.899*** (0.283) | 0.609** (0.297) | 1.106*** (0.256) | | 1.422*** (0.250) | 1.305*** (0.266) |
| Efficiency | -20.391** (-8.136) | -28.488*** (-8.266) | -21.290** (-8.340) | -30.799*** (-8.345) | -19.794** (-8.492) | -22.508*** (-8.378) | -22.414** (-9.185) | -33.211*** (-9.420) |
| Liquidity | 49.400*** (-10.275) | 57.317*** (-10.635) | 50.491*** (-11.149) | 46.640*** (-10.622) | 27.095*** (-9.313) | 24.696** (-10.175) | 26.294*** (-10.001) | 31.151*** (-10.365) |

3. The Impact of Competition on Corporate Environmental and Social Performance in the MENA Banking Sector

| Dependent | ENV (1) | ENV (2) | ENV (3) | ENV (4) | SOC (5) | SOC (6) | SOC (7) | SOC (8) |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Stock return | -2.157 (-6.107) | 0.635 (-6.107) | 3.721 (-6.067) | -0.690 (-6.229) | 1.544 (-5.348) | 4.524 (-5.667) | 6.160 (-5.368) | 2.396 (-5.988) |
| Beta | 4.626 (-3.526) | 5.084 (-3.496) | 5.368 (-3.297) | 8.590*** (-3.088) | 7.049*** (-2.468) | 6.842*** (-2.381) | 7.702*** (-2.344) | 10.010*** (-2.359) |
| Market-Assets | 10.199 (-6.345) | 10.394* (-5.927) | 13.112** (-5.688) | 13.697** (-6.601) | 18.102*** (-4.829) | 11.817** (-4.735) | 21.533*** (-4.661) | 21.290*** (-5.564) |
| Free Float | 19.734*** (-7.256) | 23.972*** (-7.116) | 29.060*** (-7.594) | 23.801*** (-7.793) | 7.060 (-5.884) | 15.252*** (-5.533) | 16.378*** (-5.928) | 8.985 (-6.540) |
| Ownership concentration | 0.267*** (0.087) | 0.235** (0.091) | 0.293*** (0.092) | 0.181* (0.101) | 0.178*** (0.058) | 0.166** (0.065) | 0.198*** (0.065) | 0.104 (0.071) |
| LnAsset | 8.452*** (-1.389) | 7.891*** (-1.304) | 6.725*** (-1.358) | 5.741*** (-1.388) | 8.345*** (-1.047) | 8.281*** (-1.013) | 7.027*** (-1.070) | 6.429*** (-1.114) |
| LnAge | 4.646** (-2.116) | 8.945*** (-1.638) | 4.437** (-1.769) | 13.175*** (-1.614) | 6.790*** (-1.938) | 11.096*** (-1.795) | 5.845*** (-1.909) | 12.796*** (-1.942) |
| Year fixed effect | YES | YES | YES | YES | YES | YES | YES | YES |
| Constant | -146.370*** (-20.234) | -128.340*** (-12.488) | -150.840*** (-20.019) | -143.044*** (-20.875) | -164.118*** (-16.932) | -117.052*** (-11.864) | -170.320*** (-17.171) | -172.241*** (-18.019) |
| Number of Obs. | 308 | 308 | 308 | 282 | 308 | 308 | 308 | 282 |
| R ² | 0.5401 | 0.5096 | 0.5518 | 0.5748 | 0.5628 | 0.5091 | 0.5769 | 0.5608 |

Source: Own production

3.4.5 Additional analysis

Following Khattak and Saiti (2020) and Nguyen and Nguyen (2020), we examine the influence of ESG performance on bank profitability and stability, measured by net interest margin (NIM) and Z-score, respectively.

