ISTANBUL TICARET UNIVERSITY

GRADUATE SCHOOL OF FINANCE

MASTER OF INTERNATIONAL FINANCE

THE IMPACT OF ESG PERFORMANCE IN THE BANKING INDUSTRY: A COMPARATIVE STUDY BETWEEN DEVELOPED AND EMERGING MARKETS

Master Thesis

Brian MANDISODZA

ISTANBUL, 2024

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Dedication

I dedicate all the required information in this title **'The Impact of ESG Performance in the Banking Industry: A Comparative Study between Developed and Emerging Markets'** has been written in accordance with the academic manners and ethical commitment. I would clarify that all the materials, sources, data and all extra inputs have been benefited well throughout the writing procedure of this thesis. All matters contained in this thesis are my personal opinion and do not reflect the official view of Istanbul Ticaret University.

Brian MANDISODZA

ABSTRACT

The nature of the relationship between bank performance and ESG activities remains an area of growing interest among investors, academics, regulators, and scholars as indicated in literature by an increasing number of related studies, however the research results show significant notable variations. Therefore, this study aims to comparatively examine the impact of ESG factors on financial performance of banks in developed and emerging markets. To achieve this, we employ a panel multiple regression analysis on yearly data which covers a period from 2012 through 2021 from a total of 220 banks where 114 banks are from developed markets and 106 from emerging markets. The findings of the study show that ESG combined has a significant positive impact on the financial performance of banks in developed markets while no impact is found in emerging markets. Individually, ESG pillars are shown to have varying results. The study indicates that only Environmental and Social pillars have a strong positive impact on bank performance in developed markets whereas governance has no impact. Interestingly, in emerging markets, only the Governance factor has a significant positive impact on bank performance while Environmental and Social factors have no significant impact. Furthermore, the results also show that ESG controversy has a strong positive impact on banks performance both in emerging and developed markets.

Keywords: Environmental, social, governance, sustainability, bank performance, developed and developing markets.

ÖZET

Banka performansı ile ÇSY faaliyetleri arasındaki ilişkinin doğası, literatürde giderek artan sayıda ilgili çalışmanın gösterdiği gibi yatırımcılar, akademisyenler, düzenleyiciler ve akademisyenler arasında giderek artan bir ilgi alanı olmaya devam ediyor, ancak araştırma sonuçları önemli ölçüde dikkate değer farklılıklar gösteriyor. Bu nedenle bu çalışma, gelişmiş ve gelişmekte olan piyasalarda ÇSY faktörlerinin bankaların finansal performansı üzerindeki etkisini karşılaştırmalı olarak incelemeyi amaçlamaktadır. Bunu başarmak için, 114'ü gelişmiş piyasalardan ve 106'sı gelişmekte olan piyasalardan olmak üzere toplam 220 bankanın 2012'den 2021'e kadar olan dönemini kapsayan yıllık veriler üzerinde panel çoklu regresyon analizi kullanıyoruz. Çalışmanın bulguları, ESG'nin birleşiminin gelişmiş piyasalardaki bankaların finansal performansı üzerinde önemli bir pozitif etkiye sahip olduğunu, gelişmekte olan piyasalarda ise herhangi bir etkinin bulunmadığını göstermektedir. Bireysel olarak ESG sütunlarının değişen sonuçlara sahip olduğu gösterilmiştir. Çalışma, gelişmiş piyasalarda yalnızca Çevresel ve Sosyal sütunların banka performansı üzerinde güçlü bir olumlu etkiye sahip olduğunu, yönetişimin ise hiçbir etkisinin olmadığını göstermektedir. İlginç bir şekilde, gelişmekte olan piyasalarda yalnızca Yönetişim faktörünün banka performansı üzerinde önemli bir pozitif etkisi varken, Çevresel ve Sosyal faktörlerin önemli bir etkisi yoktur. Sonuçlar aynı zamanda ÇSY tartışmasının hem gelişmekte olan hem de gelişmiş piyasalarda banka performansı üzerinde güçlü ve olumlu bir etkiye sahip olduğunu gösteriyor.

Anahtar Kelimeler: Çevresel, sosyal, yönetişim, sürdürülebilirlik, banka performansı, gelişmiş ve gelişmekte olan piyasalar.

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INTRODUCTION

In this contemporary and dynamic economic environment, there is a growing awareness among business strategists, managers, and leaders that the growth and survival of businesses stretches beyond a focus on profit maximization. Contrary to the early shareholder's theory by Friedman (1970) which advocates the maximizing of return for shareholders, Freeman's stakeholders' theory (1984) posits that businesses should account for the impact of their activities on all the interested stakeholder constituencies such as local communities. In this accord, there is a fast-growing interest in sustainability issues especially regarding the efforts of businesses towards environmental, social and governance issues which is widely recognized as an acronym, ESG. Over the recent years, environment, social and governance, ESG issues have extended from being an ethical issue to becoming an issue of economic significance Menicucci & Paolucci (2022). Investors and creditors are becoming more concerned about the efforts of business towards sustainability, and this is presumed to ultimately affect the ability of firms to secure certain funding needed to thrive. Furthermore, there is an expected transfer of multi trillion value of wealth to millennials, for example in America as recorded in a study titled "The greater wealth transfer…" by Accenture (2012). Notably, 86 % of these millennials have shown interest in sustainable investments as compared to 75% of the general population of investors Morgan Stanely (2021). The study also showed that 90% of young investors will likely pursue sustainable investment in the long run. Therefore, it is now a sensible economical obligation of companies to integrate ESG issues into their business models. This is also supported by several studies such as those by Menicucci & Paolucci (2022) and Kim & Zhichuan (2021) which have indicated that ESG factors have an influence on the financial performance of businesses.

In addition to evidently being an economical issue, in some countries, providing ESG reports has become a compulsory basis or "comply or explain" basis, which requires an explanation for not complying with reporting standards. This is especially evident in developed markets as compared to emerging markets, which therefore brings about a concern of firms' efforts towards ESG issues in both markets. In Malaysia for example, publicly listed companies have been disclosing ESG issues as a mandatory act since 2016. More so in EU, several large companies from banks, insurance, energy companies, and other listed companies are required to report ESG issues according to Non-financial Reporting Directive (NFRD) which will be replaced by the Corporate Sustainability

Reporting Directive (CSRD) that will widen the scope of the companies. To add, the UK has also recently mandated financial disclosure related to climate issues from large companies defined by at least 500 employees. This rising number of compulsory disclosures is especially driven by pressing matters related to climate change. The increasing threat of global warming has made the regulators and authorities more conscious of the impact of companies in different industries. Some industries such as the mining industry have a direct impact through emission of gas or land degradation. And some industries such as the banking industry bring special concern because in addition to direct influence, banks are believed to also facilitate sustainability issues positively or negatively through financing certain projects or companies. Such perceived level of responsibility and the overall role played by the banks in the financial systems is the motivation of this research to understand how the efforts towards these ESG issues affect the bank performance. In addition, the rising awareness of ESG issues by investors, regulators, societies, and researchers has brought more attention to ESG related controversies in companies. And these controversies stem from several issues, for example how environmentally sensitive companies are dealing with and accounting for their activities which are detrimental to the environment. Comparatively, the banking industry has not had the same attention and scrutiny as other industries, and to the best of our knowledge there is a limited number of ESG related studies in literature. Hence the efforts and purpose of this study to investigate the impact of ESG factors on bank performance.

There are several research studies that have investigated the relationship between ESG factors and financial performance of companies in various industries such as energy, transport, mining. The findings obtained in these industries have shown a strong relation between the ESG factors and financial performance, for example Ngan et al (2022), Naeem et al (2022). However, the same cannot yet be said for the banking sector. There are a limited number of studies focusing on banks and the results are still mixed. Thus, this paper aims to investigate the impact of ESG factors on bank performance. The results of this study will be an addition to literature by providing more evidence which helps solidify conclusions on the relation between ESG factors and bank performance. Moreso this research extends to provide results on the ESG performance in developed and emerging markets. This will be a valuable addition especially for decision makers of banks in developed and emerging markets. The results will provide insights into the extent

to which ESG issues should be taken into consideration when projecting and evaluating the future bank performance and analyzing risk. The study contributes to literature by providing more evidence on the nexus between bank performance and ESG performance, especially with a comparative analysis between developed and emerging markets and consideration of the lagging effect. Furthermore, the findings are resourceful for some decision-makers such as ESG conscious investors, management of banks, policy makers and other interested stakeholders.

To analyze the relationship between ESG factors and bank performance, we employed the data collected from the Refinitiv database as ESG scores and the bank specific financial data. This is in line with previous ESG related studies that have used similar variables with data collected from the Refinitiv database, for example a study by Menicucci & Paolucci (2023) which examined the impact of ESG on banks in Italy.

The following sections of the paper are arranged as follows. Section 2 of the paper presents an extensive review of the literature and the formulation of hypotheses to be tested. Section 3 will present the details and nature of the variables used and how the corresponding data values were collected from which sources. Moreover, this section will show the research methodology and the models used. The results obtained from the analysis will be shown in section 4 and this will include descriptive statistics and the empirical results of the models used to test the underlying hypothesis. Finally, the paper will present the conclusions of the study and provide the corresponding recommendations. And to sum up, the limitations of the study and areas for possible extension are presented.

1. THEORETICAL BACKGROUND AND LITERATURE REVIEW

Reasonably, rational business owners, strategists, investors, and other stakeholders desire to see an organization thrive broadly with a good all-round performance or, specifically for some stakeholders, a high financial performance. However, the performance of a business is not always as desired or anticipated. Businesses fail. This fact has been for decades the motivation for researchers to answer the question: What influences or what are the drivers of business performance and to what degree? To answer this question, many studies have been conducted, and broadly, literature indicates that financial performance is driven by some financial and non-financial factors. Financial factors include leverage, liquidity, firm size Omondi (2013), net profit margin, debt to equity ratio Estiasih & Putra (2021), Batchimeg (2017). Despite subtle variations in results due to different methodologies and special cases, many previous studies have shown consensus on financial factors that impact financial performance. However, it has not been the case for non-financial factors whose common characteristic of concern is the complexity in compiling objective data. To name some, non-financial factors include, company board composition, Müller (2014), management decisions Ongore (2013), organization culture Mali (2021), use of resources, market orientation, information technology Nguyen *et al* (2021) and recently an area of fast-growing interest, the composition of ESG factors and sustainable finance, which is the focus of this study. The purpose of this study is to investigate the impact of ESG factors on bank performance in developed and emerging markets.

1.1 Bank Performance: CAMELS Framework

Banks are considered to play a crucial central role in an economy which is evidently supported by their important roles which include bringing savers and borrowers together, which ultimately enhances the smooth functioning of an economy Menicucci & Paolucci (2016). Moreover, banks are known to play the role of facilitating the transmission of monetary policy, creating money, and making loans. Considering these crucial roles by banks and the interconnectedness of economic units through these banks, the bank performances are prone to receive careful monitoring by authorities, investors, communities to ensure their continuous facilitation of a smooth economy. Bank performance has been described as the conditions at which banks are able to generate and channel funds Indriastuti (2021). Studies have shown that there are several ways in which the performance of banks can be measured. Many studies in literature have considered

the performance of banks from different perspectives. For example, some studies have taken Return on Equity (ROE) as a proxy variable to measure the financial performance of banks Birindelli (2018), Return on Assets (ROA) as measure of the operating performance of banks Buallay (2019). Some studies have considered the market-based performance of banks by using Tobin Q as a proxy variable Thornton & Tommaso (2020). In line with previous studies, this research considers Return on Equity as an aggregate measure of banks performance which according to literature focuses more on the financial performance of banks. Even though the performance of banks can be evaluated by considering the above-mentioned profitability ratios, there are several factors to consider when further studying the performance of banks. The performance of banks goes beyond profitability to account for other aspects that are crucial for the success of banks. For example, capital adequacy, liquidity issues, asset quality, sensitivity to risk and management of institutions. In other words, the performance of banks can be attributed to different factors that constitute the overall performance. Such decompositions bring about more comprehensive frameworks such as the CAMELS framework which will be described below.

