

# **EXAMINING THE IMPACT OF ESG SCORE PERFORMANCE ON BANK MARKET VALUE : A CASE STUDY OF BANKING INDUSTRY IN 6 ASEAN COUNTRIES**

**A Thesis**

**Submitted to the Master's Study Program of Sustainable Finance at  
the Faculty of Economics and Business in partial fulfillment of the  
requirements for the degree of**

**Master of Sustainable Finance (M.Fin.)**



by:

**Laraswati**

**03222310008**

**UNIVERSITAS ISLAM INTERNASIONAL INDONESIA  
DEPOK  
2025**

# **EXAMINING THE IMPACT OF ESG SCORE PERFORMANCE ON BANK MARKET VALUE : A CASE STUDY OF BANKING INDUSTRY IN 6 ASEAN COUNTRIES**

**A Thesis**

**Submitted to the Master's Study Program of Sustainable Finance at  
the Faculty of Economics and Business in partial fulfillment of the  
requirements for the degree of**

**Master of Sustainable Finance (M.Fin.)**



by:

**Laraswati**

**03222310008**

**UNIVERSITAS ISLAM INTERNASIONAL INDONESIA  
DEPOK  
2025**

## ABSTRACT

03222310008

Laraswati.laraswati@uiii.ac.id

Master of Sustainable Finance

Universitas Islam Internasional Indonesia

This research examines the correlations between ESG performance and market value of banks within the ASEAN region. Specifically, it examines the impact of ESG combined score and its individual pillars Environmental (ENVS), Social (SPS), and Governance (GPS) on bank market capitalization. The analysis covers a panel of 50 banks from Indonesia, Malaysia, Singapore, Thailand, the Philippines, and Vietnam over the period 2005 to 2024. To assess both short-run and long-run dynamics, the study employs the Autoregressive Distributed Lag (ARDL) model, supported by robustness checks using the Generalized Method of Moments (GMM) and fixed-effect models. The findings reveal that in the long run, ESG scores and their sub-components do not have a statistically significant effect on bank market value, as indicated by a positive but insignificant error correction term ( $ECT = 0.393, p = 0.000$ ). However, in the short run, the fixed-effect model shows that ESG has a positive and significant impact at the 10% level, while the Environmental and Social pillars are significant at the 5% level. The Governance pillar shows a positive but statistically insignificant correlation with market value. These results suggest that while ESG activities may not yield long-term market benefits in the ASEAN banking sector, they can enhance market value in the short term, particularly through environmental and social performance. This research highlights the importance of integrating ESG considerations into short-term strategies, especially in emerging markets, while acknowledging the need for further development in regulatory frameworks and investor awareness to realize long-term value from ESG initiatives.

Keywords : *ESG, Environmental Pillar Score, Social Pillar Score, Governance Pillar score, Market Value*

## **ACKNOWLEDGEMENTS**

First and foremost, I would like to express my deepest gratitude to Allah SWT for His endless blessings, guidance, and strength throughout the process of completing this thesis. Without His will and mercy, this achievement would not have been possible.

I would also like to extend my sincere gratitude to my supervisor, Dr Taridi Kasbi Ridho and Mr. Fajar B Hirawan Ph.d., for continuous support, encouragement, and insightful guidance throughout the development of this thesis. Their expertise and patience have been invaluable in shaping the quality of my research.

I also thank my head of department, for the attention, support, and motivation during my studies, and all the faculty members of Economics and Finance, especially the Department of Sustainable Finance and all the lecturers at Universitas Islam Internasional Indonesia for providing me with necessary resources and a stimulating research environment. My appreciation extends to Universitas Islam Internasional Indonesia (UIII) Scholarship for supporting my studies financially.

Lastly, I would like to dedicate this thesis to my father, Mr. Mingan, my beloved mother, Wismaniah, as well as my sister, Ayu Windar Wati, who always pray for me and provide emotional support. Thank you to my dear friend Rashid Shabir Abbasi for providing emotional support, assistance in revising the thesis, and contributing suggestions and input during the writing process.

## TABLE OF CONTENTS

|                                                               |      |
|---------------------------------------------------------------|------|
| TITLE PAGE.....                                               | i    |
| STATEMENT OF AUTHENTICITY .....                               | ii   |
| ANTI PLAGIARISM STATEMENT .....                               | iii  |
| THESIS ATTESTATION.....                                       | iv   |
| THESIS DEFENSE APPROVAL .....                                 | v    |
| THESIS DEFENSE INTERNAL MEMO .....                            | vi   |
| ABSTRACT.....                                                 | vii  |
| ACKNOWLEDGEMENTS .....                                        | viii |
| LIST OF TABLES .....                                          | xii  |
| LIST OF FIGURES .....                                         | xiii |
| ABBREVIATION DIRECTORY.....                                   | xiv  |
| CHAPTER I INTRODUCTION .....                                  | 1    |
| 1.1 Background .....                                          | 1    |
| 1.2 Problem Statement .....                                   | 3    |
| 1.3 Research Question .....                                   | 4    |
| 1.4 Research Objective .....                                  | 4    |
| 1.5 Hypothesis.....                                           | 5    |
| 1.6 Significance of the study.....                            | 5    |
| 1.7 Thesis Outline .....                                      | 6    |
| CHAPTER II LITERATURE REVIEW .....                            | 8    |
| 2.1 Conceptual Framework .....                                | 8    |
| 2.1.1. Concept of ESG Scores.....                             | 8    |
| 2.1.2. ESG Score.....                                         | 10   |
| 2.1.3. Bank Market Value Concept.....                         | 13   |
| 2.2 Theoretical Framework .....                               | 14   |
| 2.2.1. Theory of Signaling and Transmission Signaling.....    | 14   |
| 2.2.2. Stakeholder Theory .....                               | 15   |
| 2.3 Correlation between ESG Score and Bank Market Value ..... | 16   |
| 2.3.1. Theoretical Evidence.....                              | 16   |
| 2.3.2. Empirical Evidence .....                               | 18   |
| 2.3.3. Gaps and limitations.....                              | 25   |
| 2.4 Research Framework .....                                  | 26   |
| CHAPTER III METHODOLOGY .....                                 | 28   |

|                                                                                       |    |
|---------------------------------------------------------------------------------------|----|
| 3.1 Data Description .....                                                            | 28 |
| 3.1.1. Independent Variables.....                                                     | 31 |
| 3.1.2. Dependent Variables .....                                                      | 32 |
| 3.1.3. Control variables .....                                                        | 33 |
| 3.2 Model Description .....                                                           | 35 |
| 3.2.1 The Autoregressive Distributed Lag (ARDL) Model .....                           | 35 |
| 3.2.2 Cointegration and Error Correction .....                                        | 38 |
| 3.2.3 Steps for Estimation .....                                                      | 39 |
| 3.2.4 Heteroskedasticity .....                                                        | 39 |
| 3.2.5 Serial Correlation Test (Autocorrelation) .....                                 | 39 |
| 3.2.6 Multicollinearity Test.....                                                     | 40 |
| 3.2.7 Unit Root Test.....                                                             | 40 |
| 3.2.8 Panel cointegration test .....                                                  | 40 |
| 3.2.9 Hausman Test.....                                                               | 40 |
| 3.2.10 Short- and Long-term Estimation.....                                           | 41 |
| 3.2.11 Robustness test.....                                                           | 41 |
| CHAPTER IV .....                                                                      | 42 |
| RESULT AND DISCUSSION .....                                                           | 42 |
| 4.1 Descriptive Statistics.....                                                       | 42 |
| 4.2 Correlations.....                                                                 | 43 |
| 4.3 Classical Assumption Tests .....                                                  | 44 |
| 4.3.1. Multicollinearity Test.....                                                    | 45 |
| 4.3.2. Autocorrelation and Heteroskedasticity Tests .....                             | 46 |
| 4.3.3. Unit Root Test.....                                                            | 46 |
| 4.4 Regression Results .....                                                          | 47 |
| 4.4.1. Long Term Estimation (ARDL).....                                               | 47 |
| 4.4.2. Short Term Estimation (ARDL) .....                                             | 49 |
| 4.5 Robustness Tests.....                                                             | 50 |
| 4.5.1. General Method of Moment (GMM).....                                            | 50 |
| 4.5.2. Fixed Effects Model.....                                                       | 52 |
| 4.6 Hypotheses Results Discussion.....                                                | 55 |
| 4.6.1. $H_1$ : ESG Score positively impacts bank market value .....                   | 55 |
| 4.6.2. $H_{1a}$ : Environmental Pillar score positively impacts on Market Value ..... | 56 |
| 4.6.3. $H_{1b}$ : Social Pillar Score positively impacts on Bank Market value.....    | 58 |

|                                                                                            |    |
|--------------------------------------------------------------------------------------------|----|
| 4.6.4. H <sub>1c</sub> : Governance Pillar Score positively impacts Bank Market Value..... | 59 |
| 4.6.5. H <sub>2</sub> : ESG Score positively impacts Bank Market Value in Long-run .....   | 61 |
| 4.6.6. H <sub>3</sub> : ESG Score positively impacts Bank Market Value in Short-run.....   | 63 |
| CHAPTER V.....                                                                             | 66 |
| CONCLUSION .....                                                                           | 66 |
| 5.1 Conclusion .....                                                                       | 66 |
| 5.2 Policy Recommendations.....                                                            | 68 |
| 5.3 Limitations .....                                                                      | 70 |
| BIBLIOGRAPHY .....                                                                         | 71 |

## LIST OF TABLES

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| Table 2.2 Theoretical Evidence .....                                        | 18 |
| Table 2.3 Empirical Evidence from Previous Study .....                      | 19 |
| Table 3.1 Data Sample- Countries .....                                      | 31 |
| Table 3.2 Data Sample of Banks.....                                         | 29 |
| Table 3.3 Variable Explanation .....                                        | 34 |
| Table 4.1 Descriptive Statistics.....                                       | 43 |
| Table 4.2 Correlation Matrix .....                                          | 45 |
| Table 4.3 Classical Assumption tests.....                                   | 46 |
| Table 4.4 Unit Root Test.....                                               | 47 |
| Table 4.5 DFE Regression: Estimated Error Correction Form (Long-term) ..... | 48 |
| Table 4.6 DFE Regression: Estimated Error Correction Form(Short-term) ..... | 49 |
| Table 4.7 Validity Test: GMM .....                                          | 51 |
| Table 4.8 Generalized Method of Moment (GMM) Estimation .....               | 52 |
| Table 4.9 Hausman test.....                                                 | 53 |
| Table 4.10 Fixed effects Model Estimation .....                             | 54 |

## LIST OF FIGURES

|                                     |    |
|-------------------------------------|----|
| Figure 2.1 Figure of Framework..... | 26 |
|-------------------------------------|----|

## ABBREVIATION DIRECTORY

|      |                                                                 |
|------|-----------------------------------------------------------------|
| ARDL | : <i>Autoregressive Distributed Lag</i>                         |
| CAR  | : <i>Capital Adquancy Ratio</i>                                 |
| CFP  | : <i>Corporate Financial Performance</i>                        |
| ESG  | : <i>Environmental, Social and Governance</i>                   |
| ENV  | : <i>Environmental</i>                                          |
| ENVS | : <i>Environmental Pillar Score</i>                             |
| FDI  | : <i>Foreign Direct Investment</i>                              |
| GDP  | : <i>Gross Domestic Product</i>                                 |
| GMM  | : <i>General Method of Moment</i>                               |
| GOV  | : <i>Governance</i>                                             |
| GRI  | : <i>Global Reporting Initiative</i>                            |
| GPS  | : <i>Governance Pillar Score</i>                                |
| ISSB | : <i>International Sustainability Standards Board</i>           |
| ISO  | : <i>International Organization for Standardization</i>         |
| MV   | : <i>Market Value</i>                                           |
| NPL  | : <i>Non Performing Loans</i>                                   |
| OECD | : <i>Organisation for Economic Co-operation and Development</i> |
| PBV  | : <i>Price to Book Value</i>                                    |
| ROA  | : <i>Return On Asset</i>                                        |
| UNEP | : <i>United Nation Environment Programme</i>                    |
| SASB | : <i>Sustainability Accounting Standars Board</i>               |
| SLB  | : <i>Sustainability Linked Bond</i>                             |
| SOC  | : <i>Social</i>                                                 |
| SPS  | : <i>Social Pillar Score</i>                                    |
| TCFD | : <i>Task Force on Climate related Financial Disclosure</i>     |
| TQ   | : <i>Tobin Q</i>                                                |

# CHAPTER I

## INTRODUCTION

### 1.1 Background

Banks are the main financial intermediaries that influence capital flows in the economy, and market behavior can, in part, be shaped by their lending decisions. The use of ESG performance criteria in assessing investment decisions and credit risk allows banks to direct funding toward more sustainable sectors. Incorporating ESG factors in credit analysis would improve the financial resilience of the banking institutions, as it would allow them to evaluate the risks of deteriorated credit quality as a result of physical consequences of climate change (Sarkar, 2022). An analysis of 2011-2020 global banks revealed that banks with stronger ESG scores had lower operational risk that resulted in higher efficiency and financial stability. It means that the ESG performance has a positive influence on financial metrics. Proper management of ESG risks can hence stabilize the financial systems and help sustain market value (Galletta et al., 2023).

Banks are able to determine the creditworthiness of potential borrowers accurately and the investments that are marketed in a company will add value to a sustainable economic system. This strategy does not only decrease environmental and social risks, but also facilitates the shift toward sustainable finance. By incorporating ESG factors in credit risk analysis, the banks will be able to assess creditworthiness and manage risks in a better way which will ultimately improve the performance of banks and lead to market value (Bonacorsi et al., 2024). The ASEAN financial authorities have been shown to be committed to promoting sustainable activities and member states are giving more emphasis to sustainable development. The ASEAN Green Bond Standards and other policies that have been introduced by countries are an indication of a global intensive to incorporate Environmental, Social, and Governance (ESG) factors in financial systems. Certain financial instruments have been put in place to facilitate the fundraising of the environmentally responsible activities, including sustainable finance or green credit. These tools are oriented on environmental protection and the promotion of sustainable development in the financial sphere (Buallay, 2019).

Building on the integration of ESG in credit risk assessments, banks can further promote sustainability by developing green financial products such as green bonds and green funds. These instruments help channel resources away from high-energy-consuming and polluting industries toward more sustainable and environmentally friendly sectors. Therefore, ESG holds significant value for banks, as it influences lending decisions and

facilitates the redirection of capital allocation toward greener sectors (Wu & Chen, 2024). The correlation between ESG performance and the banking industry is also reflected in improved operational efficiency. Recent studies indicate that higher ESG performance rankings are associated with increases in stock prices, while lower rankings can lead to declines demonstrating the influence of ESG on both the capital market and a company's market value. Moreover, by disclosing ESG performance, banks can build stakeholder trust and enhance their reputation, thereby creating a favorable external environment that attracts more external investment (Wu & Chen, 2024).

As banks enhance their ESG practices and develop sustainable financial products, the demand side is also shifting driven by growing investor and stakeholder awareness. More than 60% of customers, including investors, shareholders, and other stakeholders, now choose to invest in companies with strong sustainability performance, particularly those that demonstrate robust ESG practices. This figure continues to grow by approximately 10% annually (Maimone, 2023). ESG has thus become a key factor in investment decisions; companies that fail to adopt or implement ESG principles risk losing investor confidence and funding (Mian dkk., 2024). Financial institutions that apply environmental standards and especially banks with a high level of awareness and commitment to renewable energy projects can unlock new opportunities for investment and lending. Reflecting this trend, the financial industry has developed frameworks to support sustainability efforts. One such initiative is the Principles for Responsible Banking, issued in 2019 by the United Nations Environment Programme (UNEP). This framework has gained the commitment of 260 banks, representing 80% of the global investment industry and a total of USD 70 trillion in assets (UN Environment Program, 2022).

As the world is becoming more committed to ESG and responsible banking, ASEAN region is an attractive candidate to study, given its fast economic growth and an ever-growing focus on sustainability. The total GDP of all ASEAN countries was estimated to be over USD 3.67 trillion in 2022, which is a huge jump over the past years (O'neill, 2025). This places ASEAN as the fifth largest economy in the world after USA, China, Japan and Germany. The services sector contributes just over 50% of the bloc's GDP, with finance and banking attracting the most foreign direct investment (FDI), which rose by 22% to reach USD 57 billion (ASEAN Secretariat, 2023). The region's banking sector thus plays a central role in driving economic growth and serves as a crucial focal point for sustainable finance efforts. As of recent years, 53% of ASEAN banks are engaging more frequently with regulators on sustainability issues a notable increase from 31% in 2020. In terms of sustainable financial products, ASEAN's market includes instruments such as

green bonds, social bonds, and sustainability-linked bonds (SLBs), which collectively grew to USD 6.75 billion between 2016 and 2021 (World Bank, 2024).

In parallel with the regional focus on sustainable finance, company-level ESG disclosure has also gained prominence as a measure of corporate accountability and value. A company's strength increasingly lies in its ability to disclose both financial and non-financial performance. Publicly listed companies, in particular, are expected to demonstrate their impact on environmental, social, and governance (ESG) dimensions an expectation reflected in ESG performance reports, which have become critical metrics for evaluating sustainability impact (Buallay, 2019). The analysis of ESG indicators, which form the core of non-financial factors, plays a vital role in investment decisions, as it enables investors to more effectively assess potential risks and opportunities within their portfolios (Qi et.al.,2020). According to stakeholder theory and legitimacy theory, companies that disclose their social and environmental responsibilities tend to experience improved performance. Similarly, environmental investments are believed to positively influence firm value. While early research suggested a direct correlation between ESG performance and bank value, more recent empirical and theoretical studies indicate that the correlation is not always linear and may vary across contexts (Ersoy et.al., 2022).

There are more than 60% of customers including investors, shareholders, broader stakeholders who decide to invest their funds in companies that have Sustainability performance, especially ESG, and this figure continues to increase by 10% every year. (PWC, 2023). ESG has become an important role in making investment decisions, and if a company does not adopt or fails to implement ESG principles, the risk that will occur is that the company will lose investors. (Mian, 2024).

Financial institutions that can apply environmental standards and the high awareness of financial institutions such as banking towards renewable energy projects can open up opportunities for new investments and loans (financing), so the role of banking is very important. There is a financial industry framework in efforts to increase sustainability, namely in 2019 the Principle for Responsible Banking was issued , issued by UNEP with 80% of the investment industry and 260 banks with assets of 70 trillion USD committed to this framework. (UN Environment Programme, 2022).

## **1.2 Problem Statement**

Despite the growing emphasis on sustainability, the ASEAN banking sector remains underexplored in the ESG literature. As a region still largely classified as developing despite having the world's fifth-largest combined GDP only 53% of ASEAN banks

currently engage with regulations related to sustainable finance. This limited engagement suggests a relatively low level of ESG disclosure, which may hinder investor confidence and slow market development in these countries. Previous studies have predominantly focused on the correlation between ESG performance and bank market value in developed economies with mature regulatory environments, such as those in Europe, the United States, China, and the United Kingdom. As a result, there is a gap in the literature regarding how ESG performance influences bank market value in developing markets like ASEAN. This study aims to address that gap by providing evidence from ASEAN countries and exploring the link between ESG performance and bank market value in this regional context.

To further address the identified gap in the literature, this study provides a comprehensive analysis of the long-term impact of ESG performance on bank market value in the ASEAN context. It considers multiple dimensions, including operational, financial, and market performance. The central objective is to investigate how Environmental, Social, and Governance (ESG) factors influence the market value of banks. More specifically, the analysis focuses on the individual contributions of the three pillars of the ESG index: the environmental score, the social score, and the governance score.

Given that only a limited number of banks in ASEAN have adopted formal sustainability reporting practices, the dataset remains relatively narrow. To ensure the reliability of findings, this study draws data from trusted sources particularly Refinitiv and includes only banks that are listed and have complete ESG data available over a consistent time period, using uniform indicators across all observations.

### **1.3 Research Question**

Based on the explanation of the background and problem statement above, there are several questions in this study:

1. How does current implementation of ESG scores impact market value of banks in ASEAN?
2. What is the long term and short term impact of ESG scores on market value of banks in ASEAN?
3. What policies can promote ESG implementation in ASEAN Banking Sector?

### **1.4 Research Objective**

Based on the previous problem statement, the objective of this research are as follows :

1. Identifying the effects of implementation of ESG Score on ASEAN bank market value.

2. Assessing short-run and long-run impact implementation ESG score on market value banking in ASEAN countries.
3. Proposing possible managerial or policy implications based on the finding for ASEAN countries.

## **1.5 Hypothesis**

Previous research by (Kurniawan, 2023) identified that the ESG components Environment, Social, and Governance each have distinct effects on the market value of banks. Among these, the environmental aspect was found to have the most significant impact, largely due to growing stakeholder concerns over global warming, which has heightened awareness and support for environmental preservation. Other studies suggest that the impact of ESG components on bank market value may vary over time. For example, the social aspect can negatively influence market value in the short term, while the governance aspect tends to have a positive effect particularly when governance-related disclosures are more transparent and comprehensive (Ersan Ersoy, 2022). Thus my hypotheses are:

H<sub>1</sub> : ESG Score positively impacts Bank Market Value

H<sub>2</sub> : ESG Score positively impacts Bank Market in the long-run

H<sub>3</sub> : ESG Score positively impacts Bank Market in the short-run

### **Sub-Hypotesis**

H<sub>1a</sub> : EPS positively impacts Bank Market Value

H<sub>1b</sub> : SPS positively impacts Bank Market Value

H<sub>1c</sub> : GPS positively impacts Bank Market Value

## **1.6 Significance of the study**

This study is expected to benefit all relevant stakeholders by addressing the research objectives and contributing meaningful insights into the role of ESG and sub-component's performance in the ASEAN banking industry. Specifically, it aims to provide valuable empirical evidence on how ESG scores influence bank market value in developing economies, which remains an underexplored area. The findings are anticipated to offer relevant perspectives for a wide range of groups.