Table 24: Impact of ESG on banks profitability and stability

| Dependent | NIM | NIM | NIM | NIM | Z-score | Z-score | Z-score | Z-score |
|-------------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| LI | 0.744*** (0.149) | 0.867*** (0.223) | 1.490*** (0.220) | 1.162*** (0.232) | 6.504*** -1.847 | 7.623*** -2.541 | 8.924*** -2.731 | 8.820*** -2.548 |
| Environmental | 0.007*** (0.002) | | | | -0.014 (0.014) | | | |
| LI × Environmental | -0.011** (0.005) | | | | 0.004 (0.036) | | | |
| Social | | 0.002 (0.003) | | | | -0.048*** (0.016) | | |
| LI × Social | | -0.010* (0.005) | | | | -0.040 (0.044) | | |
| Governance | | | 0.000 (0.002) | | | | -0.003 (0.013) | |
| LI × Governance | | | -0.018*** (0.004) | | | | -0.045 (0.039) | |
| ESG | | | | 0.002 (0.003) | | | | -0.038** (0.016) |
| LI × ESG | | | | -0.017*** (0.005) | | | | -0.062 (0.042) |
| Equity to total assets | 0.501 (-1.100) | 0.210 (-1.173) | -0.075 (-1.191) | 0.038 (-1.169) | | | | |
| Efficiency | -0.070 (0.364) | -0.086 (0.379) | 0.090 (0.371) | -0.080 (0.368) | 5.799* (-3.004) | 5.348* (-2.963) | 6.259* (-3.356) | 6.136** (-2.976) |
| Gross loans to deposits | -0.249 (0.215) | -0.320 (0.217) | -0.297 (0.209) | -0.302 (0.209) | 3.973*** (-1.088) | 4.084*** (-1.060) | 4.091*** (-1.069) | 3.727*** (-1.068) |

3. The Impact of Competition on Corporate Environmental and Social Performance in the MENA Banking Sector

| Dependent | NIM | NIM | NIM | NIM | Z-score | Z-score | Z-score | Z-score |
|---------------------------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Non-interest income to total revenues | -1.469*** (0.537) | -1.474*** (0.558) | -1.646*** (0.551) | -1.505*** (0.547) | -2.150 (-2.915) | -1.615 (-2.881) | -2.460 (-2.968) | -2.175 (-2.892) |
| Age | -0.001 (0.002) | 0.001 (0.002) | 0.002 (0.002) | 0.001 (0.002) | -0.078*** (0.015) | -0.061*** (0.015) | -0.079*** (0.015) | -0.067*** (0.017) |
| Ownership concentration | 0.001 (0.002) | 0.001 (0.002) | 0.002 (0.002) | 0.001 (0.002) | 0.006 (0.012) | 0.006 (0.012) | 0.006 (0.012) | 0.006 (0.012) |
| Size | -0.100* (0.057) | -0.070 (0.060) | -0.087 (0.054) | -0.079 (0.058) | -0.302 (0.429) | -0.039 (0.449) | -0.464 (0.428) | -0.219 (0.408) |
| GDP growth | 0.112*** (0.020) | 0.121*** (0.021) | 0.113*** (0.021) | 0.120*** (0.021) | -0.201* (0.112) | -0.154 (0.107) | -0.235** (0.113) | -0.205* (0.108) |
| Inflation | 0.054*** (0.018) | 0.056*** (0.018) | 0.054*** (0.018) | 0.056*** (0.018) | -0.132* (0.070) | -0.125* (0.066) | -0.144** (0.073) | -0.144** (0.069) |
| WGI | -0.031*** (0.004) | -0.032*** (0.004) | -0.034*** (0.004) | -0.032*** (0.004) | -0.126*** (0.029) | -0.121*** (0.028) | -0.134*** (0.025) | -0.131*** (0.027) |
| ISL | 0.251*** (0.083) | 0.207** (0.085) | 0.171** (0.084) | 0.203** (0.084) | -3.354*** (0.645) | -3.587*** (0.610) | -3.341*** (0.722) | -3.576*** (0.663) |
| STA | 0.463*** (0.153) | 0.551*** (0.158) | 0.537*** (0.144) | 0.582*** (0.152) | -1.338 (0.991) | -0.622 (-1.016) | -1.470* (0.884) | -0.866 (0.931) |
| Year fixed effect | yes | yes | yes | yes | yes | yes | yes | yes |
| Constant | 5.633*** (0.510) | 5.461*** (0.521) | 5.718*** (0.471) | 5.563*** (0.501) | 25.827*** (-2.774) | 23.924*** (-2.834) | 27.572*** (-2.935) | 26.299*** (-2.713) |
| Number of Obs. | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| R2 | 0.6174 | 0.6037 | 0.6234 | 0.6120 | 0.5140 | 0.5367 | 0.5163 | 0.5273 |

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.

