ESG and banking financial performance: A multi-level meta-analysis review.

Mahmoud Zarea [1], Diego Prior [2], and Mohamed Hegazy[3]

[1]Universitat Autònoma de Barcelona, Zarea.Mahmoud@autonoma.cat

[1]Faculty of Commerce, Cairo University

[2]Universitat Autònoma de Barcelona

[3]Faculty of commerce Cairo university

[3]UAB

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Abstract

Purpose -This investigation elucidates the protracted discourse surrounding the relationship between Environmental, Social, and Governance (ESG) performance and financial results within the banking industry by systematically synthesizing the existing empirical literature.

Design/Methodology/Approach - A thorough review of the literature has identified 28 peer-reviewed investigations yielding a total of 196 distinct effect sizes. Utilizing a three-level random-effects meta-analytic methodology, we quantitatively assess the overarching ESG–performance nexus and examine significant moderators, including ESG subcomponents (E, S, G), sources of data, and the selection of financial performance indicators.

Findings - The findings substantiate a strong, positive correlation between ESG engagement and banking performance. The environmental and social dimensions consistently facilitate value generation, while the influence of governance is comparatively less significant. Return on Equity demonstrates a heightened sensitivity to variations in ESG compared to alternative performance metrics, and the discrepancies among ESG rating providers highlight the critical necessity for methodological transparency. The findings exhibit robustness when subjected to publication-bias diagnostics.

Originality/Value - As the inaugural meta-analysis exclusively focused on the banking sector—and the sole analysis to incorporate multi-level and subgroup assessments—this research reconciles previous discrepancies and provides precise, actionable insights for scholars, practitioners, and regulators

seeking to leverage ESG for sustainable value generation.

Keywords: Banking financial performance; ESG; multi-level meta-analysis; sub-group meta-analysis.

1 Introduction

Banks play an essential role in the global economy, not only by ensuring liquidity and credit flows but also by promoting economic stability and long-term sustainability. In recent years, their function has extended beyond traditional financial intermediation to include active participation in sustainable development through Environmental, Social, and Governance (ESG) practices. These practices are reflected in both internal operations—such as green banking initiatives and ethical governance structures—and external activities, including ESG-focused lending and investment strategies (Jan et al., 2023; Zahid et al., 2023). As banks increasingly integrate ESG factors into corporate strategy, evaluating the implications of ESG for Financial Performance (FP) has become a central concern for both academics and practitioners. Financial performance generally refers to the degree to which a company achieves its financial objectives and can be measured using various indicators, such as return on assets (ROA), return on equity (ROE), and Tobin's Q, which capture profitability, efficiency, and market valuation, respectively (Wang et al., 2016).

Despite the growing prominence of ESG, empirical studies have produced mixed results on its relationship with FP. Some research supports a positive association, arguing that ESG enhances risk management and stakeholder trust (Friede et al., 2015), while others suggest negative or inconclusive effects (Carnevale & Mazzuca, 2014; Nguyen & Nguyen, 2021). More recent work has identified non-linear or context-dependent patterns, adding further complexity to this debate (Dragomir et al., 2022; El Khoury et al., 2023). These inconsistencies are rooted in differing theoretical frameworks. Stakeholder theory views ESG as a mechanism for building long-term value through stronger relationships and reputational gains (Barnett & Salomon, 2012). Agency theory, however, cautions that ESG expenditures may reflect managerial self-interest and detract from shareholder returns (Jensen & Meckling, 2019). Trade-off theory emphasizes the cost-benefit tension inherent in ESG investments (Friedman, 2007), whereas the Resource-Based View (RBV) suggests that ESG competencies can become sources of competitive advantage (Russo & Fouts, 1997). These competing views reinforce the need for a comprehensive and systematic synthesis of evidence.

Contextual factors further complicate interpretation. Empirical results are often shaped by regional regulations, time frames, or sector-specific dynamics, raising concerns about external validity and comparability. Meta-analysis offers a robust framework for aggregating findings, addressing heterogeneity, and identifying mod-