By focusing on the ASEAN region comprised largely of developing countries this research is particularly relevant for companies, businesses, and governments operating in

emerging markets. The findings of the study can be used as a reference point in the way the application of ESG standards influences the performance of firms in those situations. The information obtained can help in strategic decision making that will enhance efficiency and sustainability operations. As well, the study can inform on the potentialities and obstacles surrounding the implementation of ESG policies by governments with the goal of creating more specific and relevant policy guidelines to respond to the changing market factors.

The findings can also be of use to the investors because the study presents information and analysis that can be used in making wiser investment decisions. Using the ARDL model to analyze long-term effects of ESG performance on market value, the study assists investors to analyze companies with better sustainability practices and long-term growth potentials. This is particularly applicable in an age where sustainability and corporate social responsibility are becoming more and more at the heart of investment strategies.

Lastly, the research also makes a significant contribution to the scholarly literature because it provides a region-specific study of the ESG adoption and its financial outcomes, especially in the context of Indonesian and overall ASEAN banking. It strengthens academic debate and gives a good basis to further studies and the role of ESG in the financial performance of companies in emerging economies.

## **1.7 Thesis Outline**

The thesis consists of the five chapters, namely Introduction, Literature Review, Research Methodology, Results and Discussion, and Conclusion. In the first chapter, the background and research problem will be given, including the value of ESG score implementation on the market value of the ASEAN banking industry. It gives an idea of the banking industry in the ASEAN countries and gives the research questions and hypothesis that will be used to conduct this study. The second chapter examines the conceptual framework of ESG, where each of the three pillars of Environmental, Social, and Governance were broken down. It also examines pertinent theories such as signaling theory and stakeholder theory in order to provide the theoretical underpinning of the study. Chapter three explains the methodology of the research. It identifies the variables and describes how it will utilise the Autoregressive Distributed Lag (ARDL) model that is used to analyse both short-run and long-run effects. Statistical tests which are also used in the methodology are Hausman test, the Modified Wald test of heteroskedasticity, the Wooldridge test of autocorrelation, and the F-test of long-term correlations. Chapter four

gives and analyzes the findings. It contains the analysis in detail by means of graphs, tables, and narrative information. The chapter explains the results of the ARDL model and addresses them with regard to the past studies, sheds light on the similarities, differences, and lessons learned. The fifth and last chapter concludes with the summary of the main findings, answers the research questions and concludes on the basis of results. It also provides suggestions on what should be done in future research to further examine the effect of ESG on the financial sector, especially in the developing world.

## **CHAPTER II LITERATURE REVIEW**

### **2.1 Conceptual Framework**

In this chapter, the author explains the major concepts and the theoretical framework of this study. The conceptual framework identifies the variables that are employed in the research and their relationship. It brings out the idea of ESG and sub-components scores and discusses how they apply to the market value of financial institutions in the Association of Southeast Asian Nations (ASEAN). Another point made by the chapter is the importance of ESG performance in evaluating the corporate sustainability and investor perceptions within the financial industry.

#### **2.1.1. Concept of ESG Scores**

The ESG concept has three dimensions including Environmental, Social, and Governance. It has its roots in responsible and ethical investing, which is largely connected with corporate social responsibility and ethics in business. The ESG can be used as a tool to direct the activities of companies and risk management, particularly in the context of a global shift toward green development, emission decrease, and sustainability (Fu & Li, 2023). The practice of ESG can be of great benefit to companies, such as improved access to investment networks, less riskiness, and less limitation in financing. In general, the incorporation of ESG can enhance the quality and quantity of the financial and operational performance of a firm (Zhang et.al, 2024). As Wang et al. (2024) explain, ESG may be characterized in the form of its incorporation into three major correlations, i.e., business interests, environmental and social responsibilities, and corporate governance. By being used strategically, the concept allows firms to more efficiently attract external capital to facilitate sustainable and long-term growth (Wang et al., 2024).

##### **2.1.1.1. Environmental Pillar**

The pillar of environment is concerned with matters like climate changes, greenhouse gas (GHG) emissions and air, water and soil pollution. It also deals with such destructive practices as deforestation, land exploitation, and loss of biodiversity. This pillar assists firms to assess their energy efficiency, lower emissions, and enhance waste, water and resource management practices. A number of studies have indicated that firms with good environmental records can obtain better stock returns since sustainability has become a critical issue to investors (Billio et al., 2021). The environmental pillar allows the companies to discover the direct and indirect environmental risks like risks posed by

climate change which can influence the operations of the companies. Corporate activities may have an impact, no matter how big or small the environmental repercussions are. Thus, the environmental standards are adhered to and disclosed transparently, which is the indication of the commitment of the company. It also includes the values of efficiency in operation, quality and responsibility on the impacts that its business operations have on the environment (Oliver Yébenes, 2024). Environmental performance is especially critical to banks because they are facing growing exposure to climate-related credit and transition risks. This encompasses risks that are linked to green lending and financing of fossil fuel projects (Battiston et al., 2017). Therefore, the importance of taking account of environmental factors in banking decisions is that it helps to address long-term financial and reputational risks.

#### **2.1.1.2. Social Pillar**

The social pillar refers to a company's efforts to engage with the community through philanthropic initiatives and contributions to social development. It also includes the company's commitment to fair employment practices and employee welfare (Acar, E., 2024). This pillar emphasizes the importance of nurturing positive correlations with both internal and external stakeholders namely, employees and the local communities where the company operates. These efforts can significantly improve the multidimensional well-being of employees, such as better health, enhanced workplace safety, and access to personal and professional development through training programs. At the same time, companies can support sustainable development within local communities.

Good corporate governance is needed to have a harmonious social environment. Business organizations are now being pressured to do more than just technical competence but adopt a wider concept of correlation-building. These include the investment in teamwork and enhancing relational capacities, which is one of the pillars of the success of different corporate tasks, activities, and strategic actions. Corporate sustainability is reliant on complicated relations between a variety of stakeholders. In that regard, technical skills are not enough, as trust, reciprocity, giving, and quality of participatory processes are crucial factors that contribute to the long-term success and resilience (Becchetti et al., 2022).

#### **2.1.1.3. Governance Pillar**

Governance pillar addresses the most important aspects of corporate structure and management practices, such as the independence of the board of directors, executive compensation, shareholder rights, anti-competitive practices, internal control systems, and

adherence to the existing laws and regulations (Billio et al., 2021). The company requires the pillar of governance to provide integrity and accountability as far as responsible decision-making by the company is concerned. Sustainability standards like the ESG ratings, ISO 26000, and the Global Reporting Initiative (GRI) standards are recognized and provide effective governance. The frameworks assist organizations to determine and resolve governance-related concerns as either independent issues or as part of more comprehensive sustainability plans. The corporate governance also serves as the basis of responsible and informed decisions, which companies can better respond to other sustainability challenges (ISO 26000) (Cantele et al., 2024). Furthermore, strong governance practices are closely linked to improved operational performance. Effective corporate governance can help reduce inefficiencies caused by agency problems, thereby minimizing poor performance and fostering long-term organizational resilience (Huang et al., 2023). As such, the governance pillar plays a critical role in enhancing stakeholder trust and supporting sustainable business growth.

#### **2.1.1.4. The relevance of ESG in risk management and sustainability**

Publishing ESG reports is now essential for companies to safeguard their reputation and minimize the risk of potential reputational damage in the future. ESG practices carried out by companies can provide strong support in terms of the company's sustainability performance, not only that, ESG disclosure companies with correct and quality information and provide a good level of trust between agents, so that the company has good and positive returns, and the company also has the opportunity to increase capital with the possibility of lower costs, resulting in better financial conditions (Possebon dkk., 2024).

#### **2.1.2. ESG Score**

An ESG score is generally a rating, represented by either a numerical value or a letter grade, that assesses a company's performance in three main areas: environmental responsibility, social impact, and corporate governance. The environmental category includes factors such as waste management, resource consumption, environmental impact, and biodiversity. The social category addresses the an organization's influence on society, along with its associations with local communities, suppliers, and employees. The governance category focuses on corporate structure and oversight, particularly shareholder rights, board transparency, and executive accountability.

The ESG score emerged as a tool for identifying companies that demonstrate strong performance across these criteria, making it especially valuable in the financial sector. ESG scoring helps anticipate financial risks such as reputational damage, regulatory penalties, or moral hazard and supports more informed investment decisions (Clément et al., 2022).

Different ESG rating agencies apply varying methodologies, depending on their priorities and data sources. For example, sustainable companies may be assessed based on how effectively they manage risks tied to ESG factors, which, in turn, affects their perceived economic value (Van Zanten & Huij, 2022). Among these, Refinitiv ESG Ratings have gained wide recognition. Refinitiv evaluates companies based on material factors relevant to each industry, adjusting for firm size. This approach supports investors in making sustainable and well-informed investment decisions (Van Zanten & Huij, 2022). The KLD database measurement which is currently known as MSCI uses this database. The information provided is more relevant and standardized, on important attributes of corporate social performance with consistency in performance evaluation. In the KLD measurement system, a binary system is used to cover each performance in two categories, namely "strength" and "concern", in the category of company strength that has a positive impact on performance while the concern for company performance that does not have an impact on the main issues in ESG, in the KLD evaluation has a standard of "1" which means that the evaluation of the implemented performance occurs (present), and a standard of "0" for the evaluation of performance that is not implemented (absent). The index in KLD is formed based on the accumulation of "strength" and "concern" with the total value of the two categories. Next, there is the Thomson Reuters ASSET4 Database measurement system, which is currently used by the ESG rating agency Refinitiv, the information provided is non-financial information that is objective, systematic, and relevant, using 900 points in the evaluation for each company, in the analysis process, after collecting annual ESG data, analysis by combining each quantitative and qualitative unit, which focuses on the financial, environmental, governance, and social aspects database. (Li, 2021). ESG score rating agencies are not only MSCI, there are several other institutions that build method systems in measuring ESG scores, such as ISS-Oekom and Bloomberg by utilizing direct relationships with companies, while Thomson Reuters or what we know as the Refinitiv rating agency uses an approach to stock market companies. In the MSCI and Sustainalytics rating agencies, both focus on ESG risk with risk mitigation strategies from a managerial perspective. (Billio M. a., 2021).

As of the 2020s, Refinitiv had assessed ESG performance for over 12,000 companies. Data is sourced from annual CSR reports, stock exchanges, and official

company websites. The data is organized into 10 key categories such as emissions, natural resource use, labor practices, innovation, human rights, CSR strategy, and shareholder rights. These are aggregated into the three main ESG sub-components, from which a final ESG score is calculated using weighted averages. Additionally, Refinitiv generates an ESG Combined Score (ESGC) by adjusting the original ESG score to reflect controversies or negative events with material financial impacts (Rau & Yu, 2024).

The final ESG score is presented using a percentile ranking method that produces a score between 0 and 100, alongside a letter grade ranging from D to A+, indicating performance levels across quartiles. For example, letter grades may be linked with descriptive labels such as *poor*, *satisfactory*, *good*, or *very good*.

The formula used by Refinitiv to calculate a company's ESG score in each category is as follows:

$$Score = \frac{W + \frac{S}{2}}{V}$$

The score for each company in each category is calculated based on its percentile rank. The following three factors are taken into consideration when determining the scoring methodology : organizations with a worse value than the current one (W) is defines as the number of organization with the same value included in the current one (S), the quantity of enterprises that possess a valuation of V is of interest.

To determine how much weight each ESG category should carry within a pillar, Refinitiv uses an ESG materiality framework. This framework objectively assesses the relevance of each theme to different industries. The resulting category weights are then used to calculate each company's final ESG score, which is further adjusted by TRBC (Thomson Reuters Business Classification), Refinitiv's proprietary industry classification system. This system groups companies by sector, allowing sector-specific weightings—especially for environmental and social factors—while governance weights remain constant across sectors (González- Pozo et.al., 2025).

Refinitiv's method was selected for this study due to its transparency, sector-specific focus, and regional adaptability. Its detailed and standardized ESG scoring system is especially appropriate for evaluating banks in the ASEAN region, ensuring that the analysis aligns with industry-specific and geographic realities (Erhart, 2022).

Table 2.1 Score range, grade, and linguistic description of Refinitive

| Score range                             | Grade | Description                                                                                                                                   |
|-----------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| $0.0 \leq \text{score} \leq 0.08333$    | D-    | D grades can indicates ESG performance is relative poor and insufficient degree of transparency of ESG material report and data publicly.     |
| $0.083333 < \text{score} \leq 0.166666$ | D     |                                                                                                                                               |
| $0.166666 < \text{score} \leq 0.250000$ | D+    |                                                                                                                                               |
| $0.250000 < \text{score} \leq 0.333333$ | C-    | C grade have meaning ESG performance have satisfactory relative and moderate degree of transparency of ESG material report and data publicly  |
| $0.333333 < \text{score} \leq 0.416666$ | C     |                                                                                                                                               |
| $0.416666 < \text{score} \leq 0.500000$ | C+    |                                                                                                                                               |
| $0.500000 < \text{score} \leq 0.583333$ | B-    | B grade can indicates ESG performance have good relative and an above average degree of transparency of material ESG report and data publicly |
| $0.583333 < \text{score} \leq 0.666666$ | B     |                                                                                                                                               |
| $0.666666 < \text{score} \leq 0.750000$ | B+    |                                                                                                                                               |
| $0.750000 < \text{score} \leq 0.833333$ | A-    | A grade indicates ESG performance have excellent relative and high of transparency on ESG material report and data publicly                   |
| $0.833333 < \text{score} \leq 0.916666$ | A     |                                                                                                                                               |
| $0.916666 < \text{score} \leq 1$        | A+    |                                                                                                                                               |

Source : Refinitive (González-Pozo et.al., 2025)

### 2.1.3. Bank Market Value Concept

The market value of a bank is influenced by its corporate governance practices, financial indicators, and sustainability reporting, particularly in relation to ESG activities. It is commonly assessed using quarterly stock prices as a basis. Descriptive statistical analyses have shown that banks that publish sustainability reports tend to have higher stock prices compared to those that do not, highlighting the role of transparency and ESG disclosure in enhancing perceived value.

Market performance serves as a key indicator used by both internal and external stakeholders to assess a company's growth and future potential. One of the most widely accepted tools for measuring market performance is the Tobin's Q ratio, which compares a firm's market value to the replacement cost of its assets. This ratio is considered a reliable proxy for firm performance because it captures market expectations of future earnings and the company's investment potential. A higher Tobin's Q value indicates that the market expects the firm to generate increased income in the future. In such cases, companies are more likely to allocate resources toward expansion and profit-making opportunities. If a firm's securities such as its stocks are anticipated to yield future income that exceeds the cost of investment, investors are more inclined to provide capital. Tobin's

Q, therefore, reflects not only expected future stock price appreciation but also management's efficiency in asset utilization and strategic growth (Dio Darmawan, 2024). The main indicator used by internal and external stakeholders to assess the development of a company is using market performance, there are methods that can be used to measure the company's market performance, one of which is the Tobin's Q ratio, this ratio is considered to have the most effective proxy. This ratio can be used to evaluate the company's performance by measuring the company's market value, which can reflect the potential income that will occur in the future. If the company's value can increase compared to the previous period, the company chooses to allocate resources to support growth and create profits. If securities, such as stocks, are able to generate future income that can be sold at a higher value than the cost of the investment, there is a strong incentive to obtain additional capital. The Tobin's Q ratio integrates future stock price expectations with management's ability to manage assets and the company's investment growth potential.

Recent studies have established a positive relationship between ESG scores and firm market value. Firms who have better ESG impact see better market capitalization, as reflected in Tobin's Q. Investors tend to view companies with stronger ESG scores as more valuable, which contributes to improved share prices and earnings per share (EPS). Furthermore, active ESG disclosure enhances investor trust and market confidence, increasing demand for the company's stock and ultimately boosting its overall market value (Zhou et al., 2022).

## **2.2 Theoretical Framework**

This section outlines the theoretical foundation of the research. The theories discussed serve to guide the research framework and offer an analytical lens for understanding the correlation between ESG performance and market value. The study adopts Stakeholder Theory, Signaling Theory, and Legitimacy Theory to explain the dynamics of ESG disclosure and its influence on financial outcomes, particularly within the banking sector.

### **2.2.1. Theory of Signaling and Transmission Signaling**

The foundation of Signaling Theory was laid by Michael Spence in his 1973 work *Job Market Signaling*. The theory emphasizes the critical role of information in business transactions, particularly in contexts characterized by information asymmetry. In such cases, companies especially their internal management can act as signalers, voluntarily disclosing information to signal receivers, who are typically external stakeholders such as

investors, regulators, and analysts. The goal is to reduce uncertainty and demonstrate long-term strategic commitment. The four core components of signaling theory are:

1. Signal – the information being communicated (e.g., ESG disclosures),
2. Signaler – the entity sending the signal (e.g., company management),
3. Signal Receiver – the party interpreting the signal (e.g., investors, the public), and
4. Feedback – the receiver's response to the signal, influencing future disclosures and actions.

In the context of ESG, disclosing sustainability performance serves as a strategic signal that the company is committed to long-term environmental, social, and governance objectives (Carnini Pulino et al., 2022). Such signals can influence stakeholder perception, boost investor confidence, and enhance firm reputation.

Development of signaling theory has involved a more technical perspective, the Transmission Signaling, formulated by Claude Shannon. This viewpoint centres on clarity and efficacy of information being conveyed. The companies have the mandate of ensuring the proper, comprehensive and quality ESG information is available to empower the stakeholders especially the investors to make informed decisions. The nature of ESG disclosure does not only indicate the transparency of the company but also significantly contributes to the development of stakeholder expectations. The quality of ESG disclosures may support the likelihood of companies to receive trust and long-term financing of sustainability initiatives (Hu et al., 2023). The improved transmission of ESG performance signals assists businesses to stand out in the financial market and become credible and responsible institutions.

In agreement with this, (Swarnapali, 2020) concluded that firms that implement sustainability reporting especially environmental and social practices are more likely to record a rise in the market value. Investors are becoming ready to pay a premium to firms that have good ESG performance. In the last ten years, ESG ratings have emerged as central determinants of the long-term potential and risk profile of companies that investors consider when assessing their investments (Gawęda, 2022).

### **2.2.2. Stakeholder Theory**

Stakeholder Theory was first established by R. Edward Freeman in his 1984 publication. The theory asserts that long-term business success depends on a firm's ability to actively engage with and invest in correlations across all stakeholder groups. These include shareholders, employees, customers, suppliers, and local communities. By recognizing the

interdependence between the company and its stakeholders, businesses can create strategies that align corporate objectives with the interests of these groups. This perspective promotes the idea that sustainable success is not achieved in isolation, but through continuous, mutual engagement (Freeman & McVea, 2001).

Stakeholder theory emphasizes that companies must not only operate responsibly within their business environments but also maintain collaborative networks involving both internal and external parties with an interest in the organization. Management is expected to consider stakeholder needs in a balanced and transparent manner. This fosters the exchange of relevant information and supports the company's ability to achieve its objectives. By prioritizing stakeholder interests in strategy development and ESG disclosures, companies can enhance trust, transparency, and long-term sustainability.

In this framework, stakeholders are not passive observers they actively influence a company's success. For instance, capital providers (investors) evaluate ESG disclosures before investing, customers assess product sustainability before purchasing, and suppliers assess environmental performance before entering into contracts (Freeman, 1984). Thus, environmental concerns and broader sustainability efforts are integral to stakeholder decision-making.

As public attention to ESG activities intensifies, stakeholders increasingly demand transparent, non-financial information. Traditional financial reporting is no longer sufficient. Companies now recognize the need for comprehensive disclosures that reflect their environmental, social, and governance performance. These ESG reports serve a broader audience including regulators, investors, customers, and employees compared to conventional financial disclosures, which often serve a narrower investor-focused group (Kartal et al., 2024).

Moreover, ESG disclosures are essential for evaluating greenwashing risks and assessing management's commitment to sustainability (Velte, 2024). Rating agencies and regulators rely on ESG disclosures to assign ESG scores, which, in turn, influence investment decisions and corporate reputation. Through such mechanisms, stakeholder theory reinforces the central role of transparency and accountability in modern business strategy.

## **2.3 Correlation between ESG Score and Bank Market Value**

### **2.3.1. Theoretical Evidence**

According to Post, Preston, and Sachs, the implementation of environmental, social, and corporate governance components should be pursued regardless of immediate expenses or

profits, as these factors are essential to long-term sustainability and legitimacy. In contrast, Porter and Kramer argue that a company's objective is to maximize shareholder value, while also recognizing that integrating social and environmental initiatives within core business strategies can create shared value for both the firm and society (Miralles-Quirós et al., 2019). These perspectives highlight that corporate value and ESG engagement are not mutually exclusive but can be complementary.

The current study builds on these foundations by investigating the correlation between ESG performance and market value, particularly in the banking sector. Prior research supports this connection. For example, Esteban-Sanchez et al., 2017 analyzed 154 financial institutions across 22 countries and found a positive correlation between corporate governance practices especially those involving employee engagement and firm performance. Similarly, Harjoto & Laksmana, 2018 reported that a higher degree of social responsibility adoption correlates positively with a company's financial value, suggesting that ESG integration enhances investor confidence and overall valuation.

A sample of 154 financial entities in 22 countries shows that there is a positive relationship between the performance of the companies and good corporate governance and good employees. (Esteban, et.al, 2017). According to findings of a study conducted by Harjoto and Laksamana, it has been revealed that social responsibility executed by the company has positive correlation with the value of the company. As stated by (Harjoto & Laksamana, 2018). Within the study by Bayrakdaroglu, it was mentioned that Economic Value Added (EVA), Cash Value Added (CVA), and Market Value Added could be improved by corporate governance to ensure that the variables are positively related. The study was conducted by (Bayrakdaroglu et.al, 2012).