Source: Own production

The OLS estimation findings in Table (24) suggest that increased market power has a positive effect on NIM. This means that greater market power allows banks to control prices and consequently earn higher profits. Environmental performance also has a positive impact on NIM, indicating that banks that engage in environmental sustainability practices can enhance their profitability. This positive effect could be due to the fact that these practices attract environmentally conscious customers and enhance the bank's brand reputation. However, the interaction term between LI and environmental performance negatively affects NIM. This suggests that while environmental initiatives can independently enhance profitability, their combined effect somehow diminishes this positive effect. One possible explanation for this result is the increased costs associated with implementing environmentally friendly technologies or practices, which might diminish the profitability gains associated with higher market power. Social performance does not have a significant impact on NIM, indicating that initiatives related to social responsibility do not directly influence bank profitability. On the other hand, the combined impact of social performance and LI has a negative effect on NIM. This suggests that social initiatives can reduce profitability from the exploitation of market power, likely due to the extra costs associated with these initiatives. Governance performance does not show a significant impact on NIM, suggesting that governance practices do not directly influence bank profitability. However, the interaction between LI and governance performance has a negative impact on NIM. This indicates that governance mechanisms may enforce long-term strategic planning, which can prevent the exploitation of market power purely for short-term gains. The overall ESG score is not statistically significant in relation to NIM. However, the interaction between LI and the overall ESG score has a negative impact on NIM. This suggests that implementing ESG strategies may limit the potential for profit enhancement through leveraging market power, likely due to the implementation costs and constraints associated with ESG compliance.

Moving to bank stability, market power has a significant positive impact on the Z-score. This implies that banks facing reduced competition are less likely to become insolvent as they can set prices monopolistically. Environmental and governance performance have no significant effect on the Z-score, suggesting that these initiatives do not have a direct effect on financial stability. Interestingly, social and overall ESG performance, however, has a significant negative impact on the Z-score, indicating that these initiatives might pose challenges to financial stability, possibly due to the associated costs that reduce the bank's solvency. Furthermore, the interaction between LI and ESG factors, whether considered independently or collectively, does not have a significant impact on the Z-score.

3.5 CONCLUSION

CSR is a critical issue for financial institutions given their pivotal 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. Specifically, we have investigated 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, aligning with Agency, Resource Dependence and Stakeholder Theories, confirms the positive effect of Board Gender Diversity on environmental and social outcomes. This underscores the significance of gender diversity in corporate leadership. It is essential for companies to view gender diversity not just 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. The results highlight the importance of considering the ownership and nature of a bank when assessing its impact on environmental and social factors.

Additionally, various control variables have emerged as drivers of positive environmental and social outcomes. The greater a firm's liquidity, market capitalization to total assets, market risk, free float, ownership concentration, size, and age, the more positive its impact on environmental and social performance. These variables collectively contribute to firms in the MENA banking sector fostering environmental and social responsibility.

The moderating role of Board Gender Diversity, state ownership, and a good institutional environment regarding the negative impacts of market power on environmental and social performance have also been highlighted.

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.

As with all papers, we acknowledge that ours has some shortcomings. Firstly, 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. Secondly, we collected data from only one database. According to Rubino et al. (2024), the most important ESG rating provider agencies, including Thomson Reuters, Bloomberg, and MSCI, apply varying methodologies, indicators, and surveys when assessing a firm's sustainability engagement because there are no uniform rules for calculating and constructing these scores. 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

3. The Impact of Competition on Corporate Environmental and Social Performance in the MENA Banking Sector

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.

4

CONCLUSION, LIMITATIONS AND FUTURE RESEARCH STUDIES

4. CONCLUSION, LIMITATIONS AND FUTURE RESEARCH STUDIES

4.1 CONCLUSIONS

Finally, chapter four, which is the concluding section of this thesis, presents the principal conclusions, policy recommendations, and implications of the three essays along with the existing limitations of each essay. It also identifies suggestions for future research for upcoming research scholars, thereby contributing to the ongoing development of the three discussed topics.

In recent decades, policymakers in the MENA region have implemented several reforms to enhance the performance of banks in response to technological advancements and deregulation. These reforms included promoting competition, reducing the public sector's involvement within the banking sector, implementing risk-based capital allocation regulations such as Basel III, and improving the quality of reporting in some countries to comply with different stakeholders' pressures. Hence, this research endeavor examines the impact of competition on bank performance (technical efficiency, profitability, stability, and CSR). To achieve this, this thesis explores three pivotal topics that significantly contribute to the analysis of the impact of competition on bank performance in the MENA region. The following are the conclusions derived from our three empirical investigations.