erator effects across studies (Moeyaert et al., 2017; Stanley & Doucouliagos, 2012). Several meta-analytic studies have explored the ESG–FP relationship at the firm level, including studies by Friede et al. (2015) and Wang et al. (2016) which examine ESG impacts across various industries. Recent meta-analyses by Velte (2022) and Khamis et al. (2025) also analyze ESG disclosure effects and sustainability performance. However, these studies typically treat the corporate sector as a homogenous unit and do not provide a sector-specific analysis of banks.The novelty of this study lies precisely in its sectoral focus. To the best of our knowledge, this is the first study to apply a multi-level meta-analytic approach to investigate the ESG–FP relationship exclusively in the banking sector. This is a crucial contribution, as banks differ markedly from non-financial firms due to their unique regulatory environment, risk exposure, and stakeholder structure. Existing meta-analyses do not isolate these sector-specific factors, leaving a critical gap in the literature that this study seeks to address. In addition, this research examines methodological drivers of variation in empirical outcomes. ESG scores are derived from different data providers (e.g., Bloomberg, Thomson Reuters, content analysis), each using distinct methodologies. Likewise, FP is measured using various indicators—such as Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q—capturing different financial dimensions. These methodological choices may influence reported effect sizes (Grewatsch & Kleindienst, 2017; Hawn & Ioannou, 2016), and their moderating role has not been fully explored in sector-specific contexts. This study contributes to the literature in three significant ways: (1) it addresses a research gap by focusing on the banking sector; (2) it applies a multi-level meta-analysis to account for within-study effect dependencies; and (3) it investigates how data sources, financial metrics, and ESG subcomponents (E, S, G) moderate the ESG–FP relationship.

The primary aims of this manuscript are fourfold: (a) to establish a comprehensive correlation between ESG and banking FP using existing research findings, (b) to examine how ROA, ROE, and TQ as financial measures used in different studies influence this relationship, (c) to analyze how the data source (including Bloomberg, Thomson Reuters, and content analysis) influences this correlation, and (d) to evaluate the interplay among various elements of ESG. To accomplish these objectives, we synthesized outcomes from 28 academic articles containing 196 effect sizes that were published in Scopus, Web of Science (WoS), and other scholarly outlets. Multi-level meta-analysis techniques were employed to combine effect sizes within the same study to prevent potential overestimation of results. Additionally, a subgroup meta-analysis was utilized to explore the diverse metrics utilized in the studies. The subsequent sections of the paper consist of seven distinct parts. The theoretical background segment consolidates the various theories discussed in prior research and elucidates their relevance to the relationship under investigation. Following that, the literature review portion delves into reviewing the previous studies to formulate the hypotheses.

Subsequently, the methodology section gives a summary of the used methodology and data. This is succeeded by a concise presentation of the definitions and measurements of the variables. Section 5 encapsulates the data preparation and processing steps, while Section 6 focuses on presenting the results along with an in-depth discussion of the findings. Finally, the Conclusion segment encapsulates the key findings and provides a comprehensive summary.

2 Theoretical background

The most widely applied theories used to explore the relationship between Environmental, Social, and Governance (ESG) performance and financial performance include Stakeholder Theory, Agency Theory, Trade-off Theory, the Resource-Based View (RBV), and Stewardship Theory. In addition, Institutional Theory and Signaling Theory provide complementary perspectives. These frameworks offer varying explanations of how ESG activities may affect firm performance, and their theoretical diversity reflects the lack of consensus observed in the empirical literature. In our review of the articles analyzed in this study, we found that the most widely referenced theories are Stakeholder Theory, Agency Theory, and Signaling Theory, highlighting their central role in shaping current academic discourse on ESG outcomes.

Stakeholder Theory asserts that firms must manage relationships with a wide range of stakeholders—including shareholders, employees, customers, governments, and communities—in order to ensure long-term success. In this view, ESG activities are not costs but strategic investments that enhance trust, reputation, and risk management (Alamsyah & Muljo, 2023; Azmi et al., 2021; A. Buallay et al., 2021). Within the banking sector, this theory suggests that stakeholder engagement reduces risk-taking and promotes sustainable profitability (Ersoy et al., 2022). A closely related concept, Good Management Theory, treats CSR and ESG efforts as intangible assets that improve internal efficiency and long-term profitability by fostering positive stakeholder relations (Barnett & Salomon, 2012; A. Buallay, 2019).

Agency Theory, in contrast, is grounded in the principal-agent relationship, where managers (agents) may pursue personal interests at the expense of shareholder value (Jensen & Meckling, 2019). ESG engagement, from this perspective, can represent a form of managerial discretion that dilutes financial returns unless properly monitored or incentivized (Abdullah et al., 2023; Culpan & Trussel, 2005). This theory views ESG as potentially inefficient unless aligned with shareholder goals.