In yet another research study, Bayrakdaroglu dkk., 2012 demonstrated that corporate governance has a positive impact in the main financial indicators like Economic Value Added (EVA), Cash Value Added (CVA) and Market Value Added (MVA). These results support the idea that properly managed companies with active ESG policies are able to create better financial performance.

Collectively, these theoretical insights and empirical evidence highlight the increasing agreement that strong ESG practices particularly those facilitated by good governance can improve the market value of a company, and draw attention of investors and lead to sustainable financial performance.

Table 2.2 Theoretical Evidence

| <i>Author</i>                                               | <i>Method</i>                        | <i>Key Result</i>                                                                  | <i>Region</i>              |
|-------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------|----------------------------|
| <i>Ghzali, Daud, Ismail (2023)</i>                          | ARDL                                 | ESG Performance have positive impact on Economic Growth                            | ASEAN 5 Countries          |
| <i>Raza, Alavi &amp; Asif (2024)</i>                        | ARDL                                 | Sustainability Factor Have significant Impact on the Financial Performance of Bank | United Emirates Arab (UEA) |
| <i>Falrea Alharbi</i>                                       | Fix Effect Model                     | ESG factor have significantly impact to contribute economic growth                 | GCC Countries              |
| <i>Aras, G., &amp; Hacıoglu Kazak, E. (2022)</i>            | Multiple linier regression model     | The impact of ESG score performance on market value is significant                 | OECD Countries             |
| <i>Di Martino, G., Miglietta, F., &amp; Potì, V. (2024)</i> | Multivariate linier regression model | ESG score have impact on bank market value                                         | Europe Bank                |

(Alharbi, 2024; Aras & Hacıoglu Kazak, 2022; Di Martino et al., 2024; Ghazali et al., 2023; Raza et al., 2024)

### 2.3.2. Empirical Evidence

Among the three ESG components Environmental (ENV), Social (SOC), and Governance (GOV) empirical results indicate that only the Environmental (ENV) dimension has a statistically significant impact on market value (MV). Specifically, the environmental performance of banks in the ASEAN region is positively associated with their market value. Additionally, bank size (SIZE) shows a strong and significant correlation with changes in MV, suggesting that larger banks tend to gain more investor confidence, possibly due to better ESG disclosure capacity and stronger operational structures.

This trend may reflect increasing shareholder concern over global warming, making them more attentive to a bank's environmental strategies and lending practices. At a 95% confidence level, the correlation between the environmental variable and bank market value is statistically significant implying that the observed effect is unlikely to be due to chance. Positive environmental performance thus plays a crucial role in influencing bank performance and attracting investor trust in the region.

To address potential endogeneity issues, such as reverse causality or omitted variable bias, the Generalized Method of Moments (GMM) is recommended. This method was also used in Azmi's (2021) research, which applied a Two-Step System GMM

approach with dynamic panel data. Prior to interpreting the core variables of the study, diagnostic tests were conducted to ensure instrument validity and to detect autocorrelation issues in the model's residuals.

Regressions were conducted four times, one each time with composite ESG, ENV, SOC and GOV scores to determine which of the ESG dimensions has the greatest impact on the market value (Kurniawan, 2023). Similarity in the outcomes of the models was used to validate the dominance of the environmental factor in determining the variations in the market value.

In complement to these results, a fixed-effects regression with linear and non-linear panel data analysis of the U.S. bank sector showed that there is a nonlinear (inverted U-shape) relationship between the ESG performance and the bank market value. To start with, higher ESG investment leads to better market value. Nevertheless, there is a limit after which additional investments in ESG start to hurt the market value. This implies that, although ESG activities are mostly advantageous, too much investment can result in a decrease in returns. In complement to these results, a fixed-effects regression with linear and non-linear panel data analysis of the U.S. bank sector showed that there is a nonlinear (inverted U-shape) relationship between the ESG performance and the bank market value. To start with, higher ESG investment leads to better market value. However, beyond a certain threshold, further ESG investments begin to negatively impact market value. This suggests that while ESG activities are generally beneficial, excessive investment may lead to diminishing returns.

This finding is supported by El Khoury et al., who emphasized the importance of identifying the “tipping point” where ESG efforts shift from value creation to potential inefficiency. Banks are advised to calibrate ESG investments carefully to maintain shareholder value. Implementing green marketing strategies and appealing to eco-conscious investors can help attract sustainable capital inflows and promote long-term value creation (Ersan Ersoy, 2022).

Table 2.3 Empirical Evidence from Previous Study

| No | Journal                                                                                        | Summary                                                                                                                                                                                                                                                                             |
|----|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | “Sustainable investing: ESG effectiveness and market value in OECD regions (Dsouza dk., 2025)” | <b>Background :</b><br>The present study is set against the backdrop of increasing global emphasis on sustainable development and the role of ESG factors in corporate strategies. The selection of OECD countries is predicated on the premise that they boast advanced economies. |

|   |                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                                                                                                     | <p><b>Methodology:</b> The employment of a fixed-effect model is recommended in order to mediate the roles of profitability and operational capability in the impact of ESG practices on market value. The dependent variable is the market value measure using Tobin's Q. The independent variable is the ESG combined score. The mediating variable is ROE. The total asset turnover (TAT) is the third variable. The use of 1758 firm has been consistent since 2011-2022.</p> <p><b>Result :</b> if this study have Positive Impact of ESG on Market Value, The study confirms that enhanced ESG performance significantly boosts a firm's market value, as measured by Tobin's Q. This supports the hypothesis that strong ESG practices are positively associated with higher market valuations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2 | <p>“The Impact of ESG Scores on Bank Market Value? Evidence from the U.S. Banking Industry. (Ersoy dkk., 2022)”</p> | <p><b>Background :</b></p> <p>The present study investigates the correlation between Environmental, Social, and Governance (ESG) performance and the market value of U.S. commercial banks from 2016 to 2020. The researchers employed an unbalanced panel consisting of 151 US commercial banks.</p> <p><b>Method:</b> The present study utilised fixed-effects regression models to analyse the effects of Environmental, Social, and Governance (ESG) scores and their sub-components on market value, measured by market capitalisation. The utilisation of both linear and non-linear models is imperative in order to capture the inherent complexity of the correlation under investigation.</p> <p><b>Result:</b> The findings of this study indicate a potentially unfavourable correlation between ESG investment and bank market value. The results demonstrate an inverted U-shaped correlation between Environmental Performance Score (EPS) and market value, with a decline in EPS leading to a decrease in market value, followed by a subsequent enhancement over a long term perspective. Similarly, the Social Pillar Score exhibits an U-shaped correlation; however, the Governance Pillar does not exert a statistically significant influence on market value.</p> |
| 3 | <p>“Sustainable development, ESG performance and company market value: Mediating effect of</p>                      | <p><b>Background :</b></p> <p>The present study utilises data from publicly listed companies within the Shanghai and Shenzhen A-share markets, with a particular focus on the period from 2014 to 2018. The</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|   |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | financial performance (Zhou et al., 2022)”                                                                                                    | <p>present study investigates the correlation between Environmental, Social, and Governance (ESG) performance and a company's market value, focusing on the mediating role of financial performance.</p> <p><b>Method :</b> The utilisation of panel data analysis with a linear regression model incorporating a fixed-effect design is selected on the basis of Hausman tests. The independent variable is the performance of environmental, social and governance (ESG) initiatives. The dependent variable is market value. The mediating variable is return on equity (ROE), while company size and financial leverage act as control variables.</p> <p><b>Result :</b> ESG Performance have significant positive correlation with market value.</p>                                                                                                                                                                                                                                                                                                                                                                                          |
| 4 | “Do ESG scores effect bank risk taking and value? Evidence from European banks, (Di Tommaso & Thornton, 2020)”                                | <p><b>Background:</b></p> <p>The present study aims to address the gap in empirical banking literature regarding the impact of ESG activities on bank performance. To this end, it focuses on European banks from 2007 to 2018, particularly in terms of risk and value.</p> <p><b>Method :</b></p> <p>The study employed a quantitative research method, utilising panel data analysis to examine the impact of ESG scores on bank risk-taking and value. To address potential endogeneity issues and ensure robust results, the dynamic Generalised Method of Moments (GMM) estimator was employed.</p> <p><b>Result:</b> The study indicate that Environmental, Social and Governance (ESG) scores exert a detrimental effect on the market value of European banking institutions. This finding is consistent with the "overinvestment" perspective, which posits that ESG initiatives may diminish bank value by allocating resources away from investment prospects. Despite the potential for risk mitigation, the adverse direct impact on bank value is not adequately offset by the favourable indirect effect of risk reductionton.</p> |
| 5 | “Enhancing firm value through the lens of ESG materiality: Evidence from the banking sector in OECD countries (Aras & Hacıoglu Kazak, 2022a)” | <p><b>Background :</b></p> <p>The study investigates the correlation between ESG (Environmental, Social, and Governance) materiality performance and firm value in the banking sector across OECD countries.</p> <p><b>Method :</b></p> <p>Multiple linear regression models assess the impact of ESG Materiality and ESG Combined scores on firm value. Dependent Variable Firm Value measure used price to book value ratio (PBV) and Tobin Q assessing firm value,</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|   |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                                                                                                                                                    | <p>Independent Variable ESG Materiality and ESG Combined Score, control variable CAR, ROE.</p> <p><b>Result :</b></p> <p>The impact of ESG score performance on market value is significant, particularly when financial materiality is considered. The study finds that ESG Materiality scores, which focus on financially material ESG issues, have a positive impact on firm value. Specifically, these scores significantly predict firm value as measured by Price-to-Book Value (PBV) and Tobin's Q (TQ) in the banking sector across OECD countries.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 6 | <p>“Environmental, social, and governance (ESG) performance and financial outcomes: Analysing the impact of ESG on financial performance (Chen et al., 2023).”</p> | <p><b>Background :</b></p> <p>The present study investigates the correlation between Environmental, Social, and Governance (ESG) factors and Corporate Financial Performance (CFP). The study addresses research gaps in extant literature, which frequently exhibits equivocal results regarding the impact of ESG on financial outcomes. The global region encompasses the United States of America, the People's Republic of China, and the European Union.</p> <p><b>Method :</b></p> <p>The article use multiple regression model to analyse the impact of ESG ratings on corporate financial performance. Variable Independent Corporate Financial Reformance (CFP) represent by ROA, Dependent Variable ESG Rating, Mediating or Control Variable Price to Book Value Ratio, LEV.TIE.</p> <p><b>Result :</b></p> <p>The study demonstrates a substantial positive effect of ESG performance on market value. It has been demonstrated that companies with superior Environmental, Social and Governance (ESG) scores tend to demonstrate enhanced financial outcomes, including an increase in market value. This positive correlation indicates that ESG initiatives have the potential to enhance a company's market valuation by improving sustainability, reputation, and stakeholder trust. The findings indicate that effective ESG performance can positively influence corporate financial success, contributing to a company's overall market value.</p> |
| 7 | <p>“Impact of ESG performance on firm value and profitability (Aydoğmuş et al., 2022)”</p>                                                                         | <p><b>Background :</b></p> <p>The study investigates the impact of Environmental, Social, and Governance (ESG) performance on firm value and profitability, contributing to the ongoing debate on ESG's financial implications, with various region East</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|   |                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                                                                                                                                                   | <p>Asia and Pacific, Europe and Central Asia, Latin America, Middle East and North Africa, South Asia and Sb Sahara Africa.</p> <p><b>Method :</b><br/>employing Tobin's Q and Return on Assets (ROA) as dependent variables to measure firm value and profitability, respectively. The study employs a fixed effects panel data mode.</p> <p><b>Result :</b><br/>The findings of the research indicate that the ESG Combined Score (ESG_CS) demonstrates a significant and positive correlation with firm value, which is often considered a surrogate for market value. This suggests that enhancements in the social and governance dimensions of ESG performance are associated with increases in market value. Conversely, the Environment score (ENV) does not demonstrate a significant correlation with firm value, indicating that environmental factors may not affect market value as directly as social and governance factors do.</p>                                                                                                                                                                                                                                                                                        |
| 8 | <p>“The impact of ESG scores on the value relevance of fair value hierarchy of financial instruments: Evidence from European Banks (Di Martino et al., 2024)”</p> | <p><b>Background :</b><br/>The present study investigates the impact of Environmental, Social, and Governance (ESG) scores on the value relevance of financial instruments in European banks. The text focuses on the fair value hierarchy (FVH) of financial instruments, which categorises assets based on the observability of their inputs. The impetus for this research stems from the mounting significance of ESG factors in investment decision-making and the necessity to comprehend the impact of these scores on market valuations, particularly within the banking sector.</p> <p><b>Method :</b><br/>The study employs multivariate panel regression models to analyze data from 154 European banks across 30 countries from 2010 to 2018. Dependent variable PTBV (Price to Tangible Book Value), independent variable ROTE (Return on Tangible Equity)</p> <p><b>Result :</b><br/>The study finds that the presence of an ESG score is associated with a premium on the book value of banks, indicating that banks with ESG scores are valued higher in the market compared to those without such scores. In particular, financial institutions with Environmental, Social and Governance (ESG) scores demonstrate a</p> |

|    |                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                                                                                              | 17.7% increase in their price-to-book value (PTBV).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 9  | “Environmental, social and governance (ESG)-augmented investments in innovation and firms' value: a fixed-effects panel regression of Asian economies (Khalil et al., 2024)” | <p><b>Background :</b><br/>The research investigates the impact of traditional and environmental innovation on the financial and environmental performance of firms in several Asian economies. It underscores the mounting significance of environmental, social, and governance (ESG) investments in innovation, particularly within the context of sustainability and competitiveness.</p> <p><b>Method :</b><br/>Panel data analysis with firm level data from publicly traded company with time fixed effect panel regression regression is used to control for unobserved heterogeneity and analyze the impact of ESG performance on market value.</p> <p><b>Result :</b><br/>The researchers concluded that there exists a positive relationship between ESG scores and market value. Precisely, the test illustrates that those companies that score higher in ESG are more likely to have better financial performance, given the positive correlation between ESG scores and Tobin q, which is used as an indicator of the market value. This observation aligns with the literature that has already been published, indicating that the attempts of companies to follow Environmental, Social and Governance (ESG) practices have a beneficial effect on their financial results. The finding of the positive relationship between the ESG scores and the market value supports the significance of ESG practices in increasing firm value and appealing to investors that care about sustainability and responsible governance.</p> |
| 10 | “Assessing the impact of ESG scores on market performance in polluting companies: a post-COVID-19 analysis (Pasupuleti et al., 2024)”                                        | <p><b>Background :</b><br/>The study explores the correlation between Environmental, Social, and Governance (ESG) factors and firm market performance, focusing on companies in India.</p> <p><b>Method :</b><br/>The study uses multiple linear regression models to analyse the correlation between ESG scores and financial market performance. Independent variable ESG score data sources from refinitive, dependent variable Market Performance measure by Tobin Q, and control Variable Firm Size and Debt Equitr Ratio.</p> <p><b>Result :</b><br/>Research has indicated a favourable correlation between Environmental, Social and Governance</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | (ESG) scores and corporate market performance. For instance, a regression analysis revealed a significant positive coefficient of 0.31 between ESG scores and firm market performance, indicating that companies with higher ESG scores tend to have superior market value compared to those with lower scores. Moreover, the global pandemic of Coronavirus (SARS-CoV-2) has served to underscore the significance of Environmental, Social and Governance (ESG) factors. Companies that have attained superior ESG scores have exhibited elevated levels of resilience and diminished financial risk during the crisis. |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 2.3.3. Gaps and limitations

Although the topic of ESG implementation has gained considerable attention, research specifically examining its impact on bank market value remains limited. Most existing studies have focused on developed countries, such as the United States, European nations, OECD member states, and the UAE. In contrast, empirical research on developing regions particularly the ASEAN countries, including Indonesia, Malaysia, Singapore, Thailand, the Philippines, and Vietnam remains scarce. This regional gap presents a significant opportunity to expand the literature by providing evidence from emerging markets, where ESG implementation is still evolving and regulatory structures are less mature. Furthermore, most prior studies have relied on conventional econometric models, such as Fixed Effects or Random Effects models, often applying either linear or non-linear panel regressions. While these models offer valuable insights, they may not sufficiently capture the dynamic nature of ESG impacts over time, especially in contexts with limited data availability.

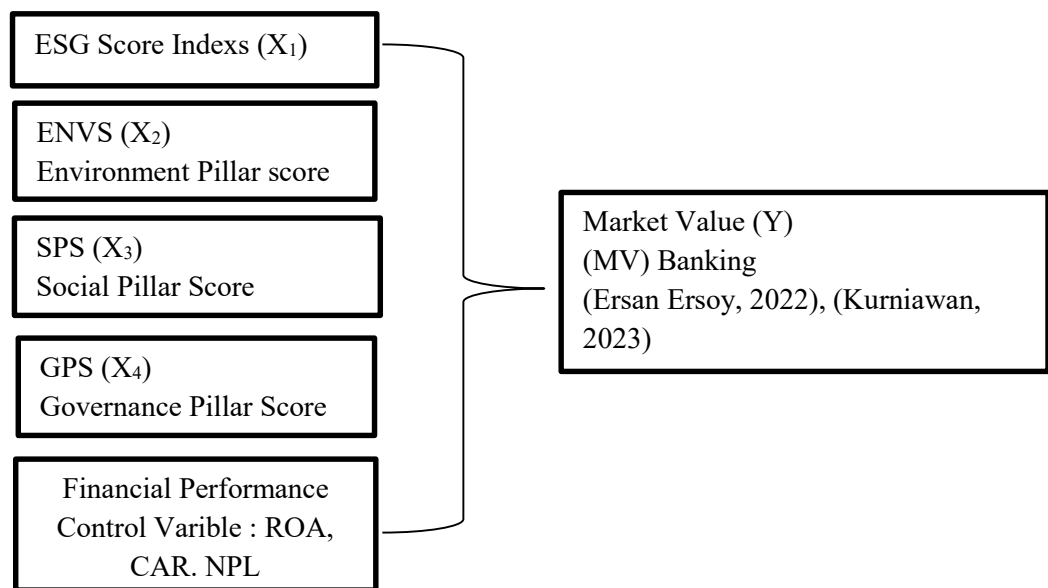
In order to fill this methodological gap, the current study uses the Autoregressive Distributed Lag (ARDL) model, which is especially efficient in the case of small sample sizes and in the consideration of the correlation among the variables integrated at different orders, e.g.,  $I(0)$  or  $I(1)$ . This is very much applicable in the case of ASEAN banks whose data reporting standards and availability is still in the developing stage. The ARDL model allows a more detailed examination as it allows estimating the short-term and the long-term effects simultaneously. This enables a more in-depth insight into the extent to which the performance of ESG can affect bank market value across time horizons. As an example, it can measure instantaneous market response to changes in ESG ratings (short run), as well

as embody how long-term ESG activity can influence firm value by way of structural and strategic adjustment (long run). The current research has methodological value in the existing literature as it applies the ARDL model to the ASEAN banking sector and contributes to the discussion of the ESG performance in emerging economies. It offers as well real-life implications to banks and policymakers on when and how ESG-related investments and disclosures matter.

## 2.4 Research Framework

Based on the results of hypothesis testing and a review of relevant variables in previous studies, this research develops a conceptual model that aligns with the methodology adopted in this study (Ersoy et al., 2022). The proposed framework is illustrated in Figure 2.1 and is designed to reflect the correlations between the variables investigated.

Figure 2.1 Research Framework



The independent variable (X) in this research is the ESG Combined Score, which provides a holistic and well-rounded evaluation of a firm's overall performance in environmental, social, and governance aspects (Dsouza et al., 2025). In addition, the study examines each ESG pillar separately:

1. "Environmental Score (ENVs) – X2"

2. “Social Score (SPS) – X3”
3. “Governance Score (GPS) – X4”

By analyzing these sub-components individually, the study seeks to provide more nuanced insights into how each dimension of ESG performance influences bank market value. The Dependent Variable is Market Value, serving as a proxy for a bank’s overall performance and investor perception. Market capitalization is used as the key indicator to measure market value (Ersoy et al., 2022). Furthermore, this study incorporates several Control Variables Return on Assets (ROA), Return on Equity (ROE), Capital Adequacy Ratio (CAR), and Non-Performing Loans (NPL). These variables are included to account for other financial factors that may influence market value. Controlling for these elements ensures that the observed effects are more accurately attributed to the ESG-related variables.

## **CHAPTER III METHODOLOGY**

### **3.1 Data Description**

This paper uses the panel data analysis methodology, an unbalanced panel data set. Panel data can be defined as a cross-sectional and time-series data combination and as such, it offers repeated measurements of a given variable across a number of entities, including individuals, firms or institutions, over a certain period of time. Ideally, a balanced panel will have all the data of all entities in all the time periods. Nevertheless, the result will be an unbalanced panel when some entities are missing values in some time periods. The unbalanced panels are common because of the reasons like selection bias, where the units can be observed only under some circumstances, or attrition, when the data is lost with time. It is important to consider the consequences of such missing values because they might lead to biases which might compromise validity and reliability of the results (Xu et al, 2007).