CAMELS Framework

The importance and central role played by banks in any economy incentivizes the need to understand how well these financial institutions are performing at a given point in time. The understanding of bank performance extends beyond a single metric such as ROE to incorporate various factors influencing bank profitability, financial position, and perceived value by the overall market. This can be shown in previous studies examining bank performance by considering several variables. For example, Frederick (2014) considered multiple factors influencing bank performance in Uganda, and Çekrezia (2015) for banks in Albania. In same line, literature also indicates that several studies have been conducted to determine factors influencing bank performance and some relied on the widely used CAMELS framework, for example Rostami (2015), Bashatweh and Ahmed (2020), Zagher and Barghi (2017), who examined the bank performance in Kenya. CAMELS framework is a factor analyst which is used to evaluate the performance of banks by examining the level of Capital adequacy, the quality of Assets, the Management, Earnings generated by the banks, the Liquidity level, and the Sensitivity of to market risks. These individual factors have been used in previous studies as the basis for examining bank performance.

Capital Adequacy

In line with the CAMELS framework, banks must maintain a certain level of capital to meet obligations and circumvent possible insolvency which can be detrimental to the bank users and the overall economy given the interconnectedness with other economic units Financial Statements Analysis, CFA Institute (2023). Capital adequacy can be defined as the level at which banks maintain capital as their capacity to meet financial obligations Bashatweh and Ahmed (2020). Banks tend to have different levels of risky assets in their portfolios with which they generate their profits from, and the higher risks pose a threat to the going concern of the banks Kaya and Uzay (2017), and safety for bank depositors, thus banks are required to maintain a certain level of capital. The maintained capital takes the form of common equity (Tier 1 capital), which is the most important and capital in the form preferred stocks and other subordinated debts (Tier 2 capital) as presented by CFA Institute curriculum 2023. These components are combined to form the level of total bank capital with which the banks' ability to raise this capital can influence the overall bank performance. Previous studies have investigated the impact of capital adequacy on bank performance where the capital adequacy ratio (CAR) was used as a proxy of the capital relative to the risky weighted assets of a bank. For example, Gonen & Scholtens (2019), Menicucci & Paolucci (2022) and Lin et al (2020) have examined the impact of CAR on bank performance and found varying results. Furthermore, according to the Basel Committee on Banking Supervision, banks are required to maintain certain levels of CAR to protect against potential losses and the capital can also ensure the availability of funds to the depositors. Basel III set a minimum requirement of 8% of total capital to be maintained relative risk weighted assets held by banks.

Asset Quality

Assets are crucial resources which are expected to generate income in the foreseeable future for many companies in various industries. The same applies for the banking industries where banks' performance can also be influenced by the type and quality of assets being held Ariff and Shawtari (2019). Most assets of banks are financial, which include the investment in securities and loans given to individuals and other companies. These assets mostly have different quality levels depending on the overall risk they possess, of which the most common is credit risk. The quality evaluation of banks assets begins at the inception of the assets, that is for example when providing loans to credit

worth borrowers, buying high quality bonds. Moreover, to ensure a continuous asset quality level, there is a need for proper management of the assets and their risk Sahyouni and Wang (2019). Based on assets performance and perceived risks, banks tend to maintain reserves as provisions for potential loan losses. The loan loss provision is also related to the level of non-performing loans Isik and Bolat (2016) which can be an indication of the asset quality. The usage of this measure can be observed in literature through some studies, for example Menicucci & Paolucci (2022) that have considered provision for loan losses as an explanatory variable affecting bank performance.

Management

The performance of banks can highly depend on how management is able to identify, evaluate and implement strategies to maximize opportunities Basel Committee (2020). These opportunities entail dealing with risks related to potential defaults, interest rates, legal issues, thus an effective control system should be developed and applied to enhance better risk control. Furthermore, some banks have compensation structures tied to some level of performance measure and this can be detrimental to the banks if it incentivizes the management to make decisions that ultimately serve them. Therefore, the integrity and quality of management is crucial to ensuring better performance of banks Ghasempour & Salami (2016).

Earnings

Banks can generate income from various sources including interest, investments, service charges DeYoung and Rice (2016), however not all sources can ensure sustainable income or earnings. Earnings are considered sustainable if they are generated from recurring operations which therefore implies the possibility of banks continuously maintaining a better performance in the long term. Bank performance can be enhanced by high-quality earnings, which CFA Institute describes as earnings that are sustainable and able to cover the required return by investors. Overall, earnings are an important factor in the performance of banks and their ability to ensure the going concern Bashatweh and Ahmed (2020). Sustainable bank earnings show the ability to generate consistent and reliable profits over an extended period. In the banking industry, sustainability is crucial for long-term success, and it implies that earnings are derived from recurring and stable operations rather than one-time or unpredictable sources. Sustainable earnings provide investors with confidence in a bank's financial health and its capacity to weather economic fluctuations.

From an investor's perspective, sustainable bank earnings hold significant importance for several reasons. Firstly, they contribute to the stability and reliability of a bank's financial performance. Investors often seek companies with consistent and growing earnings because such entities are perceived as less volatile. Predictable earnings make it easier for investors to assess the future cash flows and potential returns on their investments, reducing uncertainty and risk. Moreover, sustainable earnings reflect the effectiveness of a bank's business model and management strategies. A bank that can consistently generate profits from its core operations demonstrates resilience in the face of economic challenges. This is particularly appealing to investors who prioritize long-term stability over short-term gains. Investors also consider sustainable earnings as an indicator of a bank's ability to cover the required returns. If a bank's earnings consistently exceed the expectations of investors, it implies that the institution is not only meeting but potentially exceeding the minimum return on investment expected by its shareholders. This can enhance investor confidence and attract additional capital, supporting the bank's growth initiatives.

Liquidity

Banks have a crucial role in facilitating the flow of funds between savers and borrowers Garr and Awadzie (2021) and thus liquidity is of paramount importance to ensure a better performance for banks. Liquidity ensures that the banks can meet their short- and long-term obligations Takon and Mgbado (2020) which can be in the form of withdrawals, meeting reserve requirements by central banks and even the exploitation of investment opportunities which can be an important source of income. More so, Basel III encourages banks to maintain a minimum level of liquidity which is sufficient to cover all the expected cash outflows. The benchmark as set and recommended by Basel III is 100%, which is represented by liquidity coverage ratio.

Sensitivity to Risk

The performance of banks is a result of interaction between various factors as shown in literature by a number of influencing factors considered in some studies such as Al Shaher et al (2011). Bank performance can be subject to factors such as market risks which encompass the level of interest rate and the currencies used for investments and the different security prices over a period. Banks exploit some of the opportunities in the market based on the level of interest rates, thus the extent to which the variation in these

rates affect banks is critical to determine the likely performance of banks. The changes in interest rates affect the potential interest income generated by banks and the deposits from those with excess funds. For example, in rising interest rates, households have an incentive to save than consume Ostry and Reinhart (1995) and this enhances liquidity of banks through savers deposit accounts. Overall, the changes in interest rates affect banks differently depending on the type and quality of assets and liabilities held by banks. Moreover, the competitive landscape within the banking industry is a key factor shaping performance. Banks must constantly adapt to changes in market dynamics, emerging competitors, and evolving customer expectations to maintain their market share. Mergers and acquisitions, strategic partnerships, and diversification of services are strategies employed by banks to enhance their competitiveness and ensure sustainable growth.

Additionally, the global interconnectedness of financial markets introduces an element of systemic risk. Events in one part of the world can have cascading effects on the entire banking sector, emphasizing the importance of a comprehensive risk management framework. Macroeconomic events, geopolitical tensions, and unforeseen crises can significantly impact the stability and performance of banks. Lastly, the social and environmental responsibility of banks is gaining prominence. Stakeholders increasingly evaluate banks based on their commitment to sustainability, ethical practices, and contribution to social welfare.

1.2 ESG Disclosure

Widely known as an acronym ESG, denotes the environmental, social and governance issues that companies should address to enhance sustainability and this subject is shown to have been attracting and receiving increased attention in investment management companies, academics, media, and investors. Prior to the late 20th century, companies have long been conforming to shareholder theory which advocates for the maximization of the returns for shareholders as the sole responsibility of businesses. However, the emergency of stakeholder's theory by Edward Freeman in the 1980s, brought about a new narrative and perspective to how businesses should view their operations in the foreseeable future. Stakeholder theory emphasizes the interlinkage between stakeholders, Freeman (1984) such as employees, customers, investors, communities, and it advocates the sustainable creation of value for all stakeholders. Sustainable value creation encompasses the ecological and social issues that ultimately benefit future generations

and the society within which the business operates. This notion brings forth the idea of sustainability which has now become a subject of interest in the business world. Sustainability issues and concerns date back to the era of industrial revolution when industrial companies were heavily the leading cause of air pollution in industrial cities across America and Europe. Fast forward to the mid-20th century, several deaths were recorded in London because of the Great Smog due to heavy air pollution. During this period, such unconstrained activities by companies caused damage to the environment and threatened humanity. Moreover, other sustainability issues came to rise for example, corporate social responsibility (CSR) which was advocated by Bowen (1953) and it can be shown in previous studies that over the decades, this subject has received attention and scrutiny among academics and regulators. It can also be shown that these social issues have long been a concern since the industrial revolution, especially with regards to workers' wellbeing and working conditions.

Recently, sustainability issues have become a matter of economic significance and literature shows that many studies are reporting a strong relationship between sustainability variables and company factors which will be discussed below. Furthermore, sustainability issues have become more definitive where sustainability level by companies can be measured and they are widely known as ESG issues which stands for Environmental, Social and Governance. It was first mentioned and got wide coverage through the reports by the United Nations in 2004, which aggregately and more definitively pronounced the long-standing sustainability issues. Environmental factors, as the name hints, address issues related to the efforts of companies to protect the environment. And this emphasizes issues including the way companies are utilizing natural resources. For example, companies in the mining or energy industry are environmentally sensitive, therefore it is believed that such companies should responsibly engage in their businesses while considering the consequences of their activities and therefore take corrective actions accordingly. More so, the rising concern about global warming which to a greater extent is driven by emissions of harmful gasses, has drawn attention to the efforts of companies in addressing such. Therefore, companies are now encouraged and or obliged to disclose information on their efforts to address environmental issues. The letter S in ESG represents the social issues that need to be addressed by companies. The social issues relate to how companies deal with their workforce with regards to working conditions, diversity and inclusion, equality in career

advancement. Firms are now, more than ever, encouraged to be transparent in their efforts to address these issues. In addition, this ESG factor broadens further to address issues related to human rights, specifics of the product or service being provided by companies and communities that it serves and operates in. The social pillar is at times addressed synonymously as corporate social responsibility (CSR) which among the three factors has the long-standing history of attention.

There are several studies in literature that have examined the impact of CSR on financial performance, of which many have shown a strong positive relationship, for example Kolisch (2015)**.** The letter G in ESG denotes matters related to management, shareholders, and board of directors. It addresses the decisions made and strategy formulation and implementation by management. Also, it covers the structure of the board in terms of diversity and compensation. Overall, management plays a crucial role in the performance and survival of a business, hence the interest in governance issues, especially with regards to objectivity and independence. As much as it is encouraged for companies to disclose their ESG related initiative, the objectivity and reliability of the data disseminated by companies is a topic of debate among many intellectuals and scholars. This is mainly due to voluntary disclosure in many states which bring forth certain issues, for example greenwashing. Green washing is the falsification of information by companies with regards to their initiative on environmental protection. This also adds to ESG controversy, which is another category of ESG issues where firms are measured based on their negative and scandalous events related to environmental, social and governance issues. The efforts of ESG disclosure are in line with some UN sustainability goals which aim to enhance health, security, and wellbeing of all people. Accordingly, some countries have made it mandatory for ESG disclosure by companies. For example, countries such as New Zealand have mandated the disclosure of climate related issues for public companies and financial institutions. More so, Malaysia is one of the first countries to enact compulsory disclosure. In EU countries, several companies have been required to report ESG issues and according to the CSDR, by the end of 2023 the scope will be extended. Due to pressing matters such as climate change, several other countries, USA, China, UK and in Asia are on a verge to make ESG disclosure mandatory. Such headlines cannot be easily ignored, especially by ESG conscious investors, managers, and business owners because the extent to which these ESG issues influence the financial performance of certain

businesses such as banks is becoming a concern. Hence the motivation of this paper to investigate the impact of ESG factors on bank performance.