Trade-off Theory, often rooted in neoclassical economics, argues that ESG investments impose additional costs—such as higher wages, environmental compliance, or philanthropic giving—which may reduce short-term profitability and competitive advantage (A. Buallay et al., 2021; Friedman, 2007). While ESG may bring reputational or regulatory benefits, exceeding a certain threshold can lead to diminishing

returns and resource misallocation (Ersoy et al., 2022; Menicucci & Paolucci, 2023; Sun et al., 2019). This theory thus supports a non-linear view of the ESG–financial performance relationship.

The Resource-Based View (RBV) conceptualizes ESG capabilities as unique and valuable firm-specific resources that are difficult to imitate. By investing in ESG practices—such as green innovation, ethical governance, and community engagement—firms can build sustainable competitive advantages that translate into superior financial performance (Azmi et al., 2021; Russo & Fouts, 1997). RBV implies that ESG can be a strategic lever, especially when embedded into core business operations.

Stewardship Theory offers an alternative to Agency Theory by assuming that managers act as responsible stewards of organizational resources. Rather than pursuing self-interest, they are motivated to maximize long-term firm value while balancing stakeholder interests (Azmi et al., 2021; Barnett, 2007). ESG activities, in this view, strengthen trust and foster sustainable development, which ultimately enhances financial returns.

Institutional Theory focuses on how firms adopt ESG practices in response to social norms, regulations, and industry pressures. These institutional forces drive conformity and legitimacy-seeking behavior, especially in highly regulated sectors like banking (DiMaggio, Powell, et al., 1983). ESG is seen here as a response to coercive, normative, or mimetic pressures .

Signaling Theory interprets ESG disclosures as signals of a firm's quality, transparency, and credibility. By voluntarily reporting ESG activities, firms aim to reduce information asymmetry and attract socially conscious investors (Spence, 1978).

Taken together, these theories present divergent predictions:

Stakeholder Theory, RBV, and Stewardship Theory predict a positive relationship between ESG and financial performance.

Agency Theory and Trade-off Theory anticipate a negative or neutral effect, citing costs or misaligned incentives.

Some frameworks, such as Trade-off Theory and extensions of stakeholder perspectives, support a non-linear relationship—suggesting ESG improves performance only up to a threshold, after which its marginal value declines.

This theoretical pluralism underscores the complexity of ESG research and justifies the need for a meta-analytic approach to synthesize empirical findings and test these competing perspectives.

3 Literature review

The financial implications of ESG integration have attracted significant academic attention in recent years. To provide an orderly and rigorous synthesis of findings,

we identified and categorized relevant peer-reviewed studies that examined the relationship between ESG performance and financial performance in the banking sector. The selection was based on relevance to banking, availability of ESG and financial performance data, and citation in prior empirical or review work. To enhance clarity, the empirical findings are grouped into three categories (shown in Table 1): studies showing a positive relationship between ESG and financial performance; those reporting a negative relationship; and those revealing non-linear or context-dependent results. This structure allows us to systematically assess the current state of knowledge in the field.

Table I: Summary of Empirical Evidence on ESG–Financial Performance Relationship in the Banking Sector

Positive Impact	Negative Impact	Non-linear or Mixed Impact
Buallay, Al-Ajmi, & Saudagaran (2020)	Forgione et al. (2020)	Buallay (2019)
Cornett et al. (2016)	Carnevale & Mazzuca (2014)	El Khoury et al. (2021)
Nizam et al. (2019)	Nguyen (2020)	Azmi et al. (2021)
Shakil et al. (2019)		Buallay et al. (2020)
Wu & Shen (2013)		Soana (2011)
Siueia et al. (2019)		Miralles-Quirós et al. (2019)
Buallay (2019)		
Simpson & Kohers (2002)		

Research has consistently shown that ESG engagement in banking is associated with financial outlays that are justified by long-term benefits such as revenue stability, risk mitigation, and reputation enhancement (Bătae et al., 2020). A sustainable banking system is also vital for long-term economic growth and institutional trust (Aras et al., 2018; Menicucci & Paolucci, 2023). Many empirical studies highlight a positive relationship between ESG and financial performance. For instance, A. Buallay et al. (2021), as well as Cornett et al. (2016) and Nizam et al. (2019) identified consistent gains from ESG adoption in bank profitability and efficiency. Likewise, Shakil et al. (2019) reported that environmental and social improvements positively impacted the financial health of banks in emerging economies. These findings are reinforced by earlier work such as Wu and Shen (2013) and Simpson and Kohers (2002) who found a direct association between social responsibility and return on assets. Within the Sub-Saharan banking sector, CSR engagement was also linked to better financial outcomes Siueia et al. (2019). In the European context, A. M. Buallay et al. (2019) documented a positive ESG–performance link in a sample of 235 banks.