The data that is used in this paper is 50 banks in six countries in Southeast Asia including the Philippines, Singapore, Indonesia, Thailand, Malaysia, and Vietnam between 2008 and 2024. The information is provided by Refinitiv that also provides standardized and reliable ESG data. Specifically, the study utilizes:

1. “Environmental Pillar Score (EPS)”
2. “Social Pillar Score (SPS)”
3. “Governance Pillar Score (GPS)”
4. “ESG Combined Score (ESG)”

Due to the variation in ESG disclosure practices and reporting periods across banks and countries, the dataset is unbalanced. Only banks listed on their respective national stock exchanges are included to ensure comparability and data availability. This sample is designed to capture a broad cross-section of financial institutions operating in the ASEAN region, reflecting varying degrees of ESG integration and regulatory environments. The sample data utilized in this study comprises 50 banks from six Southeast Asian countries: Indonesia, Malaysia, Singapore, Thailand, the Philippines, and Vietnam, covering the period from 2008 to 2024. This data was sourced from Refinitiv, which provides comprehensive ESG score indices along with detailed Pillar data specifically, the Environmental Pillar Score (EPS), Social Pillar Score (SPS), Governance Pillar Score (GPS), and the overall ESG Combined Score (ESG). Given the nature of the data and some

Table 3.2 Data Sample of Banks

| <b>Indonesia</b>    | <b>Malasia</b>       | <b>Philippines</b>             | <b>Singapore</b>                        | <b>Thailand</b>           | <b>Vietnam</b>                                             |
|---------------------|----------------------|--------------------------------|-----------------------------------------|---------------------------|------------------------------------------------------------|
| Bank Aladin Syariah | Affin Bank           | Bank of the Philippine Islands | DBS Group Holdings Ltd                  | Bangkok Bank PCL          | Vietnam Joint Stock Commercial Bank for Industry and Trade |
| Bank Amar Indonesia | Alliance Bank        | BDO Unibank Inc                | Oversea-Chinese Banking Corporation Ltd | Bank of Ayudhya PCL       | Vietnam Prosperity Joint Stock Commercial Bank             |
| Bank BTPN Syariah   | AMMB Holdings        | LT Group Inc                   | United Overseas Bank Ltd                | CIMB Thai Bank PCL        |                                                            |
| Bank Central Asia   | CIMB Group Holdings  | Metropolitan Bank and Trust Co |                                         | Kasikornbank PCL          |                                                            |
| Bank CIMB Niaga     | Hong Leong Bank      | Philippine National Bank       |                                         | Kiatnakin Phatra Bank PCL |                                                            |
| Bank Danamon        | Hong Leong Financial | Rizal Commercial Banking Corp  |                                         | Krung Thai Bank PCL       |                                                            |
| Bank Jago           | Malayan Banking      | Security Bank Corp             |                                         | LH Financial Group PCL    |                                                            |
| Bank Mandiri        | Public Bank          | Union Bank of the Philippines  |                                         | SCB X PCL                 |                                                            |
| Bank Maybank Ind    | RHB Bank             |                                |                                         | TISCO Financial Group PCL |                                                            |

|                                   |  |  |  |                            |  |
|-----------------------------------|--|--|--|----------------------------|--|
| Bank<br>Negara<br>Ind             |  |  |  | TMBThanach<br>art Bank PCL |  |
| Bank<br>OCBC<br>NISP              |  |  |  |                            |  |
| Bank<br>Panin<br>Dubai<br>Syariah |  |  |  |                            |  |
| Bank<br>Pembangu<br>nan<br>Daerah |  |  |  |                            |  |
| Bank<br>Permata                   |  |  |  |                            |  |
| Bank<br>Rakyat<br>Indonesia       |  |  |  |                            |  |
| Bank<br>Sinarmas                  |  |  |  |                            |  |
| Bank<br>Tabungan<br>Negara        |  |  |  |                            |  |
| Pt Bank<br>Syariah<br>Indonesia   |  |  |  |                            |  |

inconsistencies in the availability of information across the years, the dataset is an unbalanced panel. The sample includes banks listed on the stock exchanges of the respective countries, ensuring that the banks represent a broad cross-section of the financial institutions within these economies.

Table 3.1 Data Sample

| <b>Countries</b> | <b>No. of Banks</b> |
|------------------|---------------------|
| Indonesia        | 18                  |
| Malaysia         | 9                   |
| Philippines      | 8                   |
| Singapore        | 3                   |
| Thailand         | 10                  |
| Vietnam          | 2                   |
| <b>Total</b>     | <b>50</b>           |

### 3.1.1. Independent Variables

This study obtains its independent variables based on data sourced the LSEG Data & Analytics database (formerly known as Refinitiv), widely recognized as one of the most reliable and extensive providers of ESG data worldwide (Kurniawan, K., & Kim, S. S, t.t.). This database enables the inclusion of ESG ratings for banks across six ASEAN countries Indonesia, Malaysia, Singapore, Thailand, the Philippines, and Vietnam thereby providing a robust dataset for analysis over the study period.

The variables of the ESG rating used in this study are founded on the three sustainability pillars, viz. Environmental, Social, and Governance (ESG). A weighted scoring approach is applied in assessing these pillars against global sustainability norms such as the International Sustainability Standards Board (ISSB) and the Sustainability Accounting Standards Board (SASB). The frameworks assist in outlining the issues of material and giving them the priority they deserve within the sectors. To support the validity and robustness of the ESG assessment, the ratings are also calibrated with the most prominent disclosure and reporting standards including the Carbon Disclosure Project (CDP), the Task Force on Climate-related Financial Disclosures (TCFD), and the Global Reporting Initiative (GRI), as well as industry-specific regulatory frameworks (LSEG, 2024).

In this paper, we have used the combined ESG rating along with its different sub-components which are the Environmental Pillar Score (ENVS), Social Pillar Score (SPS), and Governance Pillar Score (GPS). The rationale for this approach is to understand not only the overall effect of ESG performance on bank market value, but also to explore how each individual pillar contributes to or influences performance. By disaggregating the ESG score into its three dimensions, the study provides more granular insights into which aspects of ESG have the most significant impact. This is particularly relevant for investment

managers, regulators, and policymakers seeking to align financial performance with sustainable development goals and responsible investment strategies (Ersoy et al., 2022).

### **3.1.2. Dependent Variables**

The dependent variable in this study is market capitalization, which serves as a proxy for the market value of banks. Market capitalization is a figure that is obtained by multiplying the total amount of shares outstanding of a company with the current price of the shares in the market.” Unlike the widely applied Price-to-Earnings Ratio (PER) that is calculated by dividing the market price per share by earnings per share market capitalization provides a more straight forward and complete picture of the total value of a firm in the market (Darmawan, 2024).

The choice of market capitalization is based on the fact that it can capture the perception and expectations of investors on the future of a bank. It takes into consideration not only concrete matters like financial performance but also less concrete ones, the reputation of the bank, the quality of governance, and environmental and social activities. Market capitalization, therefore, offers a comprehensive assessment of the performance of a bank and more so in cases where the effectiveness of ESG implementation is being analyzed. Additionally, market value is consistent with wider economic and sustainability targets and it serves as a significant indicator of whether ESG practices are positively accepted by stakeholders and help to generate value in the long-term (Zhou et al., 2022).

The second reason to choose market capitalization as the dependent variable is the fact that this type of measurement is not widely used in the studies that relate to ESG in the ASEAN region. Although numerous international studies have been conducted to reveal the impact of ESG performance on firm value, they are mostly based on accounting-based measures like Return on Assets (ROA) or Return on Equity (ROE). However, such financial measures are prone to manipulation via accounting procedures and fail to include the entire market perception. In comparison, market based measures like Tobin Q, price to book ratio, and stock returns are usually said to be more accurate in measuring value of a firm. However, within these, market capitalization usage is insufficiently researched, especially when it comes to studies of the banking industry in the ASEAN economies (Analytics, 2023). This paper fills that gap with a theoretical and empirical contribution, where the market-based measure of bank value is market capitalization, in evaluating the role of ESG performance in a developing market environment.

### 3.1.3. Control variables

To ensure that this study achieves powerful and credible estimates of the relationship between ESG performance and market value, the study will use some control variables that reflect other critical factors that have been identified to affect the financial performance and perception of investors towards a bank. These control variables are popular financial and operation measures in the banking sector. The inclusion allows the study to have a better chance of isolating the particular effect of ESG factors on market capitalization with the least possible confounding effects.

Return on Assets (ROA) is a well-known profitability indicator that checks the capacity of a bank to produce net income in comparison to its total assets. It is computed by ratios of net income to the average total assets over a specified time. A larger ROA means that there is more efficiency in the use of assets in order to create profit, thus, this means there is a better performance in operations. ROA is a very important measure of financial health and asset management efficiency in the banking sector where asset portfolios are large and diverse. Since ROA is highly correlated with investor confidence and performance reviews, it will be included in this study to allow the factor of operational efficiency to play a role in determining market value.

Capital Adequacy Ratio (CAR) is a ratio of the capital of a bank to the risk-weighted assets of a bank, that is a critical regulatory standard used to determine the solvency and resilience of a bank. An increased CAR means a greater ability of a bank to absorb any possible financial shock and credit losses, providing the systemic stability and being in line with Basel regulatory requirements. CAR is included in this study as a control variable to denote the financial robustness and risk cushion of the institution that may affect the sentiment of investors and subsequently market value.

Return on Equity (ROE) is another profitability ratio which shows how effectively a bank uses the shareholders equity in order to create a net income. It is also especially applicable to investors, who can see the value created on their investment in capital. ROE can be impacted by leverage and financial structuring, but it is still an important measure in performance measurement. The addition of ROE as a control variable helps the study more clearly differentiate the impact of ESG and conventional measures of profitability since companies with high-quality ESG practices are typically linked to higher long-term ROE (Zhou dkk., 2022).

Non-Performing Loans (NPLs): The Non-Performing Loan (NPL) ratio is one of the main metrics of asset quality and credit risk exposure of a bank. NPLs are those loans that are in default or near default, usually characterized by the inability of the borrower to

make payments due in 90 days or more. Having a high NPL ratio indicates that there is more risk and possible losses that may adversely impact on the financial status and image of a bank. On the other hand, a low value of NPL ratio implies a healthy loan portfolio and a good management of risks. Within the scope of the current study, NPL is considered as a control variable due to its capacity to mediate or skew the apparent relationship between ESG performance and market value, specifically when ESG practices are in line with risk-mitigation practices (Iqbal & Nosheen, 2023).

Incorporating these control variables, ROA, ROE, CAR, and NPLs, the study will be in a better position to give more accurate and complete evaluation of how ESG performance relates to the market valuation of a bank. These variables prevent the mentioned effect of ESG to be confounded with other aspects of the performance of banks or financial risk and, in turn, improve the validity and reliability of the regression analysis.

Table 3.3 Variable Explanation

| Code                            | Variable     | Notation | Definition                                                                                                                                                                                            | Measurement                                |
|---------------------------------|--------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <b>Y (Dependent Variable)</b>   | Market Value | MVB      | The share price multiplied by the quantity of common shares in the issuance is the market value. Every time a capital change occurs or new stock tranches are issued, the amount in issue is updated. | Market price<br>X Total Outstanding Shares |
| <b>X (Independent Variable)</b> | ESG Score    | ESG      | Based on self-reported data in the environmental, social, and corporate governance pillars, the ESG Score is a total firm score.                                                                      | Environment<br>+ Social + Governance       |
|                                 | ENV Score    | ENVS     | A company's weighted average relative rating, or ENV, is determined by the three environmental category scores that are produced from the reported environmental information.                         | Environment                                |
|                                 | SPS Score    | SPS      | The weighted average relative rating of a business, or SPS, is determined by the four social category scores that are produced from the reported social information.                                  | Social                                     |

|                         |                         |     |                                                                                                                                                                  |                                                                           |
|-------------------------|-------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
|                         | GPS Score               | GPS | A company's weighted average relative rating, or GPS, is determined by the three governance category scores that are produced from the reported governance data. | Governance                                                                |
| <b>Variable Control</b> | Capital Adequacy Ration | CAR | According to banking laws, the capital adequacy ratio is the proportion of total capital to total risk-weighted assets, represented as a percentage.             | Ratio between provision for uncollectible debtors and total loans granted |
|                         | Return On Asset         | ROA | Net Income/Total Asset                                                                                                                                           |                                                                           |
|                         | Non Performing Loan     | NPL | Non-Performing loan/total loans                                                                                                                                  |                                                                           |

## 3.2 Model Description

### 3.2.1 The Autoregressive Distributed Lag (ARDL) Model

This study utilizes the ARDL (Autoregressive Distributed Lag) model to investigate the correlation between ESG performance and bank market value in the ASEAN region. The ARDL framework is particularly well-suited to this analysis due to its ability to estimate both short-run and long-run dynamics within a single unified equation system. The analysis is conducted using EViews software, which facilitates the estimation of ARDL models and the transformation into an ECM (Error Correction Model) where necessary.

The ARDL method, as introduced by (Pesaran et al., 1999), has a number of methodological advantages in comparison with the conventional cointegration methods. In contrast to the Johansen cointegration test or the Engle-Granger two-step procedure where all the variables are required to be integrated of the same order (usually  $I(1)$ ) the ARDL model is not so restrictive to allow combination of  $I(0)$  and  $I(1)$  variables as long as none of the variables are integrated of order two ( $I(2)$ ) or larger. This is a major advantage that

eliminates the necessity of stringent pre-testing and enables the researcher to continue the process of estimation in situations where the variables have mixed orders of integration.

The other strength of ARDL model is that the model is effective even in small and moderate sample size, which is usually between 30 and 80 observations. This feature renders it particularly apt to this study, considering the limitations of the data, which is comprised of 50 banks in six ASEAN countries in the time series of 2008 to 2024 with unbalanced time series data. Autocorrelation and endogeneity are also well represented in the model because it includes lagged values of both the dependent and independent variables in the regression model.

The model in the ARDL specification calculates the short-run impact of ESG scores on market value using the immediate influence of current and lagged changes in explanatory variables. At the same time, it will measure the long-run equilibrium correlation between the variables, i.e. whether a stable relationship is present between ESG performance and bank valuation in the long run.

In addition, the ARDL model may be reparameterized to a dynamic Error Correction Model (ECM). The ECM form gives us information on the speed of adjustment i.e. how fast a short-term shock is corrected in the subsequent periods when deviations occur in the long-run equilibrium. The component is especially helpful in financial and sustainability analysis where the market reaction to ESG-related disclosures can change over time.

To summarize, the selection of the ARDL model in this study is based on the following considerations:

1. It allows for mixed integration orders ( $I(0)$  and  $I(1)$ ) without requiring unit root pre-testing.
2. It is robust and reliable even with limited sample sizes.
3. It estimates both long-term and short-term correlations simultaneously.
4. It addresses potential endogeneity and serial correlation.
5. It can be converted into an Error Correction Model (ECM) to assess dynamic adjustments toward equilibrium.

These features make ARDL a methodologically sound and empirically robust approach for examining how ESG performance influences bank market value across the ASEAN banking sector. As emphasized by (Qamruzzaman & Wei, 2018), the ARDL model provides objective and consistent estimates, making it an appropriate tool for empirical analysis in financial and sustainability research.

To analyze the impact of ESG (Environmental, Social, and Governance) scores on bank market value using the ARDL (Autoregressive Distributed Lag) model, we need to specify two equations one for the short-term dynamics and one for the long-term equilibrium correlation.

### 1. Short-Term Equation (Error Correction Model)

In the short term, we include the changes in the dependent variable (market value) as well as changes in the independent and control variables (ESG, EPS, SPS, GPS, and CV). The general form of the short-term ARDL model with these variables is:

$$\begin{aligned}\Delta MV_t = & \alpha_0 + \sum_{i=1}^p \beta_i \Delta MV_{t-i} + \sum_{j=0}^{q_1} \gamma_j \Delta ESG_{t-j} + \sum_{j=0}^{q_2} \delta_j \Delta EPS_{t-j} + \sum_{j=0}^{q_3} \mu_j \Delta SPS_{t-j} \\ & + \sum_{j=0}^{q_4} \theta_j \Delta GPS_{t-j} + \sum_{j=0}^{q_5} \lambda_j \Delta CV_{t-j} + \lambda ECM_{t-1} + \epsilon_t\end{aligned}$$

Where:

- a.  $\Delta MV_t$  = Change in market value at time t.
- b.  $\Delta ESG_t$  = Change in ESG score at time t.
- c.  $\Delta ENVSt$  = Change in environmental score at time t.
- d.  $\Delta SPS_t$  = Change in social pillar score at time t.
- e.  $\Delta GPS_t$  = Change in governance pillar score at time t.
- f.  $\Delta CV_t$  = Change in control variables at time t.
- g. p, q1, q2, q3, q4, q5 = Lag lengths for the dependent and independent variables.
- h.  $\lambda$  = Error correction coefficient (speed of adjustment to long-term equilibrium).
- i.  $ECM_{t-1}$  = Error correction term (lagged residual from the long-term correlation).
- j.  $\alpha_0$  = Constant term (intercept).
- k.  $\beta_i, \gamma_j, \delta_j, \mu_j, \theta_j, \lambda_j$  = Short-term coefficients for the lags of the respective variables.
- l.  $\epsilon_t$  = Error term.

### 2. Long-Term Equation (Cointegration Correlation)

$$MV_t = \alpha_1 + \sum_{i=1}^p \phi_i MV_{t-i} + \sum_{j=0}^{q_1} \theta_j ESG_{t-j} + \sum_{j=0}^{q_2} \gamma_j EPS_{t-j} + \sum_{j=0}^{q_3} \mu_j SPS_{t-j} + \sum_{j=0}^{q_4} \theta_j GPS_{t-j} + \sum_{j=0}^{q_5} \lambda_j CV_{t-j} + \eta_t$$

Where:

- a.  $MV_t$  = Market value at time t.
- b.  $ESG_t$  = ESG score at time t.
- c.  $ENVSt$  = Environmental Pillar Score at time t.
- d.  $SPSt$  = Social Pillar Score at time t.
- e.  $GPS_t$  = Governance Pillar Score at time t.
- f.  $CV_t$  = Control variables at time t.
- g.  $p, q_1, q_2, q_3, q_4, q_5$  = Lag lengths for the dependent and independent variables.
- h.  $\alpha_1$  = Constant term (intercept).
- i.  $\phi_i, \theta_j, \gamma_j, \mu_j, \lambda_j$  = Long-term coefficients for the respective variables.
- j.  $\eta_t$  = Error term.

### 3.2.2 Cointegration and Error Correction

Like in the usual ARDL method, you should test cointegration between the market value and the independent variables (ESG, EPS, SPS, GPS, CV). In case a cointegration is established, the Error Correction Term (ECM) of the long-run equation will reflect the behaviour of the short-run movements to the long-run equilibrium. The ECM will guarantee that deviations in the short run of the long-term equilibrium are corrected with time, thus the model is appropriate in describing both the short-term dynamics and long-run correlations.

Interpretation: Short-term effects: The  $\gamma_j$ ,  $\delta_j$ ,  $\mu_j$ ,  $\theta_j$ , and  $\lambda_j$  coefficients represent the immediate short-run effects of changes in ESG, EPS, SPS, GPS, and the control variables on market value. The  $\lambda$  coefficient (error correction term) measures the speed of adjustment back to the long-term equilibrium.

Long-term effects: The  $\theta_j$ ,  $\gamma_j$ ,  $\mu_j$ , and  $\lambda_j$  coefficients capture the long-term correlations between market value and the independent variables (ESG, EPS, SPS, GPS, and controls).

### **3.2.3 Steps for Estimation**

1. Check Stationarity: Test for the stationarity of each variable (MV, ESG, EPS, SPS, GPS, CV) using unit root tests (e.g., ADF test). If a variable is non-stationary, take the first difference.
2. Select Optimal Lag Lengths: Use information criteria (e.g., AIC, SBC) to choose the appropriate lag lengths for each variable in the model.
3. Test for Cointegration: Use the Bounds Testing approach to check for cointegration among the variables. If cointegration exists, proceed with estimating the ARDL model.
4. Estimate the ARDL Model: Using software (R, Stata, EViews, etc.), estimate the ARDL model, and check for the significance of the coefficients.
5. Interpret the Results: Analyze the short-term and long-term coefficients, including the error correction term (ECM) to understand the speed of adjustment and the impact of ESG scores and other variables on market value.

### **3.2.4 Heteroskedasticity**

Heteroskedasticity occurs when the spread of the regression errors varies from one observation to another, rather than remaining consistent. This undermines a fundamental assumption of the Ordinary Least Squares (OLS) technique, which requires the error terms to maintain uniform variance a property referred to as homoskedasticity. When residuals are independently and identically distributed, the variance is considered constant; otherwise, heteroskedasticity may be (De Hoyos & Sarafidis, 2006). To detect heteroskedasticity, a statistical test such as the Breusch-Pagan or White test is applied. The null hypothesis assumes constant variance (homoskedasticity). If the p-value exceeds 0.05, the null hypothesis cannot be rejected, indicating homoskedasticity. Conversely, a p-value below 0.05 suggests the presence of heteroskedasticity (Dio Darmawan, 2024).

### **3.2.5 Serial Correlation Test (Autocorrelation)**

Serial correlation, also known as autocorrelation, arises when the error terms in time-series or panel data models exhibit correlation over time. This contravenes the OLS assumption that residuals should be independent of one another, potentially resulting in inaccurate standard errors and less efficient parameter estimates.

One method to detect autocorrelation is the Durbin-Watson test or Breusch-Godfrey LM test. In this study, the Runs Test, a non-parametric test, may also be employed

to determine whether residuals are randomly distributed. If residuals are not correlated, it suggests no autocorrelation and implies a well-specified model.

### **3.2.6 Multicollinearity Test**

Multicollinearity occurs when there is a strong linear relationship among two or more predictor variables within a regression model, potentially distorting coefficient estimates and weakening the explanatory power of the model. To diagnose multicollinearity, the VIF (Variance Inflation Factor) is commonly used. A VIF value exceeding 5 (or 10) indicates significant multicollinearity among independent variables. While high correlation coefficients may hint at multicollinearity, VIF provides a more robust and reliable diagnostic tool (Dio Darmawan, 2024). In cases of severe multicollinearity, variables may be dropped or combined to stabilize the model.

### **3.2.7 Unit Root Test**

A unit root test is essential in time-series and panel data analysis to determine the stationarity of variables, which influences the choice of econometric model. Non-stationary variables can lead to spurious regression results. This study employs the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to examine the presence of unit roots. The null hypothesis assumes non-stationarity. If rejected, it suggests stationarity. The ADF test accounts for lag structure, while the PP test is robust to serial correlation and heteroskedasticity (Md.Qamruzzaman, 2018).