To date, extensive studies have been conducted to investigate the impact of ESG pillars on many factors including financial performance, idiosyncratic risk, profitability of companies and mixed results were obtained either across or within the industries. Janah & Sassi (2021) indicates in their systematic literature review that ESG and sustainability issues have been a fast-growing area of interest among researchers and investors for the past two decades. Some studies found a positive, some a negative and others found no significant relationship between ESG factors and firm performance. To further the scope, certain studies have investigated these ESG issues across different markets, developed and developing countries, for example Naeem et al (2022). In addition, these ESG scores have also been considered collectively as a combined score Junius et al (2020) or as individual factors to see how each pillar, Environmental, Social and Governance affects the financial performance Almeyda (2019), Mentor (2016), Johnson (2020). To start with, Friede et al (2015) conducted a literature review study to understand the collective results obtained about ESG and financial performance. And the study found that more than 2000 studies had been conducted on the subject since 1970 of which the majority found a positive relationship between ESG and financial performance. These results were later confirmed by many studies that considered ESG as a combined score, meaning collectively considering all three factors, Environment, Social and Governance as a single metric. Aydogmus et al (2022) found a significant positive impact of ESG combined on profitability of publicly listed firms in Bloomberg database, suggesting the continuing nature of the relationship between the variables. Furthermore, Naeem & Cankaya (2022) found a significant positive impact of ESG combined on finance performance of environmentally sensitive firms in the energy industry. This clearly suggested the need for such firms to take sustainability initiatives which would enhance investors' confidence and less chances of litigation against their operation. Moreso, Almeyda & Darmansyah (2019) investigated the impact of ESG combined score on financial performance on real estate firms and they found a positive impact of ESG Score. These results implied the need for real estate companies to make sustainability decisions by facilitating green leasing between property owners and tenants which includes the use of renewable energy or providing means of using less electricity per head. Many other studies found the positive impact of ESG combined on various company performance measures and this

include studies by Bahaaeddin, (2020) and Jiaxin Tao (2023). However, despite the positive impact of ESG across various industries, in some studies contradictory results were obtained. Aydogmus et al (2020), examined whether ESG factors as a combined score has an influence on the financial performance of tourism firms in Europe and they found a significant negative relationship between the variables. This suggested that improving the ESG performance can adversely affect the performance of a company, which in this case was measured by Return on Assets (ROA). This inverse relation stems from high costs incurred or investments made towards sustainability.

Furthermore, some studies found no significant impact of ESG factors on firm performance. This is supported by the study conducted by Junius, et al (2020) which investigated the publicly listed companies in four of the ASEAN countries. These results insinuated the shortcoming of the company's efforts in improving ESG performance to enhance financial performance. Moreover, Johnson (2020) investigated the impact of ESG combined score on WACC for different sectors, industrial, consumer goods and customer service sector. The study found a strong positive relationship for companies in industrial sectors, and this suggested that an increase in cost of capital can result from efforts to improve ESG performance. In addition, the study found a negative impact in the consumer goods and customer service sector, suggesting that an improved ESG performance can be used as a tool to lower the cost of capital of some companies in these sectors. These findings by Johnson (2020) indicate the variation of ESG issues across sectors. Furthermore, a study by Hedström and Dahlsjö (2022) investigating the impact of ESG performance on various company factors, ROE, ROA, PE, PB of firms in the Sweden and China markets found no significant impact. Moreover, a study by Pu (2023) showed interesting results while investigating the impact of ESG activities on performance of firms in China. The study concluded that a better ESG performance can significantly enhance firm performance but only to a particular threshold through which any further ESG efforts can negatively impact the overall company performance. This was highlighted in the results by an inverted U-shaped relationship between ESG activities and firm performance. These observations collectively emphasize the need for further studies on ESG issues in various industries, especially for some sectors like banking that remain far from having conclusive results.

The broad nature of ESG issues covering Environment, Social and Governance factors and ESG controversies, has become a motivation for studies attempting to understand the

impact of individual ESG pillars on company performance. As indicated above, some studies have examined ESG issues as an aggregate metric for sustainability and some also show an extension into investigating the impact of individual pillars. For example, Hamdan et al (2020) has investigated ESG issues by considering individual pillars and simultaneously considering a combined ESG score. So far, literature shows a mixed pool of results. The individual ESG factors have been investigated at different levels over the years. Social factors, which are also commonly known as CSR, have been widely examined and a positive impact on financial performance is recorded. Coelho (2022) performed a systematic review of studies on CSR and financial performance stretching from 1984 to 2021, and they observed that CSR directly impacts firm financial performance. This notion is also evident through a study by Mentor (2016) who found a strong positive impact of social pillar on financial performance by examining most firms in S&P 500. In addition, many studies over the last decade have observed a positive impact of CSR on financial performance as shown by, Muchiri & Muigai, (2019), Mumtaz & Pirzada, (2014), Gautam et al (2016), Kolisch (2015), Basuony (2014).

Following the growing concern on climate change and global warming which is believed to result from company and human activities, there are studies being conducted to understand the impact of environmental pillars across and within industries. To start with, Choi et al (2021) examined the extent at which the reputational risk regarding banks' environmental efforts influence the deposits and they found that banks with poor reputation experiences a decline in deposits in regions facing unfavorable climate conditions. These results suggest that people residing in areas with high climate change risk are likely to be sensitive to the sustainable efforts of companies they invest in. Moreover, this impact of environmental pillar was confirmed through a study by Ngan et al (2022) who investigated the impact of ESG on firm performance in the transportation industry. They found a significant positive impact of the environmental factor on business performance which came as no surprise given the sensitive nature of the transportation industry with regards to the environment through emission of gasses. ESG conscious investors tend to favor firms making sustainable initiatives hence these companies are likely to perform better due to the availability of resources from these investors. Furthermore, Kim & Li (2021) observed a strong positive impact of environmental, social and governance factors on the profitability of firms (ROA). Notably they found that the impact of all the ESG factors on profitability was higher for larger firms and this can

suggest that stakeholders tend to have high expectations of the larger firms in making sustainable efforts.

Regarding governance, Aevoae et al (2023) and Afes & Jarboui (2023) recently recorded a significant positive impact of corporate governance on financial performance. Aevoae et al, (2023) obtained the results from a sample of more than 300 listed banks in 47 countries, and it was shown that firms with good corporate governance tend to have better financial stability and reduced risk as compared to those with poor governance. The latter made their conclusions based on a sample of 160 companies in the UK. This strong positive impact was also confirmed earlier through a study by Wanyama & Olweny (2013) which examined the relationship between governance and financial performance of publicly listed insurance companies in Kenya. Furthermore, by looking into public companies in South Africa, Karaye & Büyükkara (2021) found supporting results of the strong positive relationship between governance and financial performance. Moreover, Brondello et al (2018) concluded that a better performance in governance issues has a strong impact on bank performance especially regarding accommodating all genders in the board of directors.

On the other hand, the positive relationship between individual ESG factors and financial performance is still questionable because there are some studies with contradictory results stemming from differences in methodologies, sampling, regional covering, and even theoretical frameworks. To start with, a study by Almeyda & Darmansyah (2019) found a strong negative impact of social and governance factors on financial performance of real estate companies in the G7. And this implies that the cost of initiatives to enhance sustainability can harm the financial performance of these companies. More so, Margaretha & Rachmawati (2016) did not find any significant impact of social factors on firm performance by examining public firms in Indonesia. This was also observed by Atan et al (2016) who found no association between the financial performance and the disclosure of environmental, social and governance factors. The study was conducted for firms in Denmark and the results inferred no economic significance to those companies which positively responded to the pressure for ESG disclosure exerted by the legislative authorities. These contradictory results were also obtained for the ESG combined and various company factors. For example, a study Demiraj et al (2022) examined the impact of ESG factors on financial performance by considering an ESG combined score and found a strong negative relationship between the variables. This strikes as an opposing

idea of encouraging companies to undertake initiatives to ensure sustainability because it is shown to adversely impact the overall financial performance.

Notably, by employing a multiple regression analysis Junius et al (2020) found no significant impact of ESG combined score on financial performance of firms in ASEAN countries. The research was also aiming to expand the evidence on the nexus between the variables for developing countries but as highlighted, no relationship was observed. Notably, this attempt to understand the relationship between ESG factors on company performance both in developed and emerging has been a focus for several research studies. This curiosity is intrigued by differing ESG policies and pressures on firms by authorities in developed and emerging markets. Several comparative studies for both markets are presented in literature**.** To start with, Naeem et al (2021), conducted a comparative study to understand whether the financial performance of firms is impacted by ESG factors in developed and emerging markets. Their research emphasized companies in environmentally sensitive industries, and they found a positive impact of overall ESG performance on company performance in developed markets. However, it was not the case for developing markets where they found no significant relationship. And this brings attention to the extent at which ESG issues should be of concern in different markets. In addition, Janah &Assi (2021) conducted a systematic literature review to understand the impact of ESG on financial performance. And they found results aligning with Naeem et al (2021), which showed a positive influence in developed countries whilst observing an undefined nature of relationship in developing markets. Interestingly, the study by Makhdalena (2022) found contradicting results for emerging markets where they investigated the impact of ESG on financial performance of companies in ASEA developing countries and found a strong positive relationship. This can be because of the difference in the sampling methodology. The results on ESG factors and financial performance in developing and developed markets are still mixed and this study aims to contribute to literature by providing a comparative analysis of ESG and bank performance in developed and emerging markets.

1.3 ESG Disclosure and Bank Performance

Several studies have been conducted to understand whether ESG performance has an impact on company performance within and across several industries. However, the same cannot be said for the banking industry. There is a gap in literature about the ESG factors and banking performance and we believe that this paper will provide valuable insights.

So far, some studies have examined the impact ESG factors on bank performance and results remain inconclusive. To start with, Buallay (2019) examined the association between ESG performance and performance of banks in the European region and she found a significant relationship between the stated variables. However, the level of the impact varied between individual pillars which suggests a different level of significance of individual ESG pillars in the banking industry. Furthermore, a study by Miralles-Quirós et al (2019) examined the impact of ESG performance on the ability of banks to create value for shareholders. The study considered the ESG pillars individually and the results showed that Environment and Governance has a significant positive impact on the created value for shareholders. Broadly, these findings are in line with the stakeholder's theory and support the notion which emphasizes the need for a balance between creating value for shareholders and considering other stakeholders involved. In addition, some studies went further to investigate whether ESG pillars are an important factor for companies by associating with company risk. For example, Thornton & Tommaso (2020) investigated the impact of ESG performance on the behaviors of European banks in taking risk and they found that banks with good ESG performance tend to have a reduced risk-taking approach and this notion supports and aligns with the stakeholder's theory. Furthermore, Choi et al (2021) specifically examined the impact of environmental reputation of banks and their ability to generate liquidity. They found a strong positive relationship between environmental performance and liquidity, which implies that the ability and efforts of banks to maintain a good reputation on environmental issues can be an incentive for increased deposits and source of liquidity. Overall, these studies suggest the need for banks to seriously consider their efforts towards ensuring sustainability. And as discussed earlier, banks can facilitate sustainability directly and indirectly. Banks are crucial financial institutions that facilitate the smooth flow of funds in the financial systems, and this makes them important entities for enhancing sustainability through funding green projects. And due to the need for funds, business and projects will have an incentive to be conscious of ESG issues. However, some studies show otherwise. A study by Menicucci & Paolucci (2022) for example, examined the impact of ESG factors on the performance of Italian banks and they found an inverse relation between overall ESG and bank performance. This suggests that investing in the ESG issues for banks in Italy aggregately causes more harm than the expected improved performance. Interestingly, Ersoy et al (2022) obtained notable results on the relationship between ESG and bank market value. They found that a better performance by banks regarding social issues can

initially enhance the market value until a particular point and any further efforts into enhancing social affairs will cause decreasing market value. And on the other hand, the environmental pillar was found in the same study to initially cause a decline in the market and later in the long run have a positive impact on the market value of banks. And the latter suggests the notion of ESG activities being a device for long term benefit.