Providing a contrasting view, other studies report adverse effects of ESG engagement. For example, Forgione et al. (2020) found a negative relationship, suggesting that ESG implementation may burden bank resources without immediate return. In the same vein, Nguyen and Nguyen (2021) observed that unconstrained banks in Vietnam undertook excessive CSR activities, increasing risk and lowering performance. Similarly, Carnevale and Mazzuca (2014) found that sustainability reporting

had a minimal effect on earnings but a negative effect on stock prices. Providing a more nuanced perspective, some scholars point to a non-linear or conditional relationship between ESG and performance. A. M. Buallay et al. (2019) found conflicting results depending on regional context—positive in Europe but negative in a global sample. On the other hand, El Khoury et al. (2023) reported a non-linear ESG–FP association, where performance improved up to a point before declining. Studying 44 emerging economies, Azmi et al. (2021) described a diseconomy of scale in ESG adoption—suggesting that minimal ESG investment may enhance value, but excessive efforts reduce efficiency. While Soana (2011) found no statistically significant link between CSR and bank performance in Italy, Miralles-Quirós et al. (2019) reported inconclusive results. These findings emphasize the diverse financial implications of ESG adoption across regions, methodological approaches, and institutional contexts. Despite occasional inconsistencies, the bulk of empirical research points to a generally positive association between ESG engagement and improved financial outcomes in the banking sector. Building on this body of evidence, the following hypothesis is proposed:

H1:ESG has a significant positive correlation with banking financial performance.

The influence of ESG integration within the banking sector encompasses not merely the aggregate score but also the specific contributions of each individual ESG pillar—namely, Environmental, Social, and Governance. Rather than functioning in isolation, these components frequently engage in reciprocal interactions and collaboratively contribute to the formulation of financial outcomes. The nexus between ESG dimensions and corporate performance is intricate yet interrelated; environmental sustainability, social accountability, and governance practices may exert distinct yet harmonized influences. This highlights the necessity of examining each pillar in isolation to reveal subtle patterns and to avert the oversimplification of the ESG–financial performance (FP) correlation.

Within the environmental sphere, financial institutions actively engage in sustainability initiatives both internally and through their extensive networks comprising borrowers, partners, and clients (Menicucci & Paolucci, 2023). These initiatives encompass a spectrum of activities, from minimizing resource consumption to facilitating green lending and conducting environmental risk assessments. Although banks are not predominant polluters, their operational processes entail substantial energy consumption and paper usage (Jo et al., 2015), rendering environmental efficiency a pertinent issue. Concurrently, stakeholders—particularly within the European context—are increasingly examining banks' environmental policies and sustainability disclosures (El Khoury et al., 2023). Environmental accountability in the banking sector can be analyzed through three distinct perspectives: internal operational efficiency, financing of environmentally advantageous projects, and the mitigation of

risks associated with lending to environmentally detrimental sectors(Gangi et al., 2019; Laguir et al., 2018). These facets illustrate banks' evolving role in promoting cleaner production methodologies, despite their non-traditional status as industrial entities. The resource-based approach argues that environmental upgrades may contribute to greater profitability when a bank is engaging in environmental preventive operations for either itself or its customers (Russo & Fouts, 1997). This is because environmental enhancements can help reduce the adverse effects of environmental pollution. A bank is obligated to fulfill its responsibilities to a wide variety of parties, such as suppliers, the government, customers, and workers, while simultaneously promoting environmental values across its value chain, as stated by the stakeholder theory (Gangi et al., 2019). According to Jacobs et al. (2010), environmental philanthropy is able to cultivate a positive reputation among many stakeholders at this point. On the other side, the additional expense may result in a negative connection between environmental performance and financial success, particularly in nations that are less developed.

The 'social impact hypothesis,' rooted in instrumental stakeholder theory, posits that a stronger commitment to corporate social responsibility (CSR) is likely to enhance financial performance (Preston & O'bannon, 1997). Meeting the diverse needs and expectations of various stakeholders can contribute to improved efficiency, product differentiation, and a stronger competitive edge. According to Shen et al. (2016), as they conducted an