4.1.1 Conclusion of Chapter One:

The table below Table (25) displays the findings of the hypothesis testing for Chapter one.

Table 25: Hypotheses of Chapter 1 and the findings

| Hypotheses | Findings |
|---|-----------|
| H1: Banking market structure affects technical efficiency in the MENA region. Hypothesis 1 can be further divided into two separate hypotheses, as outlined below: | |
| H1a: Banking market power positively affects technical efficiency in the MENA region. | Rejected |
| H1b: Banking concentration positively affects technical efficiency in the MENA region. | Supported |
| H2: The joint influence of market power and banking concentration positively affects technical efficiency in the MENA region. | Supported |

Source: Own production

This paper analyzes the relationship between market structure, i.e., market power and banking concentration, and the efficiency of banks in the MENA region by studying the Quiet Life Hypothesis (QLH) and the Bank Specificity Hypothesis (BSH). To do so, we first calculated the bias-corrected efficiency of MENA banks using the DEA, estimated bank-level LIs as a proxy for market power, and performed the same for the HHI for market concentration.

Our results indicate that the concentration positively affects efficiency, supporting Hypothesis 1b, which refutes QLH. Market power negatively influences efficiency; thus, we can rule out Hypothesis 1a, thus supporting QLH. With regard to the combined effect of both variables, the coexistence of higher concentration and market power increases bank efficiency, confirming Hypothesis H2 and supporting the BSH hypothesis.

The structural and non-structural approaches reveal different results that may help design policies related to banking efficiency; if market concentration positively affects it, policymakers should not be concerned. If QLH is fulfilled, measures to improve efficiency and competition are necessary (Otero-González et al., 2019).

Regarding bank-specific variables, size, profitability, capitalization, and liquidity positively affect efficiency in most of the models analyzed. Moreover, an effective institutional framework and adequate financial development, as proposed by economic theory, contribute to higher levels of efficiency. The results also show a strong relationship between banking efficiency and financial inclusion. IBs and domestic banks have positive and statistically significant effects on efficiency. Conversely, it is negatively affected in listed banks and those in the Gulf region.

This study's impact is not limited to academic circles as our findings provide several contributions to the vision of policymakers, bank managers, regulators, and governments for improving the efficiency of the MENA banking system. Therefore, this paper supports the concentration-increasing policies implemented by regulators in several countries to boost efficiency. However, regulators in the MENA region must be careful when trying to increase the level of concentration in the banking industry to avoid creating excessive market power, which can harm efficiency. Consequently, it would be more advisable for them to encourage mergers or acquisitions of smaller banks with less market power to improve efficiency.

For MENA nations, which have a comparatively high level of banking sector concentration, this topic is especially crucial. The existence of larger financial institutions may not always imply less competition, based on the low degree of association between LI and market share, which calls into question the ideal size of financial institutions.

As with all papers, our study has some limitations that should be the basis for future research and must therefore be mentioned. First, this study is limited to the MENA region, thereby making it difficult to generalize its results. Despite this, the number of countries and the size of the sample analyzed make it relevant to a notable number of countries around the

world, which generally have institutional environments similar to those of many emerging countries. Second, this study specifically focused on a non-parametric approach, namely DEA, to measure bank efficiency. In terms of bank competition, we used a limited number of measures, precisely the HHI and Lerner index, which represent both structural and non-structural approaches, respectively. Future research could look at other developing countries and incorporate alternative methods for measuring bank efficiency and competition.

4.1.2 Conclusion of Chapter Two:

The table below Table (26) displays the findings of the hypothesis testing for Chapter two.