### **3.2.8 Panel cointegration test**

To assess long-run equilibrium correlations between variables in panel data, this study utilizes panel cointegration tests. These tests are applied after unit root tests confirm the integration order of variables. The Pedroni test is particularly used, as it accommodates heterogeneous intercepts and slope coefficients across cross-sectional units (Liu et al., 2023). Cointegration is confirmed when the F-statistic is higher the upper bound of critical values. No cointegration is implied when the F-statistic lies under the lower bound. If the value lies between the bounds, the result is inconclusive (Qamruzzaman & Wei, 2018). This test is essential to validate the long-run dynamics modeled in the ARDL framework.

### **3.2.9 Hausman Test**

The Hausman test is employed to determine the appropriate estimator between the “Mean Group (MG)” and “Pooled Mean Group (PMG)” approaches. While the PMG

assumes long-run homogeneity across units with short-run heterogeneity, the MG allows full heterogeneity in both short and long run. The test examines whether the difference in coefficients is systematic. If the p-value is significant (typically  $< 0.05$ ), the null hypothesis (PMG is consistent and efficient) is rejected, favoring the MG estimator. Otherwise, PMG is preferred for efficiency under long-run slope homogeneity assumptions (Wang et al., 2024) (Darsono et al., 2022).

### **3.2.10 Short- and Long-term Estimation**

Two methods are commonly used in panel analysis to estimate short- and long-term effects: Mean Group (MG) and Pooled Mean Group (PMG) estimators. MG allows for full heterogeneity across cross-sections in both short- and long-run coefficients, while PMG constrains long-run coefficients to be equal across groups but allows short-run dynamics and intercepts to vary (Pesaran et al., 1999). This study adopts the PMG estimator, as it balances homogeneity in long-term correlations justified by macroeconomic fundamentals and regulatory convergence in the ASEAN banking sector with flexibility in short-term adjustment paths. This approach is particularly suited for evaluating ESG score impacts across multiple countries with shared financial objectives but differing operational dynamics.

### **3.2.11 Robustness test**

Robustness tests are essential to ensure the reliability and generalizability of model results. In this study, robustness is assessed through the application of clustered standard errors, which correct for cross-sectional dependence and heterogeneity in panel data models. This enhances the validity of statistical inferences, particularly when observations within clusters (e.g., banks or countries) are correlated (Menegaki, 2019). Additionally, fixed effects estimators are employed to control for unobserved heterogeneity. These models include entity-specific dummy variables, effectively removing time-invariant characteristics and improving estimation accuracy (Vogelsang, 2012).

The study also utilizes the GMM (Generalized Method of Moments) to address endogeneity, dynamic panel bias, and simultaneity issues. GMM includes lagged values of the dependent variable as instruments and tests for serial correlation using the Arellano-Bond test, which is critical for validating the GMM estimation results (Ullah et.al., 2018). Together, these tests ensure that findings are not only statistically significant but also methodologically sound.

## CHAPTER IV RESULT AND DISCUSSION

This chapter presents the results and analysis of the correlation between ESG scores including the “*Environmental Pillar Score (ENVS)*”, “*Social Pillar Score (SPS)*”, and “*Governance Pillar Score (GPS)*” and the market value of banks in the ASEAN region. The findings aim to address the research hypotheses and questions outlined in previous chapters. The discussion begins with an overview of the descriptive statistics, which serves as the initial step in understanding the characteristics of the dataset used in this study.

### 4.1 Descriptive Statistics

The descriptive statistics summarize the characteristics of the variables used in this study across a panel dataset. The dataset covers 50 publicly listed banks across six ASEAN countries over the period 2005–2024, yielding an unbalanced panel due to variation in data availability. Most variables in the dataset have approximately 512 observations, except for ROA with 505 observations, CAR with 468 observations, and NPL with 422 observations.

Market Value (MV), the dependent variable, has a mean of 26.89 and a median of 25.93, with a standard deviation of 3.36. This suggests that while market values are relatively low for most ASEAN banks, a few banks with significantly higher valuations raise the mean above the median. The relatively low standard deviation also indicates moderate dispersion and relatively stable market values across the sample.

For the independent variables, Table 4.1 shows the following:

1. ESG Combined Score has a mean of 53.46 and a median of 53.98, with a moderate spread.
2. ENVS (Environmental Pillar Score) has a mean of 53.12 and a median of 58, with the highest standard deviation among ESG dimensions at 24.45, indicating substantial variation in environmental performance and disclosure strategies among banks in the region.
3. SPS (Social Pillar Score) has a mean of 55 and a median of 57, reflecting some concentration around the median.
4. GPS (Governance Pillar Score) follows a similar distribution pattern, with notable variation across institutions.

The fact that the means are generally lower than the medians across ESG indicators implies a left-skewed distribution, suggesting that while some banks have strong ESG practices, many others score below the regional average.

Among the control variables:

1. ROA has a mean of 1.35 and a median of 1.23, with a relatively low standard deviation, indicating consistent profitability performance across banks.
2. CAR exhibits a mean of 20.72 and a median of 17, with a high standard deviation of 21.48, suggesting that capital buffer levels vary considerably among ASEAN banks.
3. NPLs, although not detailed numerically in this section, are acknowledged to vary and will be further discussed in the regression analysis.

These descriptive statistics provide a foundational understanding of the dataset's structure and variability, which is critical for interpreting the results of the regression and econometric analyses that follow.

Table 4.1 Descriptive Statistics

| Variable                       | Mean   | Median | SD     | Max    | Min     | N   |
|--------------------------------|--------|--------|--------|--------|---------|-----|
| <i>Market Value</i>            | 26.896 | 25.933 | 3.365  | 34.704 | 21.95   | 512 |
| <i>ESG Combined score</i>      | 53.467 | 53.98  | 16.701 | 87.923 | 11.366  | 512 |
| <i>Environmental score</i>     | 53.012 | 58     | 24.45  | 96.203 | 15.247  | 512 |
| <i>Social Pillar score</i>     | 55.794 | 57.321 | 21.502 | 93.897 | 3.893   | 512 |
| <i>Governance Pillar Score</i> | 58.177 | 60.86  | 19.894 | 96.07  | 4.722   | 512 |
| <i>ROA</i>                     | 1.351  | 1.23   | 1.159  | 8.963  | -8.379  | 505 |
| <i>CAR</i>                     | 20.725 | 17.574 | 21.485 | 390.5  | 12.4    | 468 |
| <i>NPL</i>                     | 14.845 | 2.347  | 32.911 | 199.39 | 0.00016 | 422 |

## 4.2 Correlations

The correlation analysis aims to examine the strength and direction of the linear correlations between the dependent variable (market value) and the independent variables, as well as with control variables. The results, as presented in Table 4.2, show that market value (MV) has a positive and significant correlation with several key variables. Specifically, the ESG Combined Score (ESGCS) shows a correlation coefficient of 0.2111 with market value, indicating that higher overall ESG performance is moderately associated with increased bank market value. Among the ESG pillars, the Social Pillar Score (SPS) exhibits a coefficient of 0.2031, while the Governance Pillar Score (GPS) has

a correlation of 0.1408 with market value. These findings suggest that social and governance dimensions of ESG have a stronger influence on market perception compared to the environmental dimension.

In terms of financial performance indicators, return on assets (ROA) displays a relatively strong positive correlation with market value at 0.2964, followed by the capital adequacy ratio (CAR) at 0.2032. This implies that profitability and capital strength are also positively perceived by investors and contribute to higher market valuation. Conversely, non-performing loans (NPLs) are negatively correlated with market value, with a coefficient of -0.1016. This indicates that an increase in NPLs often associated with poor credit quality tends to reduce investor confidence and, subsequently, market value.

Interestingly, the environmental pillar score (ENVS) does not show a strong direct correlation with ROA or CAR, but it is more closely correlated with the social and governance pillar scores. Meanwhile, ESGCS demonstrates a weak correlation with ROA (0.0578) and a slight negative correlation with CAR (-0.0493), suggesting that its impact on financial health is more nuanced and potentially mediated by other factors. Overall, the correlation analysis provides preliminary evidence that stronger ESG performance, particularly in social and governance aspects, along with sound financial fundamentals, are associated with higher market value among ASEAN banks.

#### **4.3 Classical Assumption Tests**

Classical assumption tests, also referred to as validity tests, are conducted to evaluate whether the data and regression model fulfill the assumptions necessary for reliable statistical inference. These tests are essential to ensure that the panel regression model used to assess the correlation between ESG scores and market value is both statistically sound and robust. To confirm the accuracy of the correlations examined in this study, a series of diagnostic tests were performed, including the multicollinearity test, the Wooldridge test for autocorrelation, the Wald test for heteroskedasticity, and the unit root test for stationarity. These tests help identify and correct for potential issues that could bias the regression estimates or lead to misleading conclusions. The summary of the results is presented in Table 4.3.

Table 4.2 Correlation Matrix

|                                   | MV                            | ESGCS  | ENVS   | SPS    | GPS     | ROA    | CAR     | NPL  |
|-----------------------------------|-------------------------------|--------|--------|--------|---------|--------|---------|------|
| <b>ESG Combine score</b>          | 0.211*                        | 1.000  |        |        |         |        |         |      |
|                                   | 0.000                         |        |        |        |         |        |         |      |
| <b>Environmental Pillar Score</b> | 0.080                         | 0.769* | 1.000  |        |         |        |         |      |
|                                   | 0.069                         | 0.000  |        |        |         |        |         |      |
| <b>Social Pillar Score</b>        | 0.203*                        | 0.879* | 0.729* | 1.00   |         |        |         |      |
|                                   | 0.000                         | 0.000  | 0.000  |        |         |        |         |      |
| <b>Governance Pillar Score</b>    | 0.141*                        | 0.605* | 0.209* | 0.207* | 1.00    |        |         |      |
|                                   | 0.0014                        | 0.000  | 0.000  | 0.000  |         |        |         |      |
| <b>ROA</b>                        | 0.2964*                       | 0.058  | -0.044 | 0.035  | 0.084   | 1.00   |         |      |
|                                   | 0.000                         | 0.195  | 0.319  | 0.439  | 0.059   |        |         |      |
| <b>CAR</b>                        | 0.2032*                       | -0.049 | -0.067 | -0.035 | -0.037  | -0.037 | 1.00    |      |
|                                   | 0.000                         | 0.287  | 0.150  | 0.451  | 0.423   | 0.432  |         |      |
| <b>NPL</b>                        | -0.102*                       | -0.09  | -0.04  | -0.048 | -0.116* | -0.033 | -0.124* | 1.00 |
|                                   | 0.037                         | 0.071  | 0.425  | 0.317  | 0.018   | 0.498  | 0.013   |      |
|                                   |                               |        |        |        |         |        |         |      |
|                                   | * significant at the 5% level |        |        |        |         |        |         |      |

#### 4.3.1. Multicollinearity Test

Variance Inflation Factor (VIF) was used to test for multicollinearity. Based on the results in Table 4.3, all independent and control variables in the model exhibit VIF values under the commonly accepted threshold of 10. This indicates that there is no multicollinearity among the explanatory variables, meaning that the variables are not highly linearly correlated with each other. This ensures that the estimated regression coefficients are not inflated and that the model's estimates remain stable and interpretable. Therefore, multicollinearity does not pose a concern in this analysis, and the model retains its reliability for evaluating the effect of ESG performance on market value.

Table 4.3 Classical Assumption tests

| Variable                    | Multicolliniarity | Autocorrelation | Heteroscedasticity |
|-----------------------------|-------------------|-----------------|--------------------|
| <i>Dependent Variable</i>   | VIF Test          | Wooldridge test | Wald Test          |
| <i>Market Value</i>         |                   | 0.0000          | 0.0000             |
| <i>Independent Variable</i> |                   |                 |                    |
| <i>ESG Combined</i>         | 1.02              | 0.0000          | 0.0000             |
| <i>ENVS</i>                 | 1.01              | 0.0000          | 0.0000             |
| <i>SPS</i>                  | 1.01              | 0.0000          | 0.0000             |
| <i>GPS</i>                  | 1.03              |                 | 0.0000             |
| <i>Control Variable</i>     |                   |                 |                    |
| <i>ROA</i>                  | 1.08              | 0.0000          | 0.0000             |
| <i>CAR</i>                  | 1.09              | 0.0000          | 0.0000             |
| <i>NPL</i>                  | 1.03              | 0.0000          | 0.0000             |

#### 4.3.2. Autocorrelation and Heteroskedasticity Tests

The presence of serial correlation and non-constant variance in the residuals was measured using the Wooldridge test and the Wald test respectively to measure the presence of autocorrelation and heteroskedasticity respectively. Both tests give p-value less than 0.05, which means that the null hypotheses of no autocorrelation and homoskedasticity are rejected. These results justify the existence of autocorrelation and heteroskedasticity of the panel data model. Such classical regression violations indicate that the residuals are not distributed independently and identically implying they may result in biased standard errors. In order to overcome these problems and achieve sound statistical inference, the research employs a robust estimation method by employing Clustered Standard Errors that modify the standard errors to consider autocorrelation and heteroskedasticity in clusters.

#### 4.3.3. Unit Root Test

To determine the stationarity of the variables, the Fisher-type unit root test, based on the Augmented Dickey-Fuller (ADF) approach, was conducted. Stationarity is a key requirement in time series and panel data analysis, particularly for models such as ARDL, which assume that the variables are integrated at level  $I(0)$  or first difference  $I(1)$ , but not beyond. As shown in Table 4.4, the p-values for all variables are below 0.05, allowing us to reject the null hypothesis of non-stationarity. This indicates that all variables in the

dataset are stationary either at level or after first differencing, thereby satisfying the prerequisites for using the ARDL model in the subsequent analysis.

Table 4.4 Unit Root Test

| Variable                            | Test       | Statistic P | P-Value | Information |
|-------------------------------------|------------|-------------|---------|-------------|
| <i>“Market Value”</i>               | Fisher ADF | 503.3211    | 0.0000  | Stationary  |
| <i>“ESG Combined Score”</i>         | Fisher ADF | 197.551     | 0.0000  | Stationary  |
| <i>“Environmental Pillar Score”</i> | Fisher ADF | 393.3803    | 0.0000  | Stationary  |
| <i>“Social Pillar Score”</i>        | Fisher ADF | 337.0126    | 0.0000  | Stationary  |
| <i>“Governance Pillar Score”</i>    | Fisher ADF | 187.4874    | 0.0000  | Stationary  |
| <i>“ROA”</i>                        | Fisher ADF | 391.2652    | 0.0000  | Stationary  |
| <i>“CAR”</i>                        | Fisher ADF | 241.529     | 0.0000  | Stationary  |
| <i>“NPL”</i>                        | Fisher ADF | 433.4399    | 0.0000  | Stationary  |

#### 4.4 Regression Results

After completing the descriptive statistics, classical assumption tests, and unit root tests, the next step in this study is to estimate the panel regression model to assess the impact of the independent variables ESG Combined Score, Environmental Pillar Score (ENVS), Social Pillar Score (SPS), and Governance Pillar Score (GPS) on the dependent variable, market value. The estimation aims to distinguish both short-term and long-term effects. The Autoregressive Distributed Lag (ARDL) model was employed, utilizing the Pooled Mean Group (PMG) and Dynamic Fixed Effects (DFE) estimators. Additionally, robustness tests were conducted using the Generalized Method of Moments (GMM) to assess long-term consistency, and the Fixed Effects (FE) model to evaluate short-term effects.

##### 4.4.1. Long Term Estimation (ARDL)

The dynamic fixed effects (DFE) regression method has been used to conduct the long-term estimation. The DFE estimator is especially appropriate in large panels, in which it presumes that the long-run correlation (cointegration vector), the error correction term (ECT) and short-run parameters are homogenous across all cross-sections. The approach is useful in the estimation of long-run equilibrium correlations, but in a way that permits short-run dynamics to differ across units. Error Correction Term (ECT) is a very important

aspect in this model because it measures the rate of adjustment to the long-run equilibrium following a short-run shock. In theory, the convergence to equilibrium needs a negative and significant coefficient of ECT.

However, based on the regression results in Table 4.5, the ECT coefficient is positive and significant (0.393, p-value = 0.000), which theoretically contradicts the expectation of a stable long-term correlation. In terms of the long-run coefficients, the Environmental Pillar Score (ENVS) and Social Pillar Score (SPS) both have positive and statistically significant correlations with market value ENVS with a coefficient of 0.76%, and SPS with 0.83%. On the other hand, the ESG Combined Score and Governance Pillar Score (GPS) also show positive signs but are statistically insignificant. These findings suggest that, although there are positive associations between some ESG components and market value, there is no statistically confirmed long-term effect in this model. The implication is that ESG components, particularly environmental and social dimensions, may be aligned with value creation in the long run, but the correlation is not robust enough to infer causality under current model assumptions.

Table 4.5 DFE Regression: Estimated Error Correction Form (Long-term)

|                    | (1)                 | (2)                  | (3)                 | (4)                 |
|--------------------|---------------------|----------------------|---------------------|---------------------|
|                    | MKT                 | MKT                  | MKT                 | MKT                 |
| <i>ECT</i>         | 0.393***<br>(0.000) | 0.440***<br>(0.000)  | 0.409***<br>(0.000) | 0.304***<br>(0.000) |
| <i>ESG Combine</i> | 0.0081<br>(0.102)   |                      |                     |                     |
| <i>ROA</i>         | 0.292***<br>(0.000) | 0.246***<br>(0.000)  | 0.295***<br>(0.000) | 0.372**<br>(0.008)  |
| <i>CAR</i>         | 0.0194<br>(0.377)   | 0.019<br>(0.359)     | 0.0145<br>(0.503)   | 0.04<br>(0.204)     |
| <i>NPL</i>         | 0.000584<br>(0.863) | 0.000553<br>(0.868)  | -0.00042<br>(0.902) | 0.000841<br>(0.838) |
| <i>COVID_19</i>    | 0.289<br>(0.072)    | 0.207<br>(0.179)     | 0.258<br>(0.067)    | 0.555*<br>(0.026)   |
| <i>ENVS</i>        |                     | 0.00768**<br>(0.006) |                     |                     |

|                                  |          |
|----------------------------------|----------|
| <i>SPS</i>                       | 0.00832* |
|                                  | (0.041)  |
| <i>GPS</i>                       | 0.00102  |
|                                  | (0.796)  |
| “p-values in parentheses”        |          |
| * p<0.05, ** p<0.01, *** p<0.001 |          |

#### 4.4.2. Short Term Estimation (ARDL)

In the short-term estimation using ARDL, the results, as presented in Table 4.6, indicate that the ESG Combined Score has a negative but statistically insignificant effect on market value, with a coefficient of -0.003 and a p-value of 0.06. This suggests that any short-run fluctuations in ESG scores do not exert a meaningful influence on bank market value in ASEAN countries. Similarly, the sub-components of ESG ENVs (-0.00185, p-value = 0.156), SPS (-0.00256, p-value = 0.126), and GPS (-0.00102, p-value = 0.384) also exhibit negative and insignificant coefficients. These findings imply that ESG activities do not produce immediate financial benefits, and the market does not react significantly to short-term changes in ESG performance.

However, one control variable, Non-Performing Loans (NPL), stands out in the short-term model. The coefficient for NPL is -0.00327 and statistically significant at the 5% level (p-value = 0.034), indicating that an increase in NPLs is associated with a 3.4% decrease in market value. This finding highlights the market’s sensitivity to credit quality and underlines the critical role of asset quality in influencing investor perceptions and bank valuation. Therefore, while ESG indicators may not have a short-term financial impact, core financial health indicators such as NPLs remain key determinants of market performance in the short run.

Table 4.6 DFE Regression: Estimated Error Correction Form(Short-term)

|                    | (1)                 | (2)     | (3)     | (4)     |
|--------------------|---------------------|---------|---------|---------|
|                    | MKT                 | MKT     | MKT     | MKT     |
| <i>ESG Combine</i> | -0.00315<br>(0.063) |         |         |         |
| <i>ROA</i>         | -0.0634             | -0.0767 | -0.0664 | -0.0390 |

|                                  |                     |                      |                     |                     |
|----------------------------------|---------------------|----------------------|---------------------|---------------------|
|                                  | (0.220)             | (0.112)              | (0.154)             | (0.427)             |
| <i>CAR</i>                       | -0.0119<br>(0.148)  | -0.0112<br>(0.181)   | -0.0125<br>(0.115)  | -0.0120<br>(0.237)  |
| <i>NPL</i>                       | -0.00297<br>(0.058) | -0.00327*<br>(0.034) | -0.00262<br>(0.117) | -0.00323<br>(0.057) |
| <i>COVID_19</i>                  | 0.0243<br>(0.639)   | 0.0367<br>(0.443)    | 0.0245<br>(0.636)   | -0.0349<br>(0.573)  |
| <i>ENVS</i>                      |                     | -0.00185<br>(0.156)  |                     |                     |
| <i>SPS</i>                       |                     |                      | -0.00256<br>(0.126) |                     |
| <i>GPS</i>                       |                     |                      |                     | -0.00102<br>(0.384) |
| “p-values in parentheses”        |                     |                      |                     |                     |
| * p<0.05, ** p<0.01, *** p<0.001 |                     |                      |                     |                     |

## 4.5 Robustness Tests

To verify the reliability of the main regression results, robustness checks were conducted using alternative models. These tests were designed to address potential endogeneity, heteroskedasticity, and model specification issues. Specifically, the Generalized Method of Moments (GMM) was used to analyze long-term correlations, while the Fixed Effects (FE) model was employed to examine short-term impacts. These models were compared to the initial ARDL estimates to evaluate consistency and robustness.

### 4.5.1. General Method of Moment (GMM)

The Generalized Method of Moments (GMM) is a widely used technique for addressing endogeneity in dynamic panel data models. It allows for unbiased and consistent estimates by accounting for unobserved heterogeneity, simultaneity, and dynamic endogeneity through the inclusion of lagged dependent variables as instruments. The Arellano-Bond test was applied to assess the presence of second-order autocorrelation, and the Hansen test was used to evaluate the validity of instruments based on over-identifying

restrictions. In both tests, insignificant p-values (greater than 0.05) confirm the validity of the instruments and the absence of autocorrelation.