Hypothesis Development

Given the crucial role played by banks in facilitating the efficiency of financial systems in different economies around the globe, it is important to understand how banks are associated with currently fast-growing issues in these economies. And as illustrated before, ESG issues are of growing concern among investors, managers, academics, and communities at large and yet the question of whether they have statistical and economical significant impact on business and financial performance remains unwholly conclusive. Especially for the banking industry which has inconclusive results as indicated by literature with varying and contradictory results. In addition, unlike other industries that have been considerably explored for developed and emerging markets, the banking industry still lacks solid and consistent findings for both markets. And this poses a limitation for business strategists and investors in their decision-making processes with regards to whether it is of any significance in considering the integration of ESG issues into the banking sectors. This paper aims to fill this gap in the literature by providing empirical evidence on the impact of ESG factors on the banking performance in developed and emerging markets. The study will explore the ESG factors collectively, ESG combined and as individual pillars to understand the impact of each pillar in both markets. Additionally, the results will allow for a comparison of ESG performance between developed and emerging markets. Therefore, we develop the following hypothesis:

Hypothesis:

1a. The combined ESG performance has a significant positive impact on the bank performance in developed markets.

1b. The combined ESG performance has a significant positive impact on the bank performance in emerging markets.

2a. There is a significant positive relationship between individual ESG factors and bank performance in developed markets.

2a. There is a significant positive relationship between individual ESG factors and bank performance in emerging markets.

2. DATA AND RESEARCH METHODOLOGY

2.1. Data Collection

To achieve the task of this study, the ESG data was collected from the Refiniv Eikon database. Refiniv Eikon is widely used in academia and by professionals across industries to access reliable company data and global economics data. Related literature shows that several ESG related studies Ersoy et al (2022), Demiraj et al (2022) have been conducted by relying on the data provided in Refinitiv Eikon, thus in same line with these studies, we employed the data collected from the database for our analysis. Refiniv Eikon compiles the ESG data by using verifiable and publicly available information with which a wide range of components are considered with varying weights across industries. These subcategories are then collectively evaluated to determine the sustainability efforts of firms through which performance scores are allocated on three main ESG pillars which are environmental, social and governance. The scoring process involves a thorough evaluation of a company's public disclosures, regulatory filings, and sustainability reports to determine the extent to which it discloses information related to its environmental impact, social initiatives, and governance practices. These scores consider factors such as carbon emissions, diversity and inclusion policies, executive compensation structures, board composition, and ethical business practices. The methodology includes a materiality assessment to prioritize key ESG issues based on their relevance to the industry such as the banking industry in our study. Weighted criteria and indicators contribute to the overall score, reflecting the significance of different ESG aspects. In this study we collected the data as scores for the individual ESG pillar and in addition we also considered the collective ESG performance of banks which is denoted by combined ESG score as defined by Refinitiv Eikon.

Furthermore, to analyze the impact of ESG pillars on bank performance, we collected the company financials as control variables from Refinitiv Eikon and performed calculations on some of the variables as preparation for the analysis. Table 2 summarizes all the formulations and calculations used for the variables, most of which were computed by Refinitiv Eikon. In this study, Liquidity asset ratio was manually calculated by using Cash and due from banks, other earnings assets and total assets which were collected from company financial in the Refinitiv Eikon database.

2.2 Data Sample

As the study aims to comparatively investigate the impact of EGS factors on bank performance for emerging and developed markets, our sample consists of banks from both markets. The development of the markets in this study was defined according to the country's classifications by MSCI, 2021, thus our data covered countries from EU, Asia and Africa including America and Australia as shown in Table 1 below. In addition to America and Australia, most developed countries were found in the European region while emerging markets were mostly represented by countries from Asia and Africa. The ESG scores of banks were initially collected for all the banks presented by Refinitiv Eikon database in the predefined countries in Table 2 for a period from 2007 to 2021, however, due to the problem of missing ESG data for certain banks especially for those in emerging markets, the covered time span was reduced to cover a period from 2012 to 2021. The missing data for some of the banks was because the ESG data for some of these banks had not started to be recorded. In addition, some banks had been providing ESG data and stopped for a period. Banks with a long period of no EGS score recorded were eliminated while the banks with minimal number of missing data were maintained.

Moreover, as a further sampling criterion, the selected banks should have been incorporated and or operating in countries considered as developed and emerging markets for the set period. The final sample consisted of 114 banks in developed markets and 106 banks in emerging markets for a period of 10 years from 2012 to 2021. The collected data was then structured as a panel data consisting of 1140 observations for developed markets and 1060 for emerging markets. It was noted that certain banks, especially those in developing countries, have missing data points for ESG score and for company financials. The averaging method was used for some of the missing data points of banks financials and ESG scores.

Table 1: MSCI country classification 2021

Developed Markets		Emerging Markets	
Country n = 22	**Number of Banks n = 114**	**Country n = 23**	**Number of Banks n = 106**
Australia	5	Brazil	4
Austria	1	Chile	3
Belgium	1	China	8
Canada	7	Colombia	2
Denmark	2	Czech Republic	1
Finland	1	Egypt	2
France	3	Greece	4
Germany	2	Hungary	1
Hong Kong	2	India	10
Ireland	3	Indonesia	3
Israel	4	Kuwait	3
Italy	6	Malaysia	7
Japan	20	Mexico	2
Netherlands	1	Philippines	4
Norway	1	Poland	8
Portugal	1	Qatar	5
Singapore	3	Saudi Arabia	5
Spain	5	South Africa	4
Sweden	3	South Korea	6
Switzerland	2	Taiwan	8
United Kingdom	7	Thailand	6
United States	34	Turkey	6
		United Arab Emirates	4

Source: MSCI country classification 2021

Considering the purpose of the study which is to examine the impact ESG factors on banking performance, we performed a causality test to emphasize the direction of our model. Theoretically, it is viable to consider the direction in both ways that is either taking bank performance or ESG factors as the response variable. This notion is supported by the idea that the success level of banks can potentially influence their ability to undertake sustainable initiatives and on the other hand, bank performance can be considered responsive to performance in sustainability issues. Therefore, we employed Pairwise Dumitrescu Hurlin Panel Causality with results presented in section 3.3 to affirm the direction of our model which considers bank performances as the dependent variable. The results support the causal effect of ESG factors on bank performance hence the following variables are presented below.

2.3 Variables

2.3.1 Dependent variable

Previous studies have investigated the impact of ESG factors on firms or bank performance, and several different variables have been used to represent the overall

performance of a company. Some existing studies such as Buallay (2019), Cankaya (2022), Munangi and Sibindi (2020), have considered return on equity, ROE for financial performance, return on assets as proxy for operational performance and Tobin's Q to measure a company's market-based performance. Therefore, in accordance with previous studies, this paper considers only return on equity, ROE to measure the financial performance of banks. ROE is a financial performance metric which is used as a measure of the profitability of companies. ROE varies in different industries, however in general, higher values signify a company's ability to generate income from the available equity. This variable is used as a proxy to determine whether ESG factors have an impact on the performance of banks in developed and emerging markets. ROE is calculated as below:

ROE = Company Net Income / Shareholders' Equity (1)

2.3.2 Independent variable

The main explanatory variables in this study are ESG factors, which are considered both as combined scores and as individual pillars (Environmental, Social and Governance) to have a better understanding of how different dimensions of firm's sustainability affect the performance of banks. And as summarized in Table 2 in appendix, for example, the issues of climate change, use of resources and management of waste bring about concern of how banks' efforts on environmental issues directly or indirectly influences the overall bank performance. Moreso, the same application is used for the social pillar which encompasses issues that includes human rights and social well-being of internal and external stakeholders such as employees and community respectively. Furthermore, governance issues which are related to the management structures, compensations, and other affairs of the board of directors has become an area of growing interest among many academics and professionals. Therefore, to measure the impact of the performance of these individual ESG pillars, scores with a scale from 0 to 100 are collected from the Refinitiv Eikon database as the sample data for the research. Also, as stated earlier, the Refinitiv Eikon data base presents ESG performances as a combined score which will also be used in this study in accordance with previous studies (Pham et al, 2022). In addition, ESG controversies will also be considered as an explanatory for the variation in ROE. Refinitiv considers ESG controversies as the extent to which firms are exposed to environmental, social and governance scandals and events.

As noted in previous studies that ESG factors has a lagging effect Ersoy (2022), and through explanations by Refinitiv report (2022), ESG factors are seen to have a continuous impact on financial performance in subsequent years, therefore in this study we are considering ESG score with a lag of 1 year. This implies that the ESG factors are considered for the period of 2012 to 2021, while the bank financial factors are considered for the period of 2013 to 2022. We also believe this structuring will provide a more reliable outcome of results given the underlying theoretical background. However, some studies have maintained the examination of ESG factors without a lag, for example, Balatbat (2021) performed analysis for both lagged and without lag and found similar results of strong positive impact of ESG factors on firm performance. We believe the events and initiatives undertaken to enhance the ESG performance can have a negative impact on the return of the same year apart from its lagging effect where the effects are only assumed to be observed in subsequent years. Therefore, in this study we provide the results for both cases as evidence and we believe this study adds value to literature by presenting a comparison of the impact of ESG factors in cases, with a lag and without a lag.

2.3.3 Control variables

In addition to ESG factors as explanatory variables, this study considers 5 control variables to account for the variation in ROE which is not captured by the ESG factors. The used control variables are an abstract of the CAMELS framework which is used to measure and explain banks' performance Romana and Sargu (2013). The control variables include capital adequacy ratio (CAR), Liquidity Asset Ratio, Non-performing loans, Total Assets taken as logarithm and provision for loan losses. The summary of each control variable is shown in Table 2.

Capital Adequacy Ratio

Capital adequacy ratios are an indicator of the sufficiency of available bank capital relative to the risk weighted assets held by the banks Vu and Dang (2020). These ratios signify the ability of banks to absorb some losses using their capital reserves without being exposed to solvency risk. Capital Adequacy Ratios can be calculated for different categories of capital namely Equity Tier 1, Total Tier 1 capital, Tier 2 capital and Total capital as presented by the CFA Institute curriculum, 2023. Equity Tier 1 capital includes the fundamental components such as the common equity, retained earnings, and new

capital added. Total Tier 1 capital extends further to include preferred stocks and other financial securities without a determined maturity. And Tier Two capital includes the instrument with predetermined maturity of less than five years. In this study we consider the Capital adequacy ratios calculated using the total capital which are in line with previous studies such as Gonen & Scholtens (2019), Menicucci & Paolucci (2022). The formula is shown as:

Capital Adequacy Ratio = (Tier 1 capital + Tier 2 capital)/ Total risk-weighted assets. (2)

Liquidity Ratio

The liquidity position of banks can be measured by several liquidity ratios as indicated in literature. For example, Virk Sidhu et al (2022) considered a Liquidity Coverage Ratio to measure the impact on liquidity position on bank performances in India. Other studies have considered the availability of stable funds relative to the required stable funding, as a measure of liquidity. For example, a study by Ashraf et al (2015) used Net stable funding ratio (NSFR) as a measure of liquidity while examining the financial stability of the banking industry. In this study, however, we consider a Liquidity Asset Ratio which follows previous studies such as by Nizam et al (2019) as cited by Menicucci & Paolucci, 2022. Unlike the Liquidity Coverage ratio and Net stable funding ratio (NSFR) which considers liquidity position relative to expected cash outflows and required stable funding respectively, this study considers liquidity level relative to total assets of the bank to consider the liquidity level of assets being held. The formula is as follows:

Liquidity Assets Ratio: (Cash and due from banks + other earnings assets)/ Total Assets (3)

Non-performing Loans (NPL)

Non-performing Loans are defined by the European Commission as loans with a high probability of defaulting or likely to face late repayment. Such loans can potentially impact the overall performance of banks as indicated by previous studies attempting to understand the impact of NPL, for example Cucinelli (2015) and Kingu et al (2016). And considering the fractional reserve banking system, where the creation of money by banks is partly through the issuance of loans, it is important to understand how the non-performing issued loans might affect the overall bank performance. Consistent with previous studies such as Gonenc & Scholtens (2019), in this study we consider the

proportion of non-performing loans to examine the impact of NPL on the overall bank performance.