Table 26: Hypotheses of Chapter 2 and the findings

| Hypotheses | Findings | | |
|---|---------------|-----------|-------------|
| | Profitability | Solvency | Credit risk |
| Hypothesis 1: Bank market power positively influences the profitability and stability of the banking sector in the MENA region. It should be noted that previous studies in the MENA region have yielded inconclusive results. Based on these findings, it can be inferred that heightened competition generally leads to reduced financial profitability and stability, while simultaneously increasing credit risk. Consequently, Hypothesis 1 can be further divided into two separate hypotheses, as outlined below: | | | |
| Hypothesis 1a: Bank market power positively influences the profitability and solvency of the banking sector in the MENA region. | Supported | Supported | |
| Hypothesis 1b: Bank market power positively influences the credit risk of the banking sector in the MENA region. | | | Supported |
| Hypothesis 2: There is a non-linear relationship between market power, profitability, solvency, and credit risk in the banking sector in the MENA region. | Rejected | Supported | Supported |
| Hypothesis 3: The Islamic model has a significant negative impact on profitability and stability in the banking sector in the MENA region. | Supported | Supported | Rejected |
| Hypothesis 4: Banks operating in GCC countries have a significant negative impact on profitability and stability in the MENA region. | Supported | Supported | Supported |
| Hypothesis 5: The positive effect of market power on profitability and stability is stronger in Islamic banks than in conventional banks. | Supported | Supported | Rejected |
| Hypothesis 6: The positive effect of market power on profitability, solvency, and credit risk is less pronounced in GCC banks than in non-GCC banks. | Supported | Supported | Supported |

Source: Own production

The banking industry within the MENA region exhibits distinct characteristics, namely, relatively low market competition and significant state ownership. Simultaneously, it has demonstrated robust financial stability compared with financial sectors in other regions with respect to both solvency and credit quality. With this motivation in mind, we examine the link between competition, profitability, and stability in the MENA banking industry. We also consider the unique aspects of banks' business models and geographical characteristics by exploring the moderating influences of IBs and GCC countries on the relationship between competition, profitability, and stability. This allows for the formulation of specific recommendations for both groups of business models and countries.

To achieve the aims of this study, we use three accounting-based proxies: ROA (profitability), Z-Score (solvency), and LLPs ratio (credit risk). In addition, we use the bank-level Lerner Index (LI) as a direct measure of market power and to avoid problems such as omitted variable bias, simultaneity, and endogeneity, we use a two-step system GMM model.

The findings from the empirical application indicate that the effect of bank competition on stability can vary depending on the proxy used to measure stability. While it might exert an adverse influence on bank solvency, it concurrently exhibits positive effects on credit risk, showing that various types of risks can account for the heterogeneous effects previously observed in the literature. Our findings suggest that an increase in banks' pricing power, as measured by LI, is associated with higher bank profitability and solvency, confirming Hypothesis 1a and thus supporting the competition-fragility theory. On the other hand, the study also reveals a positive association between LI and LLP (credit risk), confirming Hypothesis 1b, thus providing supportive evidence for the competition-stability hypothesis. We contend that the viewpoints of "competition-fragility" and "competition-stability" should not be seen as mutually exclusive theories but can coexist within the banking system. Banks with greater market power and, therefore, a higher franchise value are more likely to charge higher interest rates on loans, which in turn increases the level of risk associated with their loan portfolios (Berger et al., 2009).

Furthermore, our findings provide evidence of a non-linear relationship that supports the possibility of coexistence between the two theories. The evidence reveals an inverse U-shaped relationship between market power and bank solvency and a U-shaped connection between market power and bank credit risk, supporting Hypothesis 2.

Moreover, the findings indicate that banks with higher efficiency, lower leverage, more revenue diversification, and smaller size are more profitable and solvent. In terms of credit risk, banks with higher leverage, smaller size, and greater revenue diversification face elevated risk.

Upon examining the moderating role of Islamic banks on the effect of the market power on profitability and solvency, the evidence indicates that this impact will be more positive for IBs than for CBs, confirming Hypothesis 5. On the other hand, when

considering the interaction term between banks' geographical characteristics (GCC) and the Lerner index, the evidence suggests that the impact of the market power on profitability, solvency, and credit risk will be less positive in GCC countries than in non-GCC countries, supporting Hypothesis 6.

Our findings indicate that the variation in the relationship between bank market power and profitability and stability across countries can be explained by market and institutional framework factors. To mitigate risks in the banking sector and enhance financial stability, regulators and policymakers in several MENA nations should carefully formulate banking policies. The significant variations between IBs and CBs, alongside differences in the institutional contexts and competition levels across nations, must all be considered in these policies.

Our study has significant implications for the future of banking in countries with dual markets, where both conventional and Islamic banks coexist, particularly in nations where IBs are constantly acquiring market shares. In this context, as IBs continue to grow in the MENA region, CBs should establish Sharia-compliant Islamic banking windows that would enable them to better leverage their market power and achieve greater profitability and solvency. Bank supervisors and regulators need to closely observe both conventional and Islamic financial institutions in dual markets to prevent excessive competition that could have more detrimental effects on the profitability and solvency of IBs.