Table 4.7 Validity Test: GMM

| <i>Variable</i> | <b>Arellano Bond test (2)</b> | <b>Hansen Test</b> |
|-----------------|-------------------------------|--------------------|
| <i>ESG</i>      | 0.197                         | 0.094              |
| <i>ENVS</i>     | 0.281                         | 0.128              |
| <i>SPS</i>      | 0.181                         | 0.091              |
| <i>G</i>        | 0.352                         | 0.141              |
| <i>PS</i>       |                               |                    |

Based on Table 4.7, the Arellano-Bond test results show that ESG, ENVS, SPS, and GPS all have p-values above 0.05 (e.g., ESG = 0.197; GPS = 0.352), indicating no autocorrelation in the residuals. The Hansen test results also demonstrate validity, with all p-values above 0.05 (e.g., ESG = 0.09; SPS = 0.09), suggesting that the instruments used are exogenous and the model is correctly specified.

*The long-term effect is thus expressed as follows:  $\gamma / (1 - \beta)$*

where  $\gamma$  is the coefficient of the independent variable and  $\beta$  is the coefficient of the lagged dependent variable. As shown in Table 4.8, the lagged market value variable (L.MKT) has a significant coefficient ( $p = 0.000$ ), indicating persistence in market value over time.

However, the ESG variable does not exhibit a significant effect on market value, with a p-value of 0.378 and a long-run coefficient of 0.017, suggesting no meaningful long-term correlation. Similarly, the ESG sub-pillars ENVS ( $p = 0.689$ ), SPS ( $p = 0.367$ ), and GPS ( $p = 0.367$ ) have insignificant p-values and low long-run coefficients, indicating that none of these variables significantly influence market value in the long term. Among the control variables, ROA ( $p = 0.12$ ) and CAR ( $p = 0.32$ ) are also not significant, while NPL has a negative coefficient but remains statistically insignificant. Interestingly, the COVID-19 dummy is the only variable that shows a statistically significant negative effect ( $p = 0.001$ ), suggesting that the pandemic negatively impacted bank market values during the study period.

These GMM results support the conclusion that the ESG and its pillars do not have a statistically significant long-term effect on bank market value. While the coefficients are

positive, their insignificance confirms the earlier ARDL results, where the Error Correction Term (ECT) was positive and significant, indicating a lack of a valid long-run equilibrium. Therefore, the GMM test confirms the robustness of the ARDL findings regarding the long-term insignificance of ESG performance on market value.

Table 4.8 Generalized Method of Moment (GMM) Estimation

|                                                               | (1)                  | (2)                  | (3)                  | (4)                  |
|---------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|
|                                                               | MKT                  | MKT                  | MKT                  | MKT                  |
| <i>L.MKT</i>                                                  | 0.893***<br>(0.000)  | 0.860***<br>(0.000)  | 0.894***<br>(0.000)  | 0.844***<br>(0.000)  |
| <i>ESG_lag</i>                                                | 0.00186<br>(0.378)   |                      |                      |                      |
| <i>ROA_lag</i>                                                | 0.225<br>(0.124)     | 0.303<br>(0.142)     | 0.225<br>(0.114)     | 0.332<br>(0.159)     |
| <i>CARtotal_lag</i>                                           | 0.0119<br>(0.329)    | 0.0174<br>(0.306)    | 0.0118<br>(0.319)    | 0.0197<br>(0.314)    |
| <i>NPLR_lag</i>                                               | -0.000493<br>(0.482) | -0.000626<br>(0.489) | -0.000503<br>(0.474) | -0.000604<br>(0.550) |
| <i>COVID_19</i>                                               | -0.167**<br>(0.001)  | -0.175***<br>(0.001) | -0.168**<br>(0.001)  | -0.175***<br>(0.001) |
| <i>Long-run Coefficient <math>\gamma / (1 - \beta)</math></i> | 0.017                | 0.0045               | 0.014                | 0.016                |
| <i>ENVS_lag</i>                                               |                      | 0.000638<br>(0.689)  |                      |                      |
| <i>SPS_lag</i>                                                |                      |                      | 0.00155<br>(0.367)   |                      |
| <i>GPS_lag</i>                                                |                      |                      |                      | 0.00177<br>(0.378)   |
| "p-values in parentheses"                                     |                      |                      |                      |                      |
| * $p < 0.05$ , ** $p < 0.01$ , *** $p < 0.001$                |                      |                      |                      |                      |

#### 4.5.2. Fixed Effects Model

To examine short-term impacts, a Fixed Effects (FE) model was employed. Before estimation, the Hausman test was conducted to determine the appropriate model between Fixed and Random Effects. As shown in Table 4.9, the chi-square statistic of 79.64 with a

p-value of 0.0000 confirms that the FE model is more suitable due to significant differences in coefficients between the two models.

Table 4.9 Hausman test

| <i>Variable</i>                                       | <b>Coefficients</b>     |                         |                                   |                                               |
|-------------------------------------------------------|-------------------------|-------------------------|-----------------------------------|-----------------------------------------------|
|                                                       | <b>(b)</b><br><b>FE</b> | <b>(B)</b><br><b>RE</b> | <b>(b-B)</b><br><b>Difference</b> | <b>sort(diag(V_b-V_B))</b><br><b>Std. err</b> |
| <i>MKT_lag</i>                                        | 0.7254095               | 0.9997642               | 0.2743546                         | 0.0365947                                     |
| <i>ESG_lag</i>                                        | 0.0030753               | -0.0006567              | 0.003732                          | 0.0006119                                     |
| <i>ROA_lag</i>                                        | -0.01896                | 0.0170803               | -0.0360402                        | 0.0183783                                     |
| <i>NPLR_lag</i>                                       | -0.0033801              | -0.0001414              | -0.0032387                        | 0.0011752                                     |
| <i>CARtotal_lag</i>                                   | -0.0048958              | -0.00382                | -0.0010758                        | 0.0025212                                     |
| <i>COVID_19</i>                                       | -0.1660915              | -0.2045684              | 0.0384769                         | .                                             |
| Test of H0: Difference in coefficients not systematic |                         |                         |                                   |                                               |
| $\chi^2(6) = (b-B)'[(V_b-V_B)^{-1}](b-B)$             |                         |                         |                                   |                                               |
| 79.64                                                 |                         |                         |                                   |                                               |
| Prob > $\chi^2$ = 0.0000                              |                         |                         |                                   |                                               |

In Table 4.10, the FE model includes 385 observations and produces a significant overall F-statistic (Prob > F = 0.0000), confirming model validity. A high R-squared value (0.6479) suggests a good fit, and Robust Standard Errors were applied to address heteroskedasticity and autocorrelation concerns. The results indicate that the ESG variable has a positive but marginally insignificant effect ( $p = 0.061$ ), nearing the 10% significance threshold.

However, the ENVS and SPS variables show statistically significant positive effects on market value. Specifically, ENVS has a coefficient of 0.00265 ( $p = 0.03$ ), and SPS has a coefficient of 0.00236 ( $p = 0.029$ ), indicating that a one-unit increase in each pillar score improves market value by approximately 0.26% and 0.24%, respectively, in the short term. In contrast, GPS is not significant ( $p = 0.169$ ). Among control variables, NPL is significantly and negatively associated with market value (coefficient = -0.0032,  $p = 0.001$ ), suggesting that higher non-performing loans reduce market value. The COVID-19 dummy also has a significant negative effect, with coefficients ranging between -0.153 and -0.177 ( $p = 0.000$ ), confirming the short-term economic impact of the pandemic. Meanwhile, ROA and CAR are positive but not statistically significant.

Comparing these results to the ARDL short-term findings reveals inconsistencies. While the ARDL model showed negative and insignificant effects for ESG and its sub-pillars, the FE model finds positive and significant effects for ENVS and SPS. Additionally, the ARDL model indicated a positive effect of COVID-19 on market value, whereas the FE model reveals a significant negative impact. These conflicting findings suggest that the ARDL model lacks robustness in the short-term context.

In conclusion, the Fixed Effects model is more reliable for analyzing short-term correlations between ESG factors and bank market value. The results suggest that environmental and social performance positively influence market value in the short run, while governance performance does not. The FE model, therefore, supports the hypothesis that ESG activities can enhance firm value in the short term—particularly through environmental and social initiatives while also confirming the negative effect of credit risk and economic shocks.

Table 4.10 Fixed effects Model Estimation

|                       | (1)                    | (2)                    | (3)                    | (4)                    |
|-----------------------|------------------------|------------------------|------------------------|------------------------|
|                       | MKT                    | MKT                    | MKT                    | MKT                    |
| <i>MKT_lag</i>        | 0.725***<br>(0.000)    | 0.701***<br>(0.000)    | 0.726***<br>(0.000)    | 0.765***<br>(0.000)    |
| <i>ESG_lag</i>        | 0.00308<br>(0.061)     |                        |                        |                        |
| <i>ROA_lag</i>        | -0.019<br>(0.47)       | -0.014<br>(0.593)      | -0.017<br>(0.525)      | -0.028<br>(0.278)      |
| <i>CAR total_lag</i>  | -0.0049<br>(0.064)     | -0.00482<br>(0.077)    | -0.00472<br>(0.08)     | -0.00405<br>(0.253)    |
| <i>NPLR_lag</i>       | -0.00338***<br>(0.001) | -0.00325***<br>(0.001) | -0.00353***<br>(0.001) | -0.00329***<br>(0.001) |
| <i>COVID_19</i>       | -0.166***<br>(0.000)   | -0.177***<br>(0.000)   | -0.168***<br>(0.000)   | -0.153***<br>(0.000)   |
| <i>Robust.Std.Err</i> | 0.0015933              | 0.00119                | 0.00104                | 0.00107                |
| <i>ENVS_lag</i>       |                        | 0.00265*<br>(0.033)    |                        |                        |
| <i>SPS_lag</i>        |                        |                        | 0.00236*<br>(0.029)    |                        |
| <i>GPS_lag</i>        |                        |                        |                        | 0.0015<br>(0.169)      |

|                    |                     |                                  |                     |                     |
|--------------------|---------------------|----------------------------------|---------------------|---------------------|
|                    |                     |                                  |                     |                     |
| <i>_cons</i>       | 7.429***<br>(0.000) | 8.089***<br>(0.000)              | 7.453***<br>(0.000) | 6.428***<br>(0.000) |
| <i>N</i>           | 385                 | <i>"p-values in parentheses"</i> |                     |                     |
| <i>r2_w</i>        | 0.6479              | * p<0.05, ** p<0.01, *** p<0.001 |                     |                     |
| <i>r2_b</i>        | 0.9954              |                                  |                     |                     |
| <i>r2_o</i>        | 0.9926              |                                  |                     |                     |
| <i>F</i>           | 104.68              |                                  |                     |                     |
| <i>Prob &gt; F</i> | 0.0000              |                                  |                     |                     |
| <i>Sigma_u</i>     | 0.91791078          |                                  |                     |                     |
| <i>Sigma_e</i>     | 0.2135035           |                                  |                     |                     |
| <i>Rho</i>         | 0.94867527          |                                  |                     |                     |

## 4.6 Hypotheses Results Discussion

### 4.6.1. H<sub>1</sub>: ESG Score positively impacts bank market value

The results from the regression analyses using the ARDL model, along with the robustness checks via the GMM and Fixed Effects models, suggest that the ESG score has a positive impact on bank market value in the short term. This is indicated by the positive coefficient of ESG (0.00308) with a p-value of 0.061, which is statistically significant at the 10% level. However, the findings do not support a long-term impact, as evidenced by the robustness of the ARDL results, which align with the GMM model in showing that ESG performance does not significantly influence market value over the long term. Therefore, Hypothesis H1 is accepted only in the short-term context, where ESG demonstrates a positive correlation with market value.

In the short run, the influence of ESG on bank market value and performance can often be mixed or nuanced. It has been suggested that banks may initially experience increased expenditure following the adoption of environmental initiatives, due to the capital investments required. These additional costs, however, do not necessarily translate into immediate profit increases or gains in market value. For example, banks engaging in detailed environmental disclosures may encounter temporary declines in efficiency, or may see little to no improvement in short-term performance. Similarly, implementing improvements in corporate governance may not yield instantaneous financial benefits; in fact, such measures can sometimes increase internal operating costs, which may adversely affect short-term profitability. Thus, short-term financial benefits from ESG-related actions

are not guaranteed, and often depend heavily on the institutional context and geographical setting in which a bank operates (Chang et.al., 2021).

Moreover, the impact of ESG factors on firm value is not necessarily permanent or uniform across sectors. Among the three pillars of ESG, the Social (S) dimension appears to exert a more stable and persistent effect on the continuation of firm value, whereas the Environmental (E) and Governance (G) dimensions do not demonstrate consistent or statistically significant influence over the long term. It is critical to recognize that ESG initiatives, although generally viewed positively, may not always lead to sustainable value creation, especially if misaligned with firm strategy or stakeholder expectations (Y.-Y. Liu & Lee, 2025).

The review of the previous literature provides evidence in support of the idea that moderate rates of ESG engagement are most appropriate when it comes to improving firm performance. Conversely, too much or too aggressive ESG operations is subject to diminishing marginal returns, and indeed, in certain situations may even adversely impact firm efficiency and profitability. In the banking industry, environmental programs seem to have the greatest and favorable effect on the market value. This implies that precisely calibrated and controlled ESG actions especially on the front of environmental responsibility can have a favorable effect on investor perception and bank valuation. Nevertheless, excessive investments in ESG, with no consideration of strategic fit or financial ability, may result in inefficiencies in operations, and can even negate the possible benefits.

This research supports the perception that ESG engagement particularly when such is implemented with a balance and transparency can diminish information asymmetry and enhance trust between banks and external stakeholders, such as minority shareholders and bondholders. This, in its turn, leads to the growth of confidence in the market and a positive valuation effect in the short-term run (Azmi et.al., 2021). Therefore, the financial results of ESG activities in the long-term are unclear or not significant in the ASEAN banking reality, but the short-term effects are evident and strategically valuable.

#### **4.6.2. H<sub>1a</sub>: Environmental Pillar score positively impacts on Market Value**

To evaluate this hypothesis, the effect of the Environmental Pillar (ENVS) score on bank market value is assessed in both the long-term and short-term contexts. Based on the regression results from the ARDL model, which has been confirmed to be robust through the GMM estimation method, the long-run coefficient of ENVS is 0.0045, with a

corresponding p-value of 0.689. This result indicates that the environmental score does not have a statistically significant long-term impact on the market value of banks in ASEAN.

This outcome may be attributed to the substantial costs associated with implementing environmental initiatives, which often do not yield immediate or sustained returns. Many banks and financial institutions have engaged in various investment strategies aimed at reducing emissions, mitigating pollution, and transitioning towards cleaner and greener technologies. Additionally, increasing compliance with environmental regulations, which have become more stringent over time, has added further operational and compliance burdens (Yuen et.al., 2022). These factors contribute to the lack of long-term financial impact from environmental scores, especially in developing economies where the return on sustainability investment may be delayed or uncertain.

In contrast, the short-term analysis reveals a different picture. Based on the Fixed Effects model regression, the ENV5 variable exhibits a positive and statistically significant correlation with market value, with a coefficient of 0.00265 and a p-value of 0.03, which is significant at the 5% level. This result indicates that improvements in environmental performance are associated with increases in bank market value in the short run. Therefore, sub-hypothesis H1a is accepted in the short-term context, demonstrating that environmental scores positively influence bank valuation within a shorter time frame.

This short-term effect can be explained by several mechanisms. Banks with robust environmental initiatives are more likely to avoid regulatory penalties, reduce operational risks, and increase stakeholder confidence, all of which can enhance perceived firm value. Additionally, transparent environmental reporting and active climate-related disclosures act as signals of responsible governance, which reduces information asymmetry between the firm and external investors. This improved transparency builds stakeholder trust, thereby strengthening customer and investor correlations, and contributes to enhanced cash flows and lower cost of equity capital, particularly in emerging markets, where environmental concerns often resonate strongly with stakeholder priorities (Azmi et.al., 2021). Furthermore, Alghafes et.al., 2024 found that even in oil-dependent economies, such as those in parts of ASEAN and the broader Islamic finance ecosystem, there is increasing market recognition of environmental initiatives. Their research emphasizes that environmentally responsible practices are now financially valued, especially by institutional investors, which helps explain the observed short-term market response.

Complementary evidence is provided by Chang dkk., 2021 who investigated ESG performance in both developed and developing Asian economies. Their study used a sample of 60 developed and 85 developing economies in Asia. The findings revealed a

negative and significant impact of environmental performance on market value in developed countries ( $p\text{-value} < 5\%$ ), likely due to the high cost of compliance and regulatory pressures. In contrast, no statistically significant correlation was observed in developing economies, where sustainability frameworks may still be evolving and market incentives for environmental disclosures are relatively weak.

Finally, Al Amosh & Khatib, 2023 found that a strong environmental score within the ESG framework can attract investor interest, support stock performance, and mitigate adverse effects on firm value during crisis periods such as the COVID-19 pandemic. This positive perception reflects the growing investor demand for sustainable and resilient banking practices, reinforcing the idea that environmental scores can offer short-term strategic advantages, particularly in times of market uncertainty or external shocks.

In conclusion, while the Environmental Pillar score does not have a measurable long-term effect on bank market value in the ASEAN context, its short-term impact is clearly positive and statistically significant. This validates Hypothesis H1a in the short term and underlines the increasing relevance of environmental responsibility as a signal of performance and stability to both investors and stakeholders in emerging markets.

#### **4.6.3. H<sub>1b</sub>: Social Pillar Score positively impacts on Bank Market value**

To assess Hypothesis H1b, the impact of the Social Pillar Score (SPS) on bank market value is examined in both the short-term and long-term contexts. Based on the results of the Fixed Effects model used in the robustness test, as shown in Table 4.10, the SPS variable exhibits a statistically significant and positive effect on bank market value. The regression results show a coefficient of 0.00236 with a  $p\text{-value}$  of 0.029, which is significant at the 5% level. This indicates that banks with stronger social responsibility practices experience a measurable improvement in their market value in the short term. Conversely, the ARDL model, confirmed to be robust with the GMM estimation, shows that SPS does not have a statistically significant impact in the long term. The long-run coefficient is 0.014, but the associated  $p\text{-value}$  of 0.367 renders this effect insignificant. Therefore, Hypothesis H1b is accepted, with the finding that the Social Pillar Score positively influences market value in the short term, but does not have a lasting impact over time.

The short-term influence of the social variable on bank market value can be attributed to its effect on cost efficiency, stakeholder trust, and corporate reputation. According to Chang et.al., 2021, improvements in social responsibility have been consistently associated with enhanced bank reputation and customer confidence, which in turn attract new business opportunities and increase investor interest. This results in a

positive short-term market response, particularly in environments where customers and stakeholders are sensitive to social responsibility and ethical practices.

Additionally, the SPS variable's positive impact on market value is supported by its role in building stakeholder trust, improving employee morale, and demonstrating a commitment to broader societal goals. ...

According to the study by El Khoury et.al., 2023 in the MENA region, the community engagement, employee welfare programs and customer-oriented services are some of the social initiatives that are imperative to limit the operational risks and make the investment more attractive to investors. They conclude that socially responsible banks will have higher market valuations since investors are putting more emphasis on sustainability and stakeholder relations to determine the long-term viability of a firm. These findings are also supported by a wider comparative analysis. The social pillar of ESG has been proven to have a significant and statistically significant impact on the bank market value in developing countries with p-values as low as 1 percent (Chang dkk., 2021). This implies that investments in social responsibility yield positive returns in the market in the form of social and reputational challenges in the context where the institutions were not doing so well. In comparison, in developed countries, the same study established that social responsibility may result in rising cost and no revenue increment, and hence the resulting effect on market value is immaterial and even negative. To reinforce these findings, Al-Kubaisi & Abu Khalaf, 2025, in their research on GCC (Gulf Cooperation Council) countries, discovered that SPS positively and statistically significantly influence the market value, especially the short-term and medium-term. The regression analysis indicated p-value to be less than 0.01, which indicates a strong and valid correlation. According to the authors, this influence is explained by the importance of social initiatives in improving the reputation of the firm, raising transparency, and establishing trust with the stakeholders, which all lead to higher investor confidence and sustainable profitability. Such findings confirm the strategic importance of social responsibility in an economy where reputational capital and stakeholder involvement are strategic competencies.

#### **4.6.4. H<sub>1c</sub>: Governance Pillar Score positively impacts Bank Market Value**

The Governance Pillar Score (GPS) is assessed in this hypothesis to determine its impact on bank market value in both the long-term and short-term contexts. Based on the ARDL model, supported by robustness testing using the GMM estimation, the findings indicate that the Governance Pillar Score does not have a significant impact in the long term. This conclusion is drawn from the positive yet statistically insignificant long-run

coefficient of 0.016 and a p-value of 0.378, as shown in the GMM model. Furthermore, although the ARDL model shows a significant and positive Error Correction Term (ECT) with a p-value of 0.000, the positive sign of the ECT indicates that the variables do not achieve a stable long-run equilibrium, thereby supporting the conclusion that GPS has no long-term effect on market value.

In the short-term estimation, the results also indicate no significant effect of GPS on market value. In the ARDL short-run model, GPS exhibits a negative and insignificant coefficient, which contradicts the findings in the Fixed Effects (FE) model. In the FE model, GPS shows a positive but statistically insignificant effect, with a p-value of 0.169, which exceeds the 10% threshold for significance. The inconsistency across these models undermines the robustness of the short-term results. While there is a weak indication of a positive correlation, the evidence does not support a conclusive short-term effect of GPS on bank market value. Based on these findings, Hypothesis H1c is rejected, as the Governance Pillar Score does not exhibit a statistically significant correlation with market value in either the short or long term.