Formula: Non-performing loans/ Total loans (4)

Total Assets

The assets of banks include physical assets and financial assets with which the overall total has been considered in literature as a measure of banks or firm size. For example Cankaya & Naeem (2022), Lin et al (2020) have considered total assets as a measure of firm sizes. More so, due to the variation in firm or bank size, these previous studies have taken the natural logarithm of total assets to regulate the scale economies Hitt et al (1997) as referenced by Capar et al (2015). Accordingly, a similar approach is used in this study by taking the logarithm of bank total assets. Formula is as follows.

Bank Size = LN (Total Assets) (5)

Provision for loan Losses

In line with the quality of loans issued by banks, it is critical for banks to maintain reserves as a provision for loan losses as emphasized by the CFA Institute curriculum. It also highlighted that such provisions are an important measure of a bank's financial position and performance. The institute illustrates ratios such as allowance for loan to non-performing loans, provision for loan losses to loan charge offs. In this study we consider the measures used in previous studies such as Nugroho et al (2020) and Chang et al (2008) where the provision for loan was used as a proportion of Total loans. Therefore, the formula is as follows.

Formula: Provision for loan losses/ Total loans (6)

As stated early under the description of independent variables, the model analysis of this study considers two scenarios, first with lagged ESG values as previously used by Naeem & Cankaya (2022), Ersoy et al (2022) and lagged control variables as shown by Aktaf & Tas (2007) in their study of the how capital adequacy influence bank lending and deposits. The results of Aktaf & Tas (2007) showed that 1-year lagged control variables have a significant impact on bank deposits. Therefore, in accordance with this notion we consider lagged control variables. In the second scenario we consider both ESG factors and control variables without a lag and this is in alignment with previous studies by

Kolisch (2015) who conducted a comparative study on how CSR impacts financial performance in the USA and Germany**.**

Table 2: Summary of variables

Variable	Description and Formulas	References
Dependent Variable: Company financials from Refinitiv Eikon.		
Return of Equity (ROE)	A proxy representing the measure of the banks' performance. Formula: Net Income / Total Equity	Buallay (2019), as cited by David Junius et al, 2020
Independent Variables: Refinitiv Eikon ESG Scores.		
ESG Combined (ESG_COM)	Represents the aggregate ESG performance of firms based on the publicly reported data. The score collectively considers the environmental, social and governance issues.	Refinitiv, 2022 Buallay (2019) as cited in David Junius (2020)
Environmental (ENV)	The score represents sustainable performance regarding environmental issues, resource use, emission, and innovation. Example, pollution control and prevention.	Refinitiv report (2022) TPham et al (2022)
Social (SOC)	A representative measure of the relationship of companies to communities, workforce. And the consideration of human rights and product responsibility.	Refinitiv report, 2022 Buallay (2019), Almeyda & Darmansyah (2019)
Governance (GOV)	A measure of the disclosure and performance of banks' corporate social responsibility strategies, management, and shareholders.	Refinitiv report (2022) Almeyda & Darmansyah (2019)
ESG controversy (ESG_CON)	A measure of the impact of scandalous events and or nature of the business on environmental, social and governance issues.	Refinitiv report (2022) Carmine De Franco, (2019)
Control Variables: Company financials from Refinitiv Eikon.		
Capital Adequacy Ratio (CAR)	A broad representation of the quality of capital which attests to the level of solvency and adherence to minimum capital benchmarks by regulators. Formula:	Gonen & Scholtens (2019) Menicucci & Paolucci (2022), Lin et al (2020)

	(Tier 1 capital + Tier 2 capital)/ Total risk-weighted assets.	
Liquidity Assets Ratio (LAR)	The ratio represents a measure of liquidity. Formula: (Cash and due from banks + other earnings assets)/ Total Assets	Nizam et al (2019) as cited by Menicucci & Paolucci (2022)
Non-Performing Loan ratio (NPL)	A proportion of the loans in default to the total loans of banks. Formula: Non-performing loans are divided by total loans.	Gonenc & Scholtens, (2019)
Total Assets (LN_TA)	A measure to capture the effect of the bank size obtained by computing the natural logarithm of total assets. Formula: LN (Total Assets)	Cankaya & Naeem (2022), Lin et al (2020)
Provision for Loan Losses ratio (PLL)	A measure of the reserves by banks to account for potential losses from default loans. Formula: Loan Losses Provision/ Total Loans	Nugroho et al (2020) Chang et al (2008)

Source: Compiled by author for indicated references

2.4 Research Method and Process

This study employs a panel regression analysis model to examine whether the ESG factors significantly impact the performance of banks in developed and emerging markets. This model has similarly been used by several previous studies Buallay (2019), Menicucci and Paolucci (2022) to examine the nexus between the stated variables. Notably, as stated previously that there is a sensible lagging effect of ESG factors on performance, thus a model with 1-year lagged ESG factors and control variables will be presented below. More so, in the same accord, the explanatory variable, ESG and control variables will also be used in a similar model by treating all variables at time t, without lagging effect. This notion is driven by the idea that investments made, or cost incurred in a particular year to further a ESG performance might negatively impact the financial performance of that same period especially if significant events happen at the beginning of the year. Therefore, it is viable to investigate whether the attributed ESG score of a particular period t, has a significant relationship with the financial performance of banks in the same

period t. The results of the model without a lagging effect will be presented in the appendix and will be used to compare with findings of the model with lagging effect. The main model of this study considers the lagging effect of ESG for both developed and emerging markets and the results will be used to make decisions on the stated hypothesis. Thus, in this study, we consider the following models which are the same for developed and emerging markets.

Model 1, (t – 1)

$$ROE_{it} = \beta_0 + \beta_1 ESG_COM_{it-1} + \beta_2 CAR_{it-1} + \beta_3 LAR_{it-1} + \beta_4 NPL_{it-1} + \beta_5 LN_TA_{it-1} + \beta_6 PLL_{it-1} + \varepsilon_{it-1} \quad (7)$$

$$ROE_{it} = \beta_0 + \beta_1 ENV_{it-1} + \beta_2 SOC_{it-1} + \beta_3 GOV_{it-1} + ESG_CON_{it-1} + \beta_4 CAR_{it-1} + \beta_5 LAR_{it-1} + \beta_6 NPL_{it-1} + \beta_7 LN_TA_{it-1} + \beta_8 PLL_{it-1} + \varepsilon_{it-1} \quad (8)$$

Model 2, (t)

$$ROE_{it} = \beta_0 + \beta_1 ESG_COM_{it} + \beta_2 CAR_{it} + \beta_3 LAR_{t} + \beta_4 NPL_{it} + \beta_5 LN_TA_{it} + \beta_6 PLL_{it} + \varepsilon_{it} \quad (9)$$

$$ROE_{t} = \beta_0 + \beta_1 ENV_{it} + \beta_2 SOC_{t} + \beta_3 GOV_{it} + ESG_CON_{it} + \beta_4 CAR_{it} + \beta_5 LAR_{it} + \beta_6 NPL_{it} + \beta_7 LN_TA_{it} + \beta_8 PLL_{it} + \varepsilon_{it} \quad (10)$$

As indicated in Table 2, with a summary of variables, ROE_t represents the bank performance at period t which is the dependent variable. The ESG_COM_{it-1}, ENV_{it-1} SOC_{it-1}, GOV_{it-1}, ESG_CON_{it-1} represents the ESG scores at period t – 1, which are the explanatory variables in this study. Moreso, CAR_{it-1}, LAR_{t-1}, NPL_{it-} 1, LN_TA_{it-} 1, PLL_{it-1} represents the control variables. Finally, ε_{t-1} denotes the error at period t. The same description also applies for variables in model 2, where the period t is considered for each firm.

2.5 Limitations

The results presented in this study are not without reservations. The limitation of study includes the limited number of banks considered as a general representation of all the banks in developed countries and developing countries. This was a result of unavailability of ESG data for certain banks across countries. More so, this research study considers data only from Refinitiv Eikon and this poses a limiting factor since there are other

reliable sources that produce similar data and yet shows differences in data due the subjectivity in quantifying ESG issues. Additionally, ESG pillars are an aggregate of various components that are weighted and combined to form a score, for example the social factor in some industries encompasses issues related to working conditions, diversity and inclusion, equality in career advancement and certain research studies have investigated the sustainability position of and impact on corporations by considering these components. However, in this study, only the main pillars, environmental, social and governance are considered. This might also pose a limiting factor since it does not allow us to see the impact of certain specific components. Thus, this can be an area of further studies where all material components are considered separately. To sum up, this study does not consider the possibility of variation in ESG performance across specific economic regions within the developed and developing countries.

3. EMPIRICAL FINDINGS AND DISCUSSIONS

3.1 Descriptive Statistics

Tables 3.1 and 3.2 present the descriptive statistics of all the variables used in this study for developed markets and emerging markets respectively. It can be shown from Table 3.1 that ESG combined scores in developed countries range between 4.1 and 89.98 with a mean of 48.82 and median of 49.45. This indicates that there is a large variation in the ESG performance of banks in developed countries and this is also shown by the considerably high standard deviation of 19.07. More so, looking closer to individual ESG pillars the wide range between the minimum and maximum score is maintained especially for the social pillar, governance pillar and the ESG controversy. This shows that some banks are engaged in sustainable efforts while others are not as much. However, the Environmental pillar appears to have the highest minimum score of 15.26 which suggests that in compassion to other ESG issues, banks in developed countries are collectively more inclined to environmental sustainability. Comparatively looking at Table 3.2 which shows the descriptive statistics for emerging markets, it can be shown that ESG combined has a similar minimum and maximum score which is slightly higher than that of developed markets and this is shown by a higher mean score of 51.75 and median of 52.35. Even though the difference is minimal, it is interesting to obtain a higher mean value of ESG combined score for emerging markets as compared to developed markets given the advancement of the developed economies and the corresponding efforts towards sustainability. Table 3.2 also indicates that overall, the individual ESG pillar has similar score variation as developed markets. And this can imply that the banks in both markets are inclined as much to sustainability issues.

Furthermore, tables 3.1 and 3.2 show that developed markets and emerging markets have similar capital adequacy ratios with a mean of 0.152 and 0.157 respectively. And notably both markets have minimum capital adequacy ratios less than 8% benchmark of Basel II set by Basel Committees as part of the international banking regulations, 2004. This implies that some banks are failing to meet the minimum capital requirements, hence this might have an impact on their ability to invest in ESG issues. Moreover, the statistics show a similar level of liquidity for both markets as shown a similar mean value of Liquidity Asset Ratio. This is an interesting observation given the expected higher liquidity position for developed markets than emerging markets. Additionally, these similarity in mean values are shown for other control variables, that is provision for loan

losses (PLL) and non-performing loans (NPL), and such observations were not expected due to the assumption that in developed countries the NPL and PLL should be lower given the possibly enhanced ability of borrowers to payback in a better economic environment. Nevertheless, the maximum value of NPL in emerging markets is higher than that of developing countries which mildly support the stated assumption above.