As market power increases, GCC banks experience lower profitability, solvency, and credit risk than non-GCC banks. These findings have significant policy implications for the banking industry in GCC nations. First, to improve profitability and stability, regulators and policymakers should focus on enhancing the competitive environment in the banking industry by reducing barriers to entry for new players, privatization, lowering restrictions on activities, and encouraging innovation in the banking sector. Second, it is important to pay proper attention to banking regulations. More specifically, any efforts to enhance the competitive environment must be accompanied by reinforcement of supervision and regulations to mitigate any potential adverse effects on stability.

Policies and reforms in the MENA banking industry should improve the quality and autonomy of prudential oversight while reducing governmental influence over the financial sector. This will help address the negative impact of incentives that distort bank behavior. When banks have significant market power, robust supervisory oversight can encourage them to adopt better risk management practices, thereby preventing excessive and risky lending driven solely by profit. Additionally, reducing government ownership in the sector could decrease the incentive for banks with market power to engage in risky management practices, as they would no longer rely on public sector support and may be less likely to make imprudent decisions regarding the quality of their assets.

The unique characteristics of the MENA banking system could have significant implications for the policy recommendations derived from this study at both regional and global levels. The banking industry in the MENA region can be seen as an illustration of a

financial system within developing markets characterized by high market power. Given the similarities between the MENA banking system and those in other emerging regions/nations, reform implementation in the MENA region may hold applicability for these regions/nations.

Like any academic paper, ours also has limitations that should be mentioned, as it can provide a foundation for future research. The main limitation of this research is its reliance on accounting-based stability indicators, specifically the Z-score and LLP ratio, rather than market-based metrics, where the last necessitates stock market price information, and our dataset contains listed and unlisted banks. In terms of bank competition, we used a limited number of measures, mainly the Lerner index. Future studies can incorporate market-based risk indicators and use alternative competition measurements to obtain a more comprehensive picture of the relationship between competition and stability.

4.1.3 Conclusion of Chapter Three:

The table below Table (27) displays the findings of the hypothesis testing for Chapter three.

Table 27: Hypotheses of Chapter 3 and the findings

| Hypotheses | Findings | |
|--|---------------------------|--------------------|
| | Environmental performance | Social performance |
| Hypothesis 1: Market power negatively influences the environmental or social performance of the banking sector in the MENA region. | Supported | Supported |
| Hypothesis 2: Board gender diversity has a significant impact on the environmental and social performance of banks in the MENA region. | Supported | Supported |
| Hypothesis 3: The negative effect of market power on environmental and social performance is less pronounced in banks with greater gender diversity on their board of directors. | Supported | Supported |
| Hypothesis 4: The negative effect of market power on environmental and social performance is less pronounced in banks operating in countries with better institutional environment | Supported | Rejected |
| Hypothesis 5: The negative effect of market power on environmental and social performance is stronger in Islamic banks than in conventional banks. | Rejected | Supported |
| Hypothesis 6: The negative effect of market power on environmental and social performance is less pronounced in state-owned banks than in private banks. | Supported | Supported |

Source: Own production

Given the pivotal role that financial institutions play in fostering economic stability and their impact on the environment and society through investment and lending practices, CSR is a critical issue.

Our research focuses on examining the theoretical and empirical aspects of socially responsible behavior in the banking sector of developing countries. Specifically, we analyze how competition among banks in the MENA region from 2015 to 2021 affects their environmental and social performance. In the past, governments have intervened or relied on firms' altruism to correct socially irresponsible actions (Leong & Yang, 2020). However, our findings reveal a negative relationship between increased market power and better environmental and social outcomes, supporting Hypothesis 1. Firms that strive for a competitive advantage are more likely to invest in environmental and social initiatives. This aligns with the Stakeholder Theory, which suggests that competition motivates banks to enhance their environmental and social efforts to gain the trust of stakeholders. Banks may prioritize investments in environmental and social causes in competitive environments to secure long-term benefits, including heightened brand visibility and differentiation. This strategic approach can contribute to banks' reputation and foster greater loyalty among various stakeholders. Ultimately, these efforts not only benefit the banks themselves but also positively impact their shareholders (Hasan et al., 2018).