The ambiguous and generally insignificant impact of governance on bank market value is consistent with findings in several previous studies. For instance, (Indrasuci & Rokhim, 2023) report a statistically significant negative effect of governance on market value in the Indonesian banking sector. Their regression results indicate a negative GPS coefficient with a p-value of 0.0101, suggesting that efforts to improve governance may actually reduce bank value in emerging markets. This counterintuitive finding is often attributed to the operational complexity and cost burden introduced by the implementation of governance reforms. In markets where regulatory compliance and administrative oversight are still evolving, such reforms may hinder managerial flexibility and innovation, thereby reducing responsiveness to market dynamics.

Further evidence from (Chang et.al., 2021) reveals a similar pattern in emerging economies, where the costs associated with governance improvements often outweigh their short-term benefits. Their findings suggest that in some contexts, banks may invest in governance not for immediate financial gain, but for reputational reasons or to align with international norms, particularly in regions where ESG integration is still in its nascent stages. These altruistic motivations, while commendable, may not translate into immediate returns and can potentially suppress market value in the short run.

Interestingly, some studies also report positive and significant effects of governance in developing countries. For instance, research on the Gulf Cooperation Council (GCC) region by (Al-Kubaisi & Abu Khalaf, 2025) finds that governance

improvements such as board independence and effective oversight are positively and significantly associated with bank market value. Their results show p-values significant at the 0.01 level, suggesting a robust positive correlation. In this case, good governance is seen as a mechanism for enhancing investor trust and promoting sustainable corporate performance, particularly in financial institutions operating in volatile markets.

These mixed findings highlight the context-dependent nature of governance impacts. While governance reforms may strengthen institutional trust and attract long-term investment in some settings, they may also impose short-term costs that outweigh benefits in others. In the case of ASEAN banks, as observed in this study, governance activities appear to yield no significant improvement in market value in either time horizon. Therefore, although governance is theoretically linked to better risk management and corporate performance, the current evidence does not support a meaningful correlation between GPS and bank market value in the ASEAN region, at least within the time frame and dataset studied.

#### **4.6.5. H<sub>2</sub>: ESG Score positively impacts Bank Market Value in Long-run**

To examine the validity of Hypothesis H2, the long-run impact of ESG scores on bank market value was tested using the Autoregressive Distributed Lag (ARDL) model with the Dynamic Fixed Effects (DFE) estimator, as presented in Table 4.5. The regression was conducted using a sample of 50 publicly listed banks from six ASEAN countries Indonesia, Malaysia, Singapore, Thailand, the Philippines, and Vietnam spanning a total of 510 firm-year observations. The findings indicate that the Environmental (ENVS), Social (SPS), and Governance (GPS) Pillar Scores, as well as the aggregated ESG score, do not have a statistically significant long-run impact on bank market value.

The Error Correction Term (ECT), derived from the ARDL model, has a positive coefficient of 0.393 and a p-value of 0.000. While this result is statistically significant, the positive sign of the ECT suggests that the model fails to converge toward a long-run equilibrium, indicating that no stable long-term correlation exists between ESG variables and market value. According to theory, a negative and significant ECT coefficient is required to confirm a stable long-term cointegration between variables. Therefore, despite statistical significance, the direction of the ECT renders the long-term correlation non-robust. To confirm these findings, a robustness check was performed using the Generalized Method of Moments (GMM), as shown in Table 4.8. GMM accounts for potential endogeneity, autocorrelation, and dynamic feedback by including lagged dependent variables as instruments and computing long-run coefficients. Even after correcting for these econometric challenges, the results remain consistent with the ARDL findings: the

long-run coefficients of ESG (0.017), ENV5 (0.0045), SPS (0.014), and GPS (0.016) are all statistically insignificant, with p-values exceeding both the 5% and 10% significance thresholds. These consistent results across two robust methodologies confirm that there is no evidence of a significant long-term impact of ESG performance on bank market value in the ASEAN context. Therefore, Hypothesis H2 is rejected.

The lack of a long-run effect can be explained through several channels. First, ESG investments often entail substantial upfront costs, which may only generate financial benefits over an extended period. In many cases, the returns are intangible or delayed, which may result in a negative market response or investor skepticism in the short to medium term. According to (Pham et.al., 2025), ESG initiatives may elevate operating expenses and business risks, especially when banks face higher credit risks due to stricter lending standards imposed on ESG-noncompliant borrowers. These higher risk premiums can reduce net interest margins and ultimately erode equity returns, thereby depressing market value. Additionally, (Y. Wang & Sonenshine, 2025) warn against overinvestment in ESG, particularly in environmental initiatives, which may suffer from diminishing marginal returns. When ESG activities exceed certain thresholds, the costs may begin to outweigh the perceived benefits, especially if these investments are not closely aligned with core business performance or do not generate visible efficiency gains. In such scenarios, the long-term valuation impact of ESG initiatives may turn neutral or even negative.

In line with this, (Indrasuci & Rokhim, 2023) find that ESG performance has a significant negative effect on bank market value in East Asia, measured using the Tobin's Q ratio. Their findings emphasize the mismatch between ESG investment and financial outcomes in developing countries, where the regulatory, market, and institutional environments may not be mature enough to reward or even recognize ESG initiatives. This is echoed by (Azmi et.al., 2021), who argue that in developing markets, excessive ESG activities can destroy firm value, particularly when stakeholders become indifferent to additional ESG disclosures or when such initiatives are poorly integrated with overall business strategy.

Moreover, in markets like India, ESG disclosure and practices remain underdeveloped, and ESG-related investments tend to be treated as cost centers rather than value-creating assets. Narula et.al., 2024 report that for a sample of 45 Indian banks, ESG efforts have a negative long-term impact on market value, largely because the intangible benefits such as stakeholder satisfaction, employee loyalty, and brand equity are not yet well recognized by the market. Additionally, the absence of standardized ESG disclosure frameworks in emerging economies exacerbates this issue by making it harder for investors

to assess ESG performance, thereby weakening any positive valuation effects. Similar outcomes are observed in other developing regions. A multi-country study by Azmi et al. (2021) covering Africa, Asia, South America, and Eastern Europe finds that ESG engagement, when excessive, can lead to value destruction over the long term. This occurs when ESG investments result in higher operational costs, such as reduced wages for employees, increased consumer prices, or inefficient allocation of resources. These conditions impose opportunity costs and result in market devaluation, particularly when stakeholder enthusiasm for ESG efforts wanes or becomes saturated.

Furthermore, in the case of Brazil, (Moskovics et.al., 2024) find similar long-term drawbacks. Their study of publicly listed Brazilian firms, including financial institutions, reveals that ESG initiatives are often perceived as sunk costs. Since many Brazilian companies prioritize short-term financial efficiency, ESG is not treated as a core performance driver. Instead, it is relegated to a compliance function, resulting in minimal or negative influence on long-term market valuation.

One important external factor that further supports the rejection of H2 is the role of macroeconomic shocks, particularly the COVID-19 pandemic. According to Table 4.8, the COVID-19 dummy variable had a significant negative effect on bank market value, with a p-value of 0.001 and a coefficient of -0.167. This suggests that an increase of one unit in the COVID-19 shock leads to a 16.7% decrease in bank market value. This result is consistent with the findings of (Yuen et.al., 2022), who explain that the pandemic disrupted economic activity, reduced profitability, and elevated default risk in the banking sector. Such conditions weaken investor confidence and amplify the difficulty of justifying long-term ESG investments that do not provide immediate financial benefits.

In summary, the absence of a statistically significant long-term correlation between ESG scores and bank market value in ASEAN, even after applying robust econometric techniques such as ARDL and GMM, provides compelling evidence to reject Hypothesis H2. These findings reflect the broader challenges faced by ESG integration in developing markets, including high implementation costs, weak regulatory support, limited investor awareness, and underdeveloped disclosure standards. Without a supportive ecosystem, ESG efforts, although well-intentioned, may not translate into long-term financial gains or market value enhancement.

#### **4.6.6. H<sub>3</sub>: ESG Score positively impacts Bank Market Value in Short-run**

To assess the short-run correlation between ESG scores and bank market value, the ARDL model results presented in Table 4.6 indicate that the ESG coefficient is negative and statistically insignificant, suggesting that no short-term correlation exists under this

model specification. Given these unexpected findings, a robustness test was conducted using a fixed effects (FE) panel regression model to verify the reliability of the ARDL results. The fixed effects model was selected over the random effects (RE) alternative following the Hausman test results in Table 4.9, which produced a chi-square value of 79.64 with a p-value of 0.0000, indicating that the fixed effects model is statistically more appropriate due to the presence of correlation between the regressors and the unit-specific effects.

The fixed effect model regression revealed a positive and statistically significant correlation between ESG scores and market value in the short term. The coefficient of ESG was 0.00308, with a p-value of 0.061, making it significant at the 10% level. This implies that a one-unit increase in ESG score can lead to an approximate 0.061-unit increase in bank market value, indicating a 6.1% positive change in the short term. As a result, the fixed effects model contradicts the ARDL findings, suggesting that the ARDL model lacks robustness in this context. Therefore, based on the statistically significant and economically meaningful results from the fixed effect robustness test, Hypothesis H3 is accepted, confirming that ESG has a positive short-term impact on bank market value.

Empirical findings from prior studies further substantiate this conclusion. For instance, (Aras & Hacıoglu Kazak, 2022b) highlight that ESG performance significantly enhances the market value of banks in the OECD region, primarily due to improved reputational capital, reduced risk exposure, and alignment with investor preferences for sustainable investments. Their study emphasizes that focusing on financially material ESG factors enables banks to better manage risks associated with environmental and social issues, improve operational efficiency, and minimize default risk each of which contributes to elevated investor confidence and enhanced corporate valuation. Similarly, research by (Alghafes et.al., 2024) on 29 banks in the GCC region underscores the importance of ESG in shaping stakeholder perceptions. ESG performance enhances corporate reputation, fosters trust among stakeholders, and mitigates operational risk factors that collectively contribute to elevated market valuations, often reflected in increased Tobin's Q ratios. Investors view strong ESG practices as indicative of sound risk governance and strategic foresight, prompting favorable investment behavior and market support.

This view is further supported by the panel GMM regression analysis conducted by (Al-Kubaisi & Abu Khalaf, 2025) in GCC countries (Qatar, UAE, Saudi Arabia, Bahrain, Kuwait, and Oman), where they found a statistically significant and strongly positive correlation between ESG scores and market value in the short term. Their findings revealed significance at the 0.01 level (1%), underscoring the robustness of ESG's

influence on short-term market valuation. The study concludes that banks with superior ESG practices are better positioned to enhance investor trust and optimize risk mitigation in the near term, which, in turn, positively affects their market valuation. Further supporting evidence is provided by (Shabir et.al., 2024), who studied 174 banks across 20 developing countries categorized under the MSCI emerging market index between 2005 and 2018. Their results demonstrate a significant and positive correlation between ESG and market value, with an ESG coefficient of 0.437, statistically significant at the 1% level, using Tobin's Q as the proxy for market value. They argue that ESG initiatives particularly those related to environmental sustainability and governance structures are highly valued by stakeholders for their role in improving transparency, reinforcing long-term strategic thinking, and demonstrating institutional resilience. This leads to improved investor perception and stronger financial performance in the short run.

The analysis also acknowledges the role of macroeconomic shocks, such as the COVID-19 pandemic, in moderating the ESG market value correlation. Based on Table 4.10 from the fixed effect model, COVID-19 had a statistically significant negative effect on bank market value, with a coefficient of -0.166 and a p-value  $< 0.01$ . This suggests that the pandemic led to a 16.6% decline in market value across the sample. However, during this turbulent period, ESG performance appeared to mitigate some of the negative impacts, as ESG, ENVS, and SPS remained positively associated with market value ESG being significant at the 10% level and ENVS and SPS at the 5% level. This finding aligns with the work of (Al Amosh & Khatib, 2023), who found that banks with higher ESG performance were more resilient during crises such as the COVID-19 pandemic. ESG engagement helped maintain investor trust and stabilize stock returns during volatile periods. It also demonstrated banks' commitment to sustainable lending practices and low-carbon transitions. (Yuen dkk., 2022) further support this by arguing that banks with higher ESG scores were better able to maintain credit quality, foster stronger client correlations, and support sustainability-linked projects throughout the crisis, which contributed to market confidence and higher valuation despite broader economic disruptions.

## **CHAPTER V CONCLUSION**

### **5.1 Conclusion**

This study explored how ESG scores influence the market value of banks in the ASEAN region. To answer the first research question how does the current implementation of ESG scores impact the market value of banks in ASEAN? this research examined the correlation between Environmental, Social, and Governance (ESG) scores (both composite and individual pillars) and bank performance, specifically in terms of market value, within the ASEAN region. The analysis is based on panel data from Refinitiv covering six ASEAN countries Indonesia, Malaysia, Singapore, Thailand, the Philippines, and Vietnam comprising 512 observations across 50 banks from 2005 to 2024. The primary dependent variable was Bank Market Value, while the main independent variables included the ESG Combined Score (ESGCS), Environmental Pillar Score (ENVS), Social Pillar Score (SPS), and Governance Pillar Score (GPS), alongside control variables such as Return on Assets (ROA) and Capital Adequacy Ratio (CAR).

The results reveal that ESG performance has no significant impact on bank market value in the long run. The Dynamic Fixed Effect (DFE) model shows that ESG and its individual pillars do not have statistically significant coefficients. Although the Error Correction Term (ECT) is significant ( $p = 0.000$ ) with a coefficient of 0.393, its positive sign contradicts the theoretical expectation that a negative and significant ECT indicates a valid long-term relationship. Robustness checks using the Generalized Method of Moments (GMM) also confirm that ESG, ENVS, SPS, and GPS have no statistically significant long-term influence (all  $p$ -values  $> 10\%$ ). This means that, overall, ESG engagement does not appear to drive market value for ASEAN banks when viewed over a longer horizon.

The analysis further shows that during the COVID-19 pandemic, bank market values were negatively impacted, with a coefficient of -0.167 ( $p = 0.001$ ). ESG scores did not show a significant mitigating effect during this crisis, indicating that ESG performance alone could not shield banks from market value losses in periods of economic turmoil. The pandemic shifted investor priorities toward financial fundamentals such as profitability and capital strength. This was evident from the strong positive and significant effects of ROA and CAR on market value, while the significant negative correlation between Non-Performing Loans (NPL) and market value highlighted credit risk as a major determinant. These patterns suggest that stricter ESG-based lending criteria if they reduce the eligible borrower pool could inadvertently increase credit risk and reduce bank profitability, especially when lending targets ESG-aligned but higher-risk borrowers.

These findings align with broader trends observed in developing countries, where several structural and contextual challenges reduce the effectiveness of ESG initiatives. High costs of ESG adoption, limited institutional capacity, and weak regulatory enforcement across ASEAN nations hinder the realization of long-term ESG benefits. Environmental initiatives often require significant capital investment in areas such as emissions reduction and pollution control, which offer low short-term financial returns. Similarly, social initiatives increase operating costs and demand substantial human resources, which can reduce bank profitability (Pham et.al., 2025). Moreover, while ESG is often considered a long-term value enhancer, investor behavior in ASEAN markets remains largely driven by short-term profit motives. This mismatch between sustainability objectives and market expectations slows the financial impact of ESG activities (Chang et.al., 2021).

To answer the second research question what are the long-term and short-term impacts of ESG scores on the market value of banks in ASEAN? the results show a clear distinction. In the short term, ESG performance has a positive and statistically significant impact. The ARDL and fixed effects models reveal that a one-unit increase in ESG score is associated with an estimated 6.1% rise in market value (coefficient = 0.00308,  $p = 0.061$ ). This short-term effect appears to be driven by greater investor and stakeholder confidence in banks' ESG activities, particularly in governance and environmental aspects. These results suggest that the market rewards ESG efforts in the short run because they signal improved risk management, transparency, and sustainability (Shabir et.al., 2024).

However, the study also warns of overinvestment in ESG, which can reduce its positive financial effects. Evidence from ASEAN, GCC, and MENA countries shows that allocating excessive financial and human resources to ESG efforts beyond optimal thresholds may lead to diminishing returns. Overinvestment can reduce profitability and deter investors, especially in developing financial markets where capital efficiency is a priority. Do et al. (2024) note that investors in high-margin banks may perceive heavy ESG spending as a threat to earnings growth, thereby weakening market valuations.

The COVID-19 analysis further highlights an interesting nuance in the short-term dynamics. While the pandemic had a significant negative impact on bank market value (coefficient = -0.166,  $p = 0.000$ ), this effect was partially mitigated in banks with strong ESG performance. In the fixed effects model, ESG, ENV, and SPS variables were positive and significant at the 5% level, suggesting that ESG-oriented banks were better positioned to preserve their market value during the crisis. This supports the findings of Al Amosh and Khatib (2023), who argue that strong ESG performance enhances reputational capital

and investor trust in uncertain times. Similarly, Yuen et al. (2022) emphasize that banks aligned with ESG principles maintained better credit quality, supported low-carbon transition projects, and built resilience during turbulent market conditions.

## **5.2 Policy Recommendations**

The results of this paper present valuable information on the relationship between the Environmental, Social, and Governance (ESG) performance and market value of banks in the six ASEAN countries. The findings of the region have practical implications on the policymakers, regulators, and banking institutions as the region undertakes further commitments to sustainable finance. In this section, a list of recommendations is provided to facilitate the better integration of ESG in the banking industry, increase transparency, and eventually lead to long-term financial and environmental sustainability.

- a. **Enhancing ESG Awareness and Regulatory Visibility:** One of the most important policy implications of governance and securities regulators in the developing nations like those in the ASEAN is the increased need to raise awareness of ESG and align ESG principles with the current corporate governance systems. As a recommendation, central banks and stock market regulators in every ASEAN member country should introduce compulsory sustainability reporting policies so that the financial and non-financial information could be precise, of high quality, and reliable to the stakeholders. Moreover, ESG should be systematically combined with banks risk management and financial performance indicators, such as profitability rates, Capital Adequacy Ratio (CAR), and credit risks, which are Non-Performing Loans (NPL). The ASEAN banks ought to implement customized approaches to financial and human resource allocation to the three ESG pillars and ensure that their actions are in line with the long-term risk management and financial health goals. Corporate ESG policies should not be driven solely by compliance, but also by the pursuit of value creation. ESG strategies must be reformulated so they contribute directly to enhancing market value and bank reputation, while improving operational efficiency.
- b. **Improving ESG Disclosure Standards:** For standard setters and financial institutions, there is a critical need to advance ESG disclosure by adopting materiality-based, climate-related financial reporting practices that are aligned with global frameworks such as the IFRS Sustainability Disclosure Standards and the Task Force on Climate-related Financial Disclosures (TCFD). Reporting should be harmonized across ASEAN countries to enhance consistency, comparability, and accountability. ESG reporting frameworks must also evolve to include risk management components that address crisis scenarios, such as pandemics. Moreover, it is vital for firms to establish internal

policies that integrate ESG metrics into management performance evaluations linking not only to profitability, but also to the "triple bottom line" approach of profit, people, and planet. Regulatory and corporate policies should encourage transparent communication of corporate governance structures (e.g., independent board committees), which can serve as strong market signals, enhancing investor trust and ESG credibility.

- c. **Strengthening ESG Performance Monitoring Mechanisms:** Regulators, policymakers, and bank management must work collaboratively to upgrade the ESG performance monitoring frameworks within the banking sector. This includes integrating sector-specific ESG benchmarks, creating visibility incentives for ESG leaders, tracking ESG-related financial performance, and establishing uniform sector-based ESG reporting standards and ethical guidelines. Robust monitoring will help ensure that ESG performance is not only tracked effectively but also strategically aligned with long-term market value objectives and sector-wide sustainability goals.
- d. **Fostering a Sustainable Post-Pandemic Recovery:** Financial institutions, central banks, and government stakeholders should promote sustainable recovery by aligning post-pandemic recovery strategies with ESG principles. Policy instruments such as green bonds, social bonds, and subsidies should be expanded to reward banks that maintain or strengthen their ESG commitments during times of crisis. Recovery strategies must embed ESG resilience into the financial system by incentivizing sustainability-linked lending and by offering financing tools that support long-term environmental and social outcomes alongside economic stabilization.
- e. **Investor-Led ESG Advocacy and Engagement:** Investors play a crucial role in shaping ESG performance. They are encouraged to adopt and maintain a long-term perspective, while actively promoting the integration of ESG metrics with financial performance particularly focusing on credit risk indicators such as the NPL ratio. Rising default rates can negatively influence market ratings, which highlights the importance of balanced ESG investment strategies. Investors should continue to advocate for enhanced ESG transparency and push for stronger links between ESG strategies and risk-adjusted financial outcomes. Doing so not only enhances resilience but also contributes to sustained market value creation. By encouraging banks to embed ESG in core risk management practices, investors can help ensure that ESG initiatives translate into measurable, long-term returns and strategic advantage.

### **5.3 Limitations**

This study is subject to several limitations that should be acknowledged. First, the analysis is constrained by the availability and consistency of ESG data across countries in the ASEAN region. Not all banks in each country report ESG scores comprehensively, which may have influenced the representativeness of the sample and the robustness of the findings.

Second, the choice of econometric models used in this study namely the ARDL model, Dynamic Fixed Effects (DFE), and Generalized Method of Moments (GMM) was influenced by both data structure and the study's objective to assess both long-run and short-run dynamics. As a result, model selection was carefully limited to those considered valid and efficient within the context of data adequacy. This may have excluded other advanced or non-linear model variations that could provide additional insight, especially for complex ESG-market value correlations.

Lastly, this research primarily focuses on banks in developing ASEAN countries. Future studies are encouraged to use this study as a reference point for comparative analysis both between developed and developing countries within ASEAN, and across developing regions such as Europe, Latin America, and Africa. Such comparative frameworks could yield deeper insights and contribute to a more generalizable understanding of ESG performance and its financial implications. Moreover, future research could explore more granular ESG metrics, longer timeframes, or incorporate qualitative dimensions to enrich the findings.