Table 3.1 Descriptive Statistics: Developed Markets

Variable	Number of observations	Min	Max	Mean	Median	Standard Deviation
ROE	1040	-0.8827	0.4825	0.07772106	0.0805	0.07990735
ESG Combined	1040	4.1	89.98	48.81577	49.45	19.06606
Environmental	1040	15.26	94.3	53.34288	58.025	29.8526
Social	1040	0.93	97.64	54.3723	56.885	25.03352
Governance	1040	5.8	97	57.23276	58.91	22.93708
ESG Controversy	1040	0.49	100	79.97978	100	32.2098
Capital Adequacy Ratio	1040	0.076	0.541	0.1628285	0.152	0.04884232
Liquidity Asset Ratio	1040	0.7127	1.05257	0.9427646	0.9562031	0.04509528
NPL	1040	0	0.4646	0.03241923	0.0173	0.04840441
Total Assets	1040	15.66	26.5417	19.899919	19.83165	2.302351
PLL	1040	0.0132	0.0548	0.03815673	0.0019	0.006384904

Table 3.2 Descriptive Statistics: Emerging Markets

	Number of observations	Min	Max	Mean	Median	Standard Deviation
ROE	1010	-2.257	0.9814	11.60323	0.1209	0.1285982
ESG Combined	1010	6.72	91.78	51.75414	52.35	19.01634
Environmental	1010	0	97.66	47.86031	52.075	25.58908
Social	1010	2.46	98.61	54.15709	56.055	23.93347
Governance	1010	0.47	95.77	55.07896	59.105	22.37514
ESG Controversy	1010	8.48	100	93.67819	100	17.38397
Capital Adequacy Ratio	1010	0.061	0.4277	0.1596801	0.1576	0.03174095
Liquidity Asset Ratio	1010	0.6867035	0.9903586	0.9506039	0.9580407	0.03141434
NPL	1010	0.0006	0.6407	0.04822531	0.0265	0.07753295
Total Assets	1010	0.1403825	0.2803881	0.2094684	0.2072863	0.02709706
PLL	1010	0.0218	0.2039	0.01297099	0.00855	0.01539431

3.2 Correlations

With reference to Table 4.1.1 for developed countries, it can be shown that all three individual ESG pillars are strongly and positively correlated with the ESG combined and this comes with no surprise given that the combined score is an aggregate of the 3 pillars. More so it is notable that ESG controversy is negatively correlated with other individual ESG scores, Environmental, Social, and Governance, and this implies that the more companies have controversies regarding ESG issues the lower the score is allocated as their ESG performance. Comparatively, similar results are obtained for ESG factors in emerging markets as shown in Table 4.2.1. To add, ROE has a strong positive correlation with ESG combined score (0.1335***, $p < 0.01$), Governance factor (0.1720***, $p <$

0.01), as shown in table 4.1.1 for developed countries. This implies that banks with a higher overall ESG performance and especially good governance tend to have a better financial performance. Nevertheless, the matrix also shows that high performance in environmental issues is associated with decreased banks performance as indicated by a significant negative correlation (- 0.0871***, $p < 0.01$). Unexpectedly, Table 4.1.1 also shows that ESG controversy moves in the same direction as ROE for banks in developed countries which implies that banks with high ESG controversies have better performance, and this can be because they are focused more on profit as supported by shareholders' theory. On the other hand, results for emerging markets presented in Table 4.1.2 show that ROE has a strong negative correlation with the social pillar which differs from developed markets with no correlation found. The observed inverse correlation implies that efforts towards high performance on the social issue are associated with decrease in ROE. Regarding ESG controversies, similar correlation results are observed between ROE and ESG controversy in emerging markets as in developed markets.

Furthermore, Table 4.1.1 shows that Liquidity Asset Ratio (LAR) has a strong negative correlation with the ESG combined score (- 0.1396***, $p < 0.01$) and with all individual ESG pillars. This entails that an increase in ESG scores align with a decrease in liquidity of banks. This can be explained by outflows of funds from banks when financing ESG related activities which comes at the expense of the banks. A similar negative correlation between liquidity and ESG factors is also found in emerging markets as shown in Table 4.2.1. This implies that the association between liquidity position and the efforts toward ESG performance is universal in the banking industry across the markets. While on the same note, a positive correlation between ESG controversy and Liquidity both in emerging and developed markets, suggest that banks with high controversies are likely not making substantial investments towards ESG issues hence they tend to remain with a higher liquidity position from unused reserves buy consequently attract controversies.

Furthermore, Table 4.1.1 indicates that there is a strong positive correlation ($p < 0.01$) between capital adequacy ratio and individual ESG scores, Environmental, Social and Governance. This implies that banks with a good ESG performance are more likely to have a higher CAR and this is an important note for banks, given the underlying minimum capital requirements by local and international banking authorities. However, the correlation does not hold for the ESG combined and the ESG controversy which suggests a possible need for narrowed attention on each individual ESG pillar. On the other hand,

Table 4.2.1 shows that in emerging markets CAR has strong positive correlation with social and governance pillar including the ESG combined and ESG controversy which comparatively was shown to have no correlation in developed countries. Also, CAR has a negative correlation with environmental pillar (- 0.0774***, $p < 0.01$) in emerging markets as opposed to banks in developed countries with positive correlation (0.0913**, $p < 0.05$). This suggests possible differences in approach to minimum capital requirement for banks in developed markets versus emerging markets.

Table 4.2.1 shows that total assets, a proxy for the size of the banks, have a strong positive correlation with ESG factors in emerging markets. This suggests that the larger the banks are in emerging markets the better they are likely to perform in ESG issues. However, no relation was shown with ESG controversies. Comparatively, in developed markets as shown in Table 4.1.1, the size of the bank has strong positive correlation with only the environmental pillar with coefficient 0.3312, $p < 0.01$ and governance pillar with coefficient 0.1519, $p < 0.01$. It also shows that it has a negative correlation with ESG Controversy, and this suggests that the bigger the banks the less likely they are to have ESG related controversies. This can be explained by the fact that these large banks are under public watch therefore are likely to be more careful in their operations and in addition, this correlation is because they have the capability to finance ESG issues.

Furthermore, regarding nonperforming loans and provision for loan losses, Table 4.2.1 shows that there is a positive correlation with ESG factors for banks in emerging markets. On the other hand, the results in Table 4.1.1 for developed countries show that NPL has positive correlation with only Environmental pillar and negative correlation with governance. Also, PPL is shown to have positive correlation with ESG factors except Governance pillar. The positive correlation for PPL suggests that banks that have high ESG scores tend to be expectant of possible future non-performing loans, hence an increased level of provision for loan losses. Also, this positive relation suggests that banks that get high ESG scores are more skeptical of the outcome of their indirect efforts towards ESG issues which is financing green projects as explained previously in this paper. Moreover, a negative correlation between NPL and Governance pillar suggests that the better performance in governance issues by banks can result in lower level of nonperforming loans.

Table 4.1.1: Correlation between ESG scores and bank factors: Developed Markets

	ESG Combined	Environmental	Social	Governance	ESG Controversy
ESG Combined	1				
Environmental	0.6043***	1			
Social	0.788***	0.7191***	1		
Governance	0.6855***	0.4891***	0.5501***	1	
ESG Controversy	0.0025	- 0.4568***	- 0.4695***	- 0.3301***	1
ROE	0.1335***	- 0.0871***	0.0432	0.1720***	0.0858***
Capital Adequacy Ratio	0.0547	0.0913***	0.0807***	0.0858***	- 0.0789
Liquidity Asset Ratio	- 0.1396***	- 0.1096***	- 0.1285***	- 0.1994***	0.1122***
NPL	0.1930	0.1529***	0.0707	- 0.1561***	- 0.0007
Total Assets	0.0026	0.3312***	0.0177	0.1519***	- 0.2111***
PLL	0.1154***	0.1423***	0.1485***	0.0322	- 0.0780

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,

Table 4.2.1: Correlation between ESG scores and bank factors: Emerging Markets

	ESG Combined	Environmental	Social	Governance	ESG Controversy
ESG Combined	1				
Environmental	0.6760***	1			
Social	0.8798***	0.6871***	1		
Governance	0.6630***	0.2129***	0.3427***	1	
ESG Controversy	0.0951***	- 0.0997***	- 0.1189***	0.1324***	1
ROE	- 0.0577	- 0.0279	- 0.0708**	- 0.0537	0.0635**
Capital Adequacy Ratio	0.1525***	- 0.0774**	0.0959***	0.1925***	0.1056***
Liquidity Asset Ratio	- 0.1533***	- 0.15908***	- 0.1428***	- 0.1320***	0.0623**
NPL	0.0831***	0.1342***	0.0704**	0.0525*	- 0.0608*
Total Assets	0.2217***	0.0650**	0.2090***	0.1933***	0.0223
PLL	0.1691***	0.2325***	0.2168***	0.0285	- 0.1808***

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,

In addition, Table 4.1.2 shows a strong negative correlation between ROE with only two control variables, liquidity asset ratio LAR and nonperforming loan NPL in developed countries. The observation on NPL comes with no surprise given the expectation that the lower the level of non-performing loan in banks, the better the bank is likely to be performing. However, it is interesting to observe the inverse correlation between liquidity and ROE, which suggests that banks should not keep very high levels of liquidity to achieve a better performance. Moreso, the results indicated in the same Table 4.1.2 show

no significant correlation between ROE with Capital Adequacy Ratio, Total Assets, PLL. Comparatively, Table 4.2.2 shows that ROE has a strong positive correlation with Liquidity in emerging markets unlike developed markets with adverse relation. This suggests that in emerging markets, banks with higher liquidity positions tend to have a better performance. Notably, the same correlations between NPL and ROE in developed markets are also found in emerging markets as shown by a strong negative correlation which comes as no surprise.

Table 4.1.2 Correlation between bank factors: Developed Markets

	ROE	**Capital Adequacy Ratio**	**Liquidity Asset Ratio**	**NPL**	**Total Assets**	**PLL**
ROE	1					
Capital Adequacy Ratio	0.0341	1				
Liquidity Asset Ratio	- 0.1061***	-0.2230***	1			
NPL	- 0.5310***	- 0.0830***	0.0245	1		
Total Assets	- 0.0363	0.0168	0.0495	- 0.1271***	1	
PLL	- 0.4526	- 0.0903	- 0.0633	0.5755***	- 0.1415***	1

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,

Table 4.2.2 Correlation between bank factors: Emerging Markets

	ROE	**Capital Adequacy Ratio**	**Liquidity Asset Ratio**	**NPL**	**Total Assets**	**PLL**
ROE	1					
Capital Adequacy Ratio	0.0203	1				
Liquidity Asset Ratio	0.1589***	0.1267***	1			
NPL	- 0.1298***	- 0.0176	- 0.3010***	1		
Total Assets	0.0466	0.1789***	- 0.0136	- 0.0875***	1	
PLL	- 0.2236***	- 0.0134	- 0.3085***	0.3245***	- 0.0165	1

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,

3.3 Tests for Regression Analysis

Multicollinearity Test

As indicated in the tables above, there are correlations between explanatory variables which suggest the issue of multicollinearity that might affect the results of the underlying multiple regression models. Accordingly, in this study we further investigated whether these correlations would have a significant impact on our model. And this was achieved

through the computation of Variance Inflation Factors (VIF) as shown in Table 5 below. The desirable factor values are between 1 and 10 which indicates that the results of the multiple regression models can be reliable without the distortion of multicollinearity. Table 5 below shows that the values of VIF are in fact between 1 and 10, which implies that the observed correlations will not have an impact on all the models for developed and emerging markets.

Table 5: Multicollinearity Test: Variance Inflation Factor (VIF)

	Developed Markets		**Emerging Markets**	
Variables	**VIF**	**VIF**	**VIF**	**VIF**
ESG Combined	1.55	-	1.21	-
Environmental	-	2.88	-	2.02
Social	-	2.81	-	2.22
Governance	-	1.64	-	1.24
ESG Controversy	-	1.38	-	1.08
Capital Adequacy Ratio	1.07	1.07	1.13	1.13
Liquidity Assets Ratio	1.08	1.11	1.20	1.22
NPL	1.51	1.68	1.31	1.20
Total Assets	1.03	1.39	1.29	1.11
PLL	1.55	1.57	1.20	1.26
Mean VIF	1.21	1.73	1.23	1.39

Causality

Table 6 below shows the panel causality test which aims to determine and justify the direction of the panel regression model to be used in this study. The underlying hypothesis tested whether ESG factors have a causing effect on the ROE. To achieve this, we employed Pairwise Dumitrescu Hurlin Panel Causality Test due to the availability of heteroskedasticity and multicollinearity, (Dumitrescu, 2012). And as shown on the table below, the p-values are less than 0.05 ($p < 0.05$) for both developed and emerging markets therefore the null hypothesis is rejected, and this further implies that the ESG factors cause a change in return on equity. Accordingly, this study empirically considers ROE as the dependent variable and ESG pillars as independent variable.

Table 6: Direction of Causality: Pairwise Dumitrescu Hurlin Panel Causality Test

	Null Hypothesis	**W-stats**	**p-value**
Developed Markets	ESG factors does not homogeneously cause ROE	2.90394	0.00002 ***
Emerging Markets	ESG factors does not homogeneously cause ROE	3.10162	0.00001 ***

Hausman Test

To further develop and choose an appropriate model for our study, we performed a Hausman Test with which the results are shown in Table 7 below. We performed the Hausman test to choose between a random effect model or fixed effect model where the random effect model assumes a covariance of zero between the underlying independent variables and other uncaptured variables. And the fixed effect model considers a nonzero covariance between explanatory variables and uncaptured variables. The null hypothesis states that the appropriate model is random effect, however, as shown in table 7 that all the p-values are less than 0.05 ($p < 0.05$) for both developed and emerging markets, we reject the null hypothesis, and this implies that the fixed model is appropriate. Accordingly, in this study we performed a panel multiple regression with fixed effect.