Market competition and strategic interests play key roles in influencing environmental and social performance. However, relying solely on the market or businesses' willingness has limitations. Companies that hold significant market power and prioritize short-term gains may be reluctant to adopt socially responsible practices. To achieve improved performance, it is necessary to foster collaboration among different stakeholders, including consumers, employees, the government, and regulatory authorities.

Corporate governance, particularly the inclusion of women on corporate boards, plays a vital role in addressing environmental and social concerns. Our research, which is aligned with Agency, Resource Dependence, and Stakeholder Theories, confirms that having a board that is diverse in terms of gender has a positive impact on environmental and social outcomes. This finding supports Hypothesis 2 and emphasizes the significance of gender diversity in corporate leadership. It is crucial for companies to view gender diversity not only as an obligation but also as a strategic priority for their business.

Our findings emphasize the significant influence of the socioeconomic and institutional context in each country on firms' environmental and social commitments. This aligns with the principles of Institutional Theory. As key players, banks operate under a societal contract, aligning their activities with existing societal preferences. Furthermore, our study reveals that bank type is an important factor. Both conventional and state-owned banks demonstrate statistically significant and positive effects on environmental and social performance. Various control variables have also emerged as drivers for positive environmental and social results. Firms with higher liquidity, greater market capitalization to total assets ratio, elevated market risk, substantial free float, concentrated ownership, larger size, and older age have a positive impact on environmental and social performance. In combination, these variables contribute to the promotion of environmental and social responsibility among firms in the MENA banking sector.

Furthermore, this study illuminates how BGD, state ownership, and a better institutional environment moderate the adverse effects of market power. The findings indicate that in banks with higher BGD, state ownership, and operating in countries with better institutional environments, the negative impact is less pronounced of market power on environmental and social performance. Therefore, these results confirm Hypothesis 3, as well as Hypotheses 6 and 4 in terms of environmental performance. On the other hand, in Islamic banks, the negative impact is more pronounced, confirming Hypothesis 5 concerning social performance.

Given the expected increase in ESG investments in developing countries, our findings have important policy implications for banking industry regulators in the MENA region. By gaining a more comprehensive understanding of environmental and social strategies, regulators can better inform upcoming reforms. These reforms may include policies aimed at promoting competition and gender diversity on boards.

As with any research paper, our study has some limitations that we acknowledge. First, the sample size is small owing to data limitations, as some banks are not listed, whereas other MENA banks do not disclose ESG information. Second, we collected data from only one database. According to Rubino et al. (2024), the most important ESG rating provider agencies, including Thomson Reuters, Bloomberg, and MSCI, apply varying methodologies, indicators, and surveys when assessing a firm's sustainability engagement because there are no uniform rules for calculating and constructing these scores. In addition, the lack of a uniform benchmark for sustainability reporting in the environment in question limits the generalizability of the results.

An extension of this study could involve exploring the relationship between different subcomponents of social and environmental performance. It would also be interesting to include various non-financial industries in the sample. This would help assess whether these effects vary on the basis of environmental and social impacts, particularly in industries with significant environmental footprints and social issues. Additionally, it would be worthwhile to test these findings in samples that encompass both developed and developing countries. This would allow for the analysis of diverse institutional environments, competition levels, gender equality, and regulatory frameworks (whether voluntary or mandatory) regarding ESG disclosure.

Increasing the representation of women on boards of directors is just the first step toward women taking on leadership roles within board structures. A further development of this paper would be to analyze not only the percentage of women in senior management positions but also those who serve as board chairs or hold the CEO position within the company. Moreover, it is equally important for investors and companies to consider other diversity-related factors, such as age, education and training, and geographic background.

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Empirical evidence on the influence of competition on efficiency, profitability, stability, and corporate social responsibility (CSR) is controversial. The Quiet Life hypothesis reveals a positive connection between competition and banking efficiency, while the Banking Specificities hypothesis implies that more competition among banks is detrimental to efficiency. Regarding stability, the competition-stability theory argues that increased competition in the banking sector is associated with a decrease in credit risk. In contrast, the competition-fragility theory argues that low-competition markets can improve bank solvency by increasing profit margins. Lastly, Stakeholder theory indicates that as competition increases, companies enhance their CSR commitments. Hence, this thesis explores how competition affects the efficiency, profitability, stability, and CSR of banks in the MENA region.