## BIBLIOGRAPHY

- Acar, E. (2024). ESG Integration into Financial Markets: A Comprehensive Exploration of Concepts and Implementation. *Çağ Üniversitesi Sosyal Bilimler Dergisi*, 20(2), 133–147.
- Al Amosh, H., & Khatib, S. F. A. (2023). COVID-19 impact, financial and ESG performance: Evidence from G 20 countries. *Business Strategy & Development*, 6(3), 310–321. <https://doi.org/10.1002/bsd2.240>
- Alghafes, R., Karim, S., Aliani, K., Qureishi, N., & Alkayed, L. (2024). Influence of key ESG factors on Islamic banks' financial performance: Evidence from GCC countries. *International Review of Economics & Finance*, 96, 103629. <https://doi.org/10.1016/j.iref.2024.103629>
- Alharbi, F. (2024). The Impact of ESG Reforms on Economic Growth in GCC Countries: The Role of Financial Development. *Sustainability*, 16(24), 11067. <https://doi.org/10.3390/su162411067>
- Al-Kubaisi, M. K., & Abu Khalaf, B. (2025). Climate Governance, ESG Reporting, and the Firm Performance: Does It Matter More for Europe or the GCC? *Sustainability*, 17(9), 3761. <https://doi.org/10.3390/su17093761>
- Aras, G., & Hacıoglu Kazak, E. (2022a). Enhancing Firm Value through the Lens of ESG Materiality: Evidence from the Banking Sector in OECD Countries. *Sustainability*, 14(22), 15302. <https://doi.org/10.3390/su142215302>
- Aras, G., & Hacıoglu Kazak, E. (2022b). Enhancing Firm Value through the Lens of ESG Materiality: Evidence from the Banking Sector in OECD Countries. *Sustainability*, 14(22), 15302. <https://doi.org/10.3390/su142215302>
- ASEAN Secretariat. (2023). *Investing in ASEAN. Hongkong, Shanghai: Asosiation of Southeast Asian Nation*. <https://asean.org/wp-content/uploads/2022/12/investment-report-2023.pdf>
- Aydoğmuş, M., Gülay, G., & Ergun, K. (2022). Impact of ESG performance on firm value and profitability. *Borsa Istanbul Review*, 22, S119–S127. <https://doi.org/10.1016/j.bir.2022.11.006>
- Azmi, W., Hassan, M. K., Houston, R., & Karim, M. S. (2021). ESG activities and banking performance: International evidence from emerging economies. *Journal of International Financial Markets, Institutions and Money*, 70, 101277. <https://doi.org/10.1016/j.intfin.2020.101277>
- Battiston, S., Mandel, A., Monasterolo, I., Schütze, F., & Visentin, G. (2017). A climate stress-test of the financial system. *Nature Climate Change*, 7(4), 283–288. <https://doi.org/10.1038/nclimate3255>
- Bayrakdaroglu, A., Ersoy, E., & Citak, L. (2012). Is There a Correlation Between Corporate Governance and Value-based Financial Performance Measures? A Study of Turkey as an Emerging Market. *Asia-Pacific Journal of Financial Studies*, 41(2), 224–239. <https://doi.org/10.1111/j.2041-6156.2012.01071.x>
- Becchetti, L., Bobbio, E., Prizia, F., & Semplici, L. (2022). Going Deeper into the S of ESG: A Relational Approach to the Definition of Social Responsibility. *Sustainability*, 14(15), 9668. <https://doi.org/10.3390/su14159668>
- Billio, M., Costola, M., Hristova, I., Latino, C., & Pelizzon, L. (2021). Inside the ESG ratings: (Dis)agreement and performance. *Corporate Social Responsibility and Environmental Management*, 28(5), 1426–1445. <https://doi.org/10.1002/csr.2177>
- Bonacorsi, L., Cerasi, V., Galfrascoli, P., & Manera, M. (2024). ESG Factors and Firms' Credit Risk. *Journal of Climate Finance*, 6, 100032. <https://doi.org/10.1016/j.jclimf.2024.100032>

- Breitung, J. (2000). The local power of some unit root tests for panel data. Dalam *Advances in Econometrics* (Vol. 15, hlm. 161–177). Emerald (MCB UP ). [https://doi.org/10.1016/S0731-9053\(00\)15006-6](https://doi.org/10.1016/S0731-9053(00)15006-6)
- Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal*, 30(1), 98–115. <https://doi.org/10.1108/MEQ-12-2017-0149>
- Cantele, S., Landi, S., & Vernizzi, S. (2024). Measuring corporate sustainability in its multidimensionality: A formative approach to integrate ESG and triple bottom line approaches. *Business Strategy and the Environment*, 33(7), 7383–7408. <https://doi.org/10.1002/bse.3872>
- Carnini Pulino, S., Ciaburri, M., Magnanelli, B. S., & Nasta, L. (2022). Does ESG Disclosure Influence Firm Performance? *Sustainability*, 14(13), 7595. <https://doi.org/10.3390/su14137595>
- Chang, H.-Y., Liang, L.-W., & Liu, Y.-L. (2021). Using Environmental, Social, Governance (ESG) and Financial Indicators to Measure Bank Cost Efficiency in Asia. *Sustainability*, 13(20), 11139. <https://doi.org/10.3390/su132011139>
- Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, 345, 118829. <https://doi.org/10.1016/j.jenvman.2023.118829>
- Clément, A., Robinot, É., & Trespeuch, L. (2022). Improving ESG Scores with Sustainability Concepts. *Sustainability*, 14(20), 13154. <https://doi.org/10.3390/su142013154>
- Darsono, S. N. A. C., Wong, W.-K., Nguyen, T. T. H., & Wardani, D. T. K. (2022). The Economic Policy Uncertainty and Its Effect on Sustainable Investment: A Panel ARDL Approach. *Journal of Risk and Financial Management*, 15(6), 254. <https://doi.org/10.3390/jrfm15060254>
- De Hoyos, R. E., & Sarafidis, V. (2006). Testing for Cross-Sectional Dependence in Panel-Data Models. *The Stata Journal: Promoting Communications on Statistics and Stata*, 6(4), 482–496. <https://doi.org/10.1177/1536867X0600600403>
- Di Martino, G., Miglietta, F., & Potì, V. (2024). The impact of ESG scores on the value relevance of fair value hierarchy of financial instruments: Evidence from European Banks. *Research in International Business and Finance*, 71, 102451. <https://doi.org/10.1016/j.ribaf.2024.102451>
- Di Tommaso, C., & Thornton, J. (2020). Do ESG scores effect bank risk taking and value? Evidence from European banks. *Corporate Social Responsibility and Environmental Management*, 27(5), 2286–2298. <https://doi.org/10.1002/csr.1964>
- Dio Darmawan. (2024). *The impact of ESG implementation on financial performance: A case study of Indonesia stock market* [Tesis, Universitas Islam Internasional Indonesia]. <https://repository.uiii.ac.id/items/2dd737d1-e00f-44ac-ab0a-a74d9e5ac620>
- Do, H. L., Ho, H. H., Mai, T. C., Nguyen, T. N., & Nguyen, T. S. (2024). Does ESG really matter to the bank's stability in ASEAN countries? *Cogent Economics & Finance*, 12(1), 2420218. <https://doi.org/10.1080/23322039.2024.2420218>
- Dsouza, S., K., K., Kayani, U., Nawaz, F., & Hasan, F. (2025). Sustainable investing: ESG effectiveness and market value in OECD regions. *Cogent Economics & Finance*, 13(1), 2445147. <https://doi.org/10.1080/23322039.2024.2445147>
- El Khoury, R., Nasrallah, N., & Alareeni, B. (2023). ESG and financial performance of banks in the MENAT region: Concavity–convexity patterns. *Journal of Sustainable Finance & Investment*, 13(1), 406–430. <https://doi.org/10.1080/20430795.2021.1929807>

- Erhart, S. (2022). Take it with a pinch of salt—ESG rating of stocks and stock indices. *International Review of Financial Analysis*, 83, 102308. <https://doi.org/10.1016/j.irfa.2022.102308>
- Ersoy, E., Swiecka, B., Grima, S., Özen, E., & Romanova, I. (2022). The Impact of ESG Scores on Bank Market Value? Evidence from the U.S. Banking Industry. *Sustainability*, 14(15), 9527. <https://doi.org/10.3390/su14159527>
- Esteban-Sanchez, P., De La Cuesta-Gonzalez, M., & Paredes-Gazquez, J. D. (2017). Corporate social performance and its relation with corporate financial performance: International evidence in the banking industry. *Journal of Cleaner Production*, 162, 1102–1110. <https://doi.org/10.1016/j.jclepro.2017.06.127>
- Freeman, R. E. E., & McVea, J. (2001). A Stakeholder Approach to Strategic Management. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.263511>
- Fu, T., & Li, J. (2023). An empirical analysis of the impact of ESG on financial performance: The moderating role of digital transformation. *Frontiers in Environmental Science*, 11, 1256052. <https://doi.org/10.3389/fenvs.2023.1256052>
- Galletta, S., Goodell, J. W., Mazzù, S., & Paltrinieri, A. (2023). Bank reputation and operational risk: The impact of ESG. *Finance Research Letters*, 51, 103494. <https://doi.org/10.1016/j.frl.2022.103494>
- Gawęda, A. (2022). ESG Rating and Market Valuation of the Firm: Sector Approach. *European Journal of Sustainable Development*, 11(4), 91. <https://doi.org/10.14207/ejsd.2022.v11n4p91>
- Ghazali, N. S., Mohd Daud, S. N., & Ismail, N. H. (2023). THE IMPACT OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) ON THE ECONOMIC GROWTH OF ASEAN-5 COUNTRIES. *International Journal of Research -GRANTHAALAYAH*, 11(6). <https://doi.org/10.29121/granthaalayah.v11.i6.2023.5194>
- González-Pozo, R., Arenas-Parra, M., Quiroga-García, R., & Bilbao-Terol, A. (2025). A proposal for refining the ESG methodology used by rating agencies. *International Transactions in Operational Research*, 32(4), 2003–2033. <https://doi.org/10.1111/itor.13550>
- Harjoto, M., & Laksmana, I. (2018). The Impact of Corporate Social Responsibility on Risk Taking and Firm Value. *Journal of Business Ethics*, 151(2), 353–373. <https://doi.org/10.1007/s10551-016-3202-y>
- Hu, A., Yuan, X., Fan, S., & Wang, S. (2023). The Impact and Mechanism of Corporate ESG Construction on the Efficiency of Regional Green Economy: An Empirical Analysis Based on Signal Transmission Theory and Stakeholder Theory. *Sustainability*, 15(17), 13236. <https://doi.org/10.3390/su151713236>
- Huang, C.-J., Ke, W.-C., Chiang, R. P.-Y., & Jhong, Y.-C. (2023). Which of environmental, social, and governance pillars can improve merger and acquisition performance? *Journal of Cleaner Production*, 398, 136475. <https://doi.org/10.1016/j.jclepro.2023.136475>
- Indrasuci, A. W., & Rokhim, R. (2023). Exploring The Effects of Environmental, Social and Governance (ESG) on Banking Performance: A Case Study of Far East Asia. *Indonesian Journal of Economics and Management*, 3(3), 522–534. <https://doi.org/10.35313/ijem.v3i3.4915>
- Iqbal, S., & Nosheen, S. (2023). Moderating impact of non-performing loans on the correlation between sustainable development goals and the financial performance of banks. *Future Business Journal*, 9(1), 46. <https://doi.org/10.1186/s43093-023-00224-1>
- Kartal, M. T., Taşkın, D., Shahbaz, M., Kılıç Depren, S., & Korkut Pata, U. (2024). Effects of Environment, Social, and Governance (ESG) Disclosures on ESG Scores: Investigating the Role of Corporate Governance for Publicly Traded Turkish

- Companies. *Journal of Environmental Management*, 368, 122205. <https://doi.org/10.1016/j.jenvman.2024.122205>
- Khalil, M. A., Khalil, R., & Khalil, M. K. (2024). Environmental, social and governance (ESG) - augmented investments in innovation and firms' value: A fixed-effects panel regression of Asian economies. *China Finance Review International*, 14(1), 76–102. <https://doi.org/10.1108/CFRI-05-2022-0067>
- Kurniawan, K., & Kim, S. S. (t.t.). Environmental, Social, and Governance (ESG) Performance on the Market Value of Banks in ASEAN. *Enrichment: Journal of Management*, 13(5), 2960–2969. <https://doi.org/10.35335/enrichment.v13i5.1711>
- Liu, H., Wong, W.-K., The Cong, P., Nassani, A. A., Haffar, M., & Abu-Rumman, A. (2023). Linkage among Urbanization, energy Consumption, economic growth and carbon Emissions. Panel data analysis for China using ARDL model. *Fuel*, 332, 126122. <https://doi.org/10.1016/j.fuel.2022.126122>
- Liu, Y.-Y., & Lee, P.-S. (2025). The Effect of Environmental, Social, and Governance (ESG) on the Persistence of Firm Value: Evidence from Survival Analysis. *Accounting and Auditing*, 1(1), 4. <https://doi.org/10.3390/accountaudit1010004>
- LSEG. (2024). *Environmental, Social, Governance Score*. [https://www.lseg.com/content/dam/data-analytics/en\\_us/documents/methodology/lseg-esg-scores-methodology.pdf](https://www.lseg.com/content/dam/data-analytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf)
- Maimone, L., et. al. (2023). *ESG Trends in 2023*. PWC. [https://www.pwc.com/kz/en/publications/new\\_publication\\_assets/esg-trends-in-2023-eng.pdf](https://www.pwc.com/kz/en/publications/new_publication_assets/esg-trends-in-2023-eng.pdf)
- Menegaki, A. N. (2019). The ARDL Method in the Energy-Growth Nexus Field; Best Implementation Strategies. *Economies*, 7(4), 105. <https://doi.org/10.3390/economies7040105>
- Miralles-Quirós, M. M., Miralles-Quirós, J. L., & Redondo Hernández, J. (2019). ESG Performance and Shareholder Value Creation in the Banking Industry: International Differences. *Sustainability*, 11(5), 1404. <https://doi.org/10.3390/su11051404>
- Moskovics, P., Wanke, P., Tan, Y., & Gerged, A. M. (2024). Market structure, ESG performance, and corporate efficiency: Insights from Brazilian publicly traded companies. *Business Strategy and the Environment*, 33(2), 241–262. <https://doi.org/10.1002/bse.3492>
- Narula, R., Rao, P., Kumar, S., & Matta, R. (2024). ESG scores and firm performance-evidence from emerging market. *International Review of Economics & Finance*, 89, 1170–1184. <https://doi.org/10.1016/j.iref.2023.08.024>
- Oliver Yébenes, M. (2024). Climate change, ESG criteria and recent regulation: Challenges and opportunities. *Eurasian Economic Review*, 14(1), 87–120. <https://doi.org/10.1007/s40822-023-00251-x>
- O’neill, A. (2025). *From Gross domestic product (GDP) of the ASEAN countries from 2019 to 2029*. Statista. <https://www.statista.com/statistics/796245/gdp-of-the-asean-countries/>
- Pasupuleti, A., Ayyagari, L. R., & Akuthota, S. R. (2024). Assessing the impact of ESG scores on market performance in polluting companies: A post-COVID-19 analysis. *Discover Sustainability*, 5(1), 126. <https://doi.org/10.1007/s43621-024-00338-8>
- Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of the American Statistical Association*, 94(446), 621–634. <https://doi.org/10.1080/01621459.1999.10474156>
- Pham, H. M., Vuong, N. L., Tran, D. V., Ngo, M. T. H., & Le, T. T. (2025). Does environmental, social, and governance disclosure affect financial performance? An empirical study of Southeast and East Asia commercial banks. *Asia-Pacific Journal of Regional Science*, 9(1), 1–26. <https://doi.org/10.1007/s41685-024-00361-7>

- Possebon, E. A. G., Cippiciani, F. A., Savoia, J. R. F., & De Mariz, F. (2024). ESG Scores and Performance in Brazilian Public Companies. *Sustainability*, 16(13), 5650. <https://doi.org/10.3390/su16135650>
- Qamruzzaman, Md., & Wei, J. (2018). Financial Innovation, Stock Market Development, and Economic Growth: An Application of ARDL Model. *International Journal of Financial Studies*, 6(3), 69. <https://doi.org/10.3390/ijfs6030069>
- Qi, W., Huang, Z., Dinçer, H., Korsakienė, R., & Yüksel, S. (2020). Corporate Governance-Based Strategic Approach to Sustainability in Energy Industry of Emerging Economies with a Novel Interval-Valued Intuitionistic Fuzzy Hybrid Decision Making Model. *Sustainability*, 12(8), 3307. <https://doi.org/10.3390/su12083307>
- Quadri, F. U. (2019). A Re-Examination of the Correlation between Foreign Flows and Economic Growth in LLDCs: Dynamic Fixed Effects (DFE). *Asian Journal of Economics and Empirical Research*, 6(2), 169–179. <https://doi.org/10.20448/journal.501.2019.62.169.179>
- Rau, P. R., & Yu, T. (2024). A survey on ESG: Investors, institutions and firms. *China Finance Review International*, 14(1), 3–33. <https://doi.org/10.1108/CFRI-12-2022-0260>
- Raza, A., Alavi, A. B., & Asif, L. (2024). Sustainability and financial performance in the banking industry of the United Arab Emirates. *Discover Sustainability*, 5(1), 223. <https://doi.org/10.1007/s43621-024-00414-z>
- Roodman, D. (2009). How to do Xtabond2: An Introduction to Difference and System GMM in Stata. *The Stata Journal: Promoting Communications on Statistics and Stata*, 9(1), 86–136. <https://doi.org/10.1177/1536867X0900900106>
- Sarkar, S. (2022, Mei 22). *The Role of ESG in the Credit Appraisal Process*. Deloitte. <https://www.deloitte.com/global/en/services/consulting-risk/blogs/the-role-of-esg-in-the-credit-appraisal-process.html>
- Shabir, M., Ping, J., Işik, Ö., & Razzaq, K. (2024). Impact of corporate social responsibility on bank performance in emerging markets. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-02-2023-0208>
- Sook Lu, Y., Lim Thye, G., Muhairah, S. S., & Kumari, S. S. (2023). Applying the Pooled Mean Group Panel ARDL Technique to Analyse the Impact of Uncertainty on Economic Growth in the ASEAN-5. *International Journal of Economics and Management*, 17(1), 125–137. <https://doi.org/10.47836/ijeam.17.1.09>
- Swarnapali, R. (2020). Consequences of corporate sustainability reporting: Evidence from an emerging market. *International Journal of Law and Management*, 62(3), 243–265. <https://doi.org/10.1108/IJLMA-12-2017-0294>
- Ullah, S., Akhtar, P., & Zaefarian, G. (2018). Dealing with endogeneity bias: The generalized method of moments (GMM) for panel data. *Industrial Marketing Management*, 71, 69–78. <https://doi.org/10.1016/j.indmarman.2017.11.010>
- UN Environment Program. (2022, April 21). *Why financial institutions are banking on sustainability*. News and Stories. <https://www.unep.org/news-and-stories/story/why-financial-institutions-are-banking-sustainability>
- Van Zanten, J. A., & Huij, J. (2022). Corporate Sustainability Performance: Introducing an SDG Score and Testing Its Validity Relative to ESG Ratings. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4186680>
- Velte, P. (2024). Sustainable board governance and environmental performance: European evidence. *Business Strategy and the Environment*, 33(4), 3397–3421. <https://doi.org/10.1002/bse.3654>
- Vogelsang, T. J. (2012). Heteroskedasticity, autocorrelation, and spatial correlation robust inference in linear panel models with fixed-effects. *Journal of Econometrics*, 166(2), 303–319. <https://doi.org/10.1016/j.jeconom.2011.10.001>
- Wang, N., Pan, H., Feng, Y., & Du, S. (2024). How do ESG practices create value for businesses? Research review and prospects. *Sustainability Accounting*,

- Management and Policy Journal*, 15(5), 1155–1177. <https://doi.org/10.1108/SAMPJ-12-2021-0515>
- Wang, Y., & Sonenshine, R. (2025). The Nonlinear Impact of Environmental, Social, Governance on Stock Market Performance Among US Manufacturing and Banking Firms. *Journal of Risk and Financial Management*, 18(6), 293. <https://doi.org/10.3390/jrfm18060293>
- World Bank. (2024). *Unleashing Sustainable Finance in Southeast Asia*. <https://documents1.worldbank.org/curated/en/099310011232220307/pdf/P177802011f7760130bc49083a7beb1ef43.pdf>
- Wu, Z., & Chen, S. (2024). Does Environmental, Social, and Governance (ESG) Performance Improve Financial Institutions' Efficiency? Evidence from China. *Mathematics*, 12(9), 1369. <https://doi.org/10.3390/math12091369>
- Xu, H., Hwan Lee, S., & Ho Eom, T. (2007). Introduction to Panel Data Analysis: Concepts and Practices. Dalam G. Miller & K. Yang (Ed.), *Public Administration and Public Policy* (Vol. 71). CRC Press. <https://doi.org/10.1201/9781420013276.ch32>
- Yuen, M. K., Ngo, T., Le, T. D. Q., & Ho, T. H. (2022a). The environment, social and governance (ESG) activities and profitability under COVID-19: Evidence from the global banking sector. *Journal of Economics and Development*, 24(4), 345–364. <https://doi.org/10.1108/JED-08-2022-0136>
- Yuen, M. K., Ngo, T., Le, T. D. Q., & Ho, T. H. (2022b). The environment, social and governance (ESG) activities and profitability under COVID-19: Evidence from the global banking sector. *Journal of Economics and Development*, 24(4), 345–364. <https://doi.org/10.1108/JED-08-2022-0136>
- Zhang, W., Zhao, Y., & Meng, F. (2024). ESG performance and green innovation of Chinese enterprises: Based on the perspective of financing constraints. *Journal of Environmental Management*, 370, 122955. <https://doi.org/10.1016/j.jenvman.2024.122955>
- Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, 31(7), 3371–3387. <https://doi.org/10.1002/bse.3089>