Table 7: Hausman Test

	Model	**Chi-square value**	**p-value**	**Model**
Developing Markets	ESG Combined	111.6	0.0000	Fixed effect
	Individual ESG Pillars	123.03	0.0000	Fixed effect
Emerging Markets	ESG combined	62.97	0.0000	Fixed effect
	Individual ESG Pillars	51.37	0.0000	Fixed effect

3.4 Regression results

Table 8.1 shows the results of the multiple panel regression model where the Driscoll and Kraay standard error approach is employed. This approach was employed in this study as a remedy for diagnostic issues observed in the fixed effect model Özdemir (2019). Such issues encompass the presence of heteroskedasticity, serial correlation and cross-sectional dependence. Reference to Table 8.1, the results of the Model 1.1 DM shows that the ESG combined has a significant positive impact on the ROE of banks in developed markets as shown by $p < 0.01$, and coefficient of 0.0411. Notably, these results are obtained by considering the lagging effect of ESG factors. The positive coefficient indicates and infers that an improvement in ESG performance can be strategically used by banks to enhance a better bank performance. And this is also consistent with the findings of Buallay (2019), who presented a positive impact of ESG combined on bank performance. However, in emerging markets as shown by Model 1.1 EM in Table 8.1, the ESG combined does not have any significant impact on bank performance in emerging markets. The results for developing countries are still limited and mixed as indicated by Janah & Sassi (2021) in their systematic literature review for developing markets. They however empathized that,

even though limited studies are available for emerging markets, the majority are presenting a positive impact of ESG on firm performance as opposed to the findings of this study. Interestingly, the findings for ESG combined and banks performance both in developed and emerging markets are similar for models with 1-year lagging effect and the models without lag as shown in Table 8.2 presented in appendix. This supports the notion of current ESG scores (t) affecting the current performance (t).

Furthermore, as shown in Table 8.1, individual ESG factors have varying impacts on the bank performance both in developed and emerging markets. Firstly, the Model 1.2 DM, shows that Environmental and Social pillar have a significant positive impact on the ROE for banks in developed countries as shown by coefficients of 2.0873, $p < 0.01$ and 0.0410, $p < 0.1$ respectively. This suggests that banks can improve their overall performance by taking initiatives to enhance their reputation on environment and social issues. As noted earlier, banks can achieve this by directly taking actions within the entity or indirectly through financing projects that incorporate ESG issues in their initiatives. Moreso, it is shown in the same Model 1.2 DM that governance pillar does not have any significant impact on ROE while the ESG controversy is shown to have a positive impact on ROE with coefficient 0.0214, $p < 0.01$ for banks in developed countries. The latter suggests that banks which are not graciously focusing on ESG issues as shown by higher scores in ESG controversies are able to retain a higher return on equity. This is consistent with the shareholders theory by Friedman (1970), which emphasizes that firms have a sole responsibility to improve the shareholders' value. These same results on the impact of ESG controversy was also found for banks in emerging markets and this suggest a universal notion that banks having ESG controversies can obtain higher ROE by solely focusing on maximizing shareholders value even at the expense of other stakeholders.

Furthermore Model 1.2 EM shows that Governance pillar has a significant negative impact on ROE of banks in emerging markets with coefficient of – 0.0197292, $p < 0.1$, while developed markets show no impact. The observed inverse relationship shows that an attempt by banks in emerging markets to enhance better governance scores can be detrimental to the overall bank performance. To add, as shown in Table 8.1 under Model 1.2 EM, the results also indicate that Environmental and Social factors have no impact on banks performance in emerging markets. Our findings for developed countries are partially consistent with the results obtained by Buallay (2019) in her study of ESG

performance for European banks. She found that Environmental and social factors had significant impact on ROE while Governance pillar was shown to have a negative impact on performance as opposed to our study with Governance factor showing no impact on ROE. Notably, other previous studies showed conflicting results. For example, Miralles-Quirós et al (2019) investigated the impact of ESG factors on bank performance and they found conflicting results which might be because of using Tobin Q as opposed to ROE in this study. They found that only the governance pillar had an impact on bank performance in developed countries as opposed to our findings with Governance showing no significant impact. In emerging markets, they found Environmental factors and Governance to have significant positive impact while social issues had negative impact on performance which is different in our study where no significance is found for environmental and social pillars.

Moreover, for developed markets, the results with lagging effect shown in Table 8.1 for individual ESG scores are consistent with the results of the model without the lagging effect as shown in Table 8.2 presented in appendix. This evidently suggests that the significant impact of ESG factors is not limited only to subsequent years as suggested by the theoretical perspective of lagging effect. In addition, the Table 8.1 and 8.2 shows that for emerging markets, the Governance pillar has a similar negative significant impact for model with lagging effect as shown by a coefficient of - 0.0197292, $p < 0.1$ and without a lagging effect showing a coefficient - 0.07414, where $p < 0.05$. This implies that initiatives toward governance issues can have an impact in the same period as it does in subsequent years. Moreso, Table 8.2 shows that for emerging markets, Social factor only has a significant negative impact if the lagging effect is not considered, and this implies that the efforts of banks toward better reputation on social issues instantly has an adverse effect on the overall bank performance.

Table 8.1: Panel regression analysis: ESG and bank factors (t - 1)

Dependent Variable	Developed Markets. ROE				Emerging Markets ROE			
	Model 1.1 DM		Model 1.2 MD		Model 1.1 EM		Model 1.2 EM	
	Coefficient (p-value)	Standard Error	Coefficient (p-value)	Standard error	Coefficient (p-value)	Standard Error	Coefficient (p-value)	Standard Error
ESG Combined	0.0411283 (0.016) ***	0.0134766	-	-	0.002569 (0.948)	0.0383206	-	-
Environmental	-	-	2.087375 (0.000) ***	0.2800968	-	-	- 0.005479 (0.360)	0.0087997
Social	-	-	0.0410269 (0.096) *	0.02177	-	-	0.0067674 (0.824)	0.029407
Governance	-	-	0.0063793 (0.644)	0.0132907	-	-	- 0.0197292 (0.082) *	0.0099126
ESG Controversy	-	-	0.0214317 (0.007) ***	0.005925	-	-	0.0211454 (0.091) *	0.011011
Capital Adequacy Ratio	- 0.21733154 (0.003) ***	0.0536527	- 0.2184661 (0.009) ***	0.0630687	- 0.3191073 (0.177)	0.2154496	0.3209351 (0.182)	0.2193889
Liquidity Asset Ratio	- 0.1729894 (0.003) ***	0.042308	- 0.1794212 (0.006) ***	0.0483549	0.2280537 (0.185)	0.1573289	0.2161716 (0.209)	0.1582659
NPL	0.083856 (0.460)	0.1079648	0.0899132 (0.465)	0.117258	- 0.6504584 (0.361)	0.6717799	- 0.6499439 (0.361)	0.671008
Total Assets	- 3.927231 (0.000) ***	0.4846618	- 4.263259 (0.001) ***	0.8448698	- 4.989936 (0.001) ***	0.9791662	- 4.737943 (0.001) ***	0.9092565
PLL	- 8.038098 (0.000) ***	0.7854447	- 8.0079 (0.000) ***	0.7459876	- 2.976107 (0.022) **	1.051982	- 2.953522 (0.022) **	1.036844
Constant	106.3752 (0.000) ***	8.765675	-	-	105.763 (0.004) ***	26.80678	100.877 (0.003) ***	24.68099
F-statistic	55.67 (0.000) ***		115.25 (0.000) ***		122.04 (0.000) ***		141.61 (0.000) ***	
R-Squared	0.4772		0.4832		0.1836		0.1848	

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,

In addition, Table 8.1 also illustrates the relationship between the underlying control variables and bank performance. Firstly, by considering the lagging effect of explanatory variables, Model 1.1 DM indicates that capital adequacy ratio has a significant negative impact on ROE for banks in developed markets as shown by a coefficient of - 0.21733, p < 0.01. However no significant impact of CAR is shown for banks in emerging markets. The observed inverse relationship in developed countries contradicts the studies in literature such as Shabani et al (2019) who concluded that CAR has a positive impact on bank performance. The findings of this study suggest that banks should only strive to

meet the benchmark set by regulators without going beyond as it will likely have an adverse effect on the overall bank performance. Notably, Table 8.2 indicates that without considering the lagging effect, capital adequacy ratio does not have any significant impact on the ROE of banks in developed and emerging markets. This is consistent with the findings by Menicucci & Paolucci (2022) who concluded that CAR of the period (t) does not significantly impact the bank performance of period (t) in Italy.

Moreover, the coefficients of Model 1.1 MD, - 0.17299, $p < 0.01$ for a 1-year lag of liquidity ratio shows a significant negative impact on the return on equity for banks in developed countries while in emerging markets, no significant impact is displayed. In line with the stated insignificant impact of liquidity for emerging markets, Ongore & Kusa (2013) also concluded that liquidity has no impact on bank performances in Kenya. Additionally, the recorded inverse impact of liquidity level for developed countries is also confirmed by Menicucci & Paolucci (2022) for Italian banks. Interestingly, without considering the lagging effect as shown in Table 8.2, liquidity does not have any significant impact on ROE for banks both in developed and emerging markets. It is noticeable that in developing countries the results do not change with consideration of lagging effect as shown by no significance in both cases, while in developed countries results changed, as shown by high levels of liquidity in the previous year to adversely affect the bank performance in the subsequent year. In a nutshell, the inverse relation shows that banks that tend to maintain high levels of liquidity in developed countries will likely sabotage their overall performance. Whereas the same does not hold for emerging markets.

Furthermore, the results shown in Table 8.1 under Model 1.1 MD indicates that the size of the banks which is represented by logarithm of total assets in developed markets has a significant negative impact on ROE as shown by - 3.927231, $p < 0.01$, and similar results are observed in emerging markets where size also shown to have a significant negative impact on ROE. The observed inverse relation comes as a surprise given the notion that larger banks are more likely to have better performance due to more access to resources and support from government agencies. Moreso, it can also be shown that similar results are maintained for both emerging and developed markets when the lagging effect is not considered as shown in Table 8.2 by a significant negative impact of total assets on ROE. Overall, the results shown for total assets in this study offer a contradictory conclusion from some studies in literature. For example, Buallay (2019) reported that total assets as

a proxy for bank size has a positive impact on performance of banks in the European region.

Furthermore, Table 8.1 shows coefficients of - 8.0381, $p < 0.01$ for developed markets and - 2.953522, $p < 0.05$ for emerging markets, which indicates that the provision for loan losses, PLL has a strong negative impact on ROE for banks in both markets. This shows that banks that reserve less for potential loan losses tend to perform better. On the same note, the banks which tend to reserve less as provision for losses are most likely confident of the quality and prospects of their assets, which is mostly confirmed by better returns as illustrated by the inverse relationship. Similar results are also confirmed when the lagging effect is not considered as shown in Table 8.2 and this suggests the universal impact of PLL on ROE across time periods. In addition, the non-performing loans NPL are shown in Table 8.1 to have no significant impact on bank performance both in developed countries and emerging countries. Similar results are shown when the lagging effect is not considered. The insignificant impact of NPL implies that banks performance is not significantly dependent on performance of loans which implies other factors that can improve or harm banks performance.

3.5 Robustness Test

To ascertain the findings of this research, a robustness test was applied following considerations of possible deviations that might rise under certain assumptions of the model used. To achieve this task, further regression analysis was executed where each ESG pillar was considered with its own separate model as opposed to the model shown in Table 8.1 where all three ESG pillars were included in one model. The results of the robustness test regression analysis are shown in table 9.1 and 9.2 in appendix. This application was motivated by the assumption that including all pillars in one model might result in a confounding effect of one ESG pillar to the other, thus distorting the true impact of each individual factor. This assumption was also applied for two control variables NPL and PLL where the NPL was omitted to avoid the possible absorption effect which might distort the impact of provision for loan losses. With reference to the CAMELS framework, this assumption is supported by the fact that PLL is usually determined by banks based on the quality of assets, especially those regarded as non-performing, thus by eliminating NPL, possible differences in results could be expected.

Furthermore, by considering a possible misspecification of omitting variables, which can result in biased results, the robustness test employed an additional variable which is a 1-year leg of the ROE. The results of the regression analysis executed as a robustness test showed similar results for all individual ESG pillars both in developed and emerging markets and this outcome solidifies the robustness of conclusions made in our studies under varying assumptions.

CONCLUSIONS and RECOMMENDATIONS

The growing interest in ESG issues among investors, academics and other interested constituencies has led to several studies conducted to understand whether ESG factors have any significant influence on business performance within and across industries. However, there is limited evidence to support the position and impact of ESG in the banking sector and the results are mixed, hence the incentive for this paper. This study investigated the impact of ESG pillars on ROE, which was used as a measure of bank performance. The examination of this nexus was categorically executed for banks in developed markets and emerging markets to understand how ESG factors comparatively interacted with bank performance between both markets. The results showed that ESG combined has a strong positive impact on the banks performance in developed countries while no significant impact was observed for emerging markets in both multiple scenarios that is with and without lagging effect. This finding strongly suggests that when ESG issues are considered as an aggregate measure of sustainability level, notable effects on bank performance are only observed for developed markets, and this can be because stakeholders in developed markets are becoming more conscious and aware of sustainability issues hence pushing banks to take initiatives for better reputation.

In addition, when individual ESG pillars are considered, the results show that environmental and social factors have a significant positive impact on ROE for banks in developed markets while in emerging markets, only governance pillar is shown to have a significant impact on bank performance and notably with adverse effect. These findings in developed markets align with the stakeholder theory which advocates for the need for businesses to be considerate of all stakeholders of interest as this would eventually benefit the firm in the long run. Therefore, the observed positive impact implies that banks that perform better in environmental and social issues tend to retain a better bank performance. Environmental issues encompass areas such as climate change and the use of natural resources thus banks can indirectly enhance sustainability by financing projects devoted towards these areas or rather projects undertaken with ESG consideration. However, the recorded significant negative impact of governance pillar on ROE for banks in emerging markets aligns with the shareholders' theory which emphasizes and supports only company efforts towards the maximization of profit for shareholders and that any other initiatives would adversely affect firms' performance. Furthermore, ESG controversies are shown to have a strong positive impact on bank performance in developed and

emerging markets. This signals that banks with high ESG controversy are less concerned about ESG issues and thus they are more focused on maximizing their profit hence better performance.

With the extended comparison made in this paper on the lagging effect, similar results are observed for the impact of ESG factors on ROE in developed markets when lagging effect is not considered, whereas in emerging markets, slight differences are observed. For instance, social issues are shown to have a negative impact on ROE when the lagging effect is not considered, and this implies that the bank's efforts towards social issues can adversely impact the performance in the current period and this negative impact also aligns with shareholders' theory. Overall, the results recommend banks to carefully consider their efforts and initiative towards ESG issues such that it brings about the benefits for all stakeholder without jeopardizing the financial position. This is especially true for banks in developed countries whose performance has been shown to be the most impacted by ESG factors.

The findings of this paper provide insights that can support recommendations to banks and other stakeholders of interest. To start with, the strong positive impact of ESG combined on Return on Equity, which is observed in Table 8.1 for developed markets, supports that banks in these markets are recommended to continuously take initiatives to enhance sustainability otherwise the overall performance can be adversely affected. This is especially applicable for issues related to environmental and social issues. Thus, banks are encouraged to partake in missions aiming at dealing with climate change risks, and use of natural resources. This can be indirectly achieved by exclusively funding projects that are being undertaken in alignment with climate change goals and conservation of natural resources. For example, a project that empathizes recycling of materials. In addition to that, banks in developed countries ought to carefully deal with social issues regarding all stakeholders, such as employees, customers, and communities. And these social issues include matters such as working conditions and human rights. This is especially true in this era of social media where content of malicious acts by banks can easily be known in the world thereby ruining the reputation. Furthermore, it can be shown that ESG factors do not have an impact on bank performance in emerging markets and this can be because ESG issues have not fully been integrated in the emerging markets. And this poses as an encouragement for banks, authorities, policy makers to take

initiatives to enhance ESG practices and ensure more transparent ESG disclosures in emerging markets.

Furthermore, the considered control variables which are Capital Adequacy Ratio and Asset Liquidity Ratio are shown to have an adverse effect on the performance of banks in developed markets and this implies that banks in these markets are encouraged to maintain a minimal level of liquidity and capital. This can possibly be achieved by maintaining the CAR, which meets the criteria of local authorities and or to Basel II set by the Basel Committees as part of the international banking regulations. This recommendation also extends to banks in emerging markets, that is to only maintain the required capital by authorities because no significant impact was observed for CAR. Not surprisingly, provision for loan losses is recommended to be maintained at minimal as it is shown to have an adverse impact on bank performance.

The study of ESG performance incorporates several qualitative and subjective factors as pointed out in this study and we believe that there are other dominant factors that can be integrated with ESG performance of which there is still limited research study. Further research could consider how factors such as culture of countries and regions can play a crucial role in determining the extent to which companies consider ESG issues in their business practice. This can be an area for further studies to understand how ESG performances vary in different cultures.

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APPENDICES

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Appendix 2: List of abbreviations

LIST OF ABBREVIATIONS

ASEA **:** Association of Southeast Asian Nations

BP **:** Bank Performance

CAMELS **:** Capital Adequacy, Asset Quality, Management, Earnings, Liquidity, Sensitivity to Risk

CAR **:** Capital Adequacy Ratio

CFA **:** Chartered Financial Analyst

CSR : Corporate Social Responsibility

CSRD : Corporate Sustainability Reporting Directive

DM : Developed Markets

EM : Emerging Markets

ENV : Environment

ESG : Environmental Social Governance

COM : Combined

CON : Controversy

EU : European Union

G7 : Seven of the world's advanced economies

GOV : Governance

LAR : Liquidity Assets Ratio

MSCI : Morgan Stanley Capital International

NFRD : Non-financial Reporting Directive

NPL : Non-performing Loans

NSFR : Net stable funding ratio

PLL : Provision for Loan Losses

RM : Robustness Testing Model

ROA : Return on Assets

ROE : Return on Equity

SOC : Social

TA : Total Assets

UK : United Kingdom

UN : United Nations

USA : United States of America

VIF : Variance Inflation Factor

WACC : Weighted Average Cost of Capital

Appendix 3:

Table 8.2: Panel regression analysis: ESG and bank factors (t)

Dependent Variable	Developed Markets ROE				Emerging Markets ROE			
	Model 2. DM		Model 2. MD		Model 2. EM		Model 2. EM	
	Coefficient (p-value)	Standard Error	Coefficient (p-value)	Standard error	Coefficient (p-value)	Standard Error	Coefficient (p-value)	Standard Error
ESG Combined	0.030592 (0.008) ***	0.008927	-	-	- 0.0665812 (0.000) ***	0.0117149	-	-
Environmental	-	-	1.874891 (0.018) **	0.6482953	-	-	0.0178024 (0.424)	0.02127
Social	-	-	0.0503231 (0.040) **	0.0209411	-	-	- 0.0347559 (0.040) **	0.0145073
Governance	-	-	- 0.0158816 (0.276)	0.0136966	-	-	- 0.0741353 (0.038) **	0.0305096
ESG Controversy	-	-	0.0175349 (0.007) ***	0.0050242	-	-	- 0.002169 (0.942)	0.0288162
Capital Adequacy Ratio	0.0043698 (0.963)	0.0927607	- 0.0033522 (0.969)	0.0840248	0.4397543 (0.183)	0.3050144	- 0.4236904 (0.212)	0.3154791
Liquidity Asset Ratio	- 0.0062488 (0.931)	0.0704493	- 0.0086768 (0.895)	0.0640386	0.5823041 (0.035) **	0.2353538	0.5571856 (0.035) **	0.2242986
NPL	- 0.0563122 (0.566)	0.0945635	- 0.0638186 (0.475)	0.0856194	0.047106 (0.912)	0.4146646	0.0529923 (0.901)	0.4130244
Total Assets	- 4.179023 (0.012) **	1.332866	- 4.598731 (0.025) **	1.711964	- 2.150422 (0.019) **	0.7498211	- 2.035848 (0.064) *	0.9635732
PLL	- 7.602368 (0.000) ***	0.7259272	- 7.545563 (0.000) ***	0.7109205	- 2.899055 (0.029) **	1.113662	- 2.900122 (0.026) **	1.086306
Constant	93.03924 (0.009) ***	27.96814			15.29477 (0.283)	13.40616	16.86994 (0.192)	11.9711
F-statistic	134.72 (0.000) ***		80439.64 (0.000) ***		260.44 (0.000) ***		949.689 (0.000) ***	
R-Squared	0.4361		0.4424		0.1301		0.1350	

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,

Appendix 4:

Table 9.1: Robustness Test - Panel regression analysis: ESG and bank factors in Developed Markets

Developed Markets ROE						
	RM1		**RM2**		**RM3**	
Dependent Variable	**Coefficient (p-value)**	**Standard Error**	**Coefficient (p-value)**	**Standard error**	**Coefficient (p-value)**	**Standard Error**
Environmental	1.514168 (0.001) ***	.2916203	-	-	-	-
Social	-	-	0.0406464 (0.069) *	0.0193571	-	-
Governance	-	-	-	-	0.008222 (0.598)	0.0149584
ROE (t – 1)	- 0.0604098 (0.479)	.0812989	- 0.0708462 (0.411)	0.0816918	- 0.0609441 (0.471)	0.08061
Capital Adequacy Ratio	- 0.0666833 (0.387)	.0729131	- 0.1031714 (0.207)	0.075101	- 0.0697512 (0.372)	0.0737327
Liquidity Asset Ratio	0.038914 (0.521)	.0580365	.04288 (0.490)	0.0592115	0.0383809 (0.539)	0.0598032
Total Assets	-3.631313 (0.001) ***	.6717946	-4.799684 (0.003) ***	1.10884	-3.768001 (0.000) ***	0.5636363
PLL	-7.904585 (0.000) ***	.8085656	-7.850683 (0.000) ***	0.7635694	-7.897457 (0.000) ***	0.8100413
Constant	0	0	102.0991 (0.002) ***	23.40616	83.12454 (0.001) ***	14.89602
F-statistic	2727.59 (0.000) ***		77.43 (0.000) ***		161.53 (0.000) ***	
R-Squared	0.4666		0.4699		0.4669	

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,

Appendix 5:

Table 9.2: Robustness Test - Panel regression analysis: ESG and bank factors in Emerging Markets

Emerging Markets ROE						
	RM1		**RM2**		**RM3**	
Dependent Variable	**Coefficient (p-value)**	**Standard Error**	**Coefficient (p-value)**	**Standard error**	**Coefficient (p-value)**	**Standard Error**
Environmental	- 0.0092519 (0.204)	0.0066958	-	-	-	-
Social	-	-	-0.0134169 (0.471)	0.0177462	-	-
Governance	-	-	-	-	- 0.0203076 (0.034) **	0.0079348
ROE (t – 1)	0.2530402 (0.050) *	0.1098667	0.2524468 (0.051) *	0.1098983	0.2508749 (0.053) **	0.1103282
Capital Adequacy Ratio	0.1944578 (0.492)	0.2698121	0.2101499 (0.448)	0.263617	0.2018728 (0.474)	0.2687057
Liquidity Asset Ratio	0.3848271 (0.061) *	0.1765439	0.3869427 (0.058) *	0.1748051	0.3863315 (0.060) *	0.1761352
Total Assets	-5.015571 (0.004) ***	1.272679	- 4.820328 (0.007) ***	1.339211	-4.938134 (0.004) ***	1.213594
PLL	-2.771952 (0.022) **	0.97848	-2.780237 (0.022) **	0.9779761	-2.777699 (0.022) **	.977235
Constant	77.29206 (0.013) **	24.33519	73.04469 (0.018) **	24.52295	76.11288 (0.010) **	22.57684
F-statistic	26.61 (0.000) ***		25.72 (0.000) ***		153.77 (0.000) **	
R-Squared	0.2130		0.2131		0.2134	

Significance level *** p < 0.01, ** p < 0.05, * p < 0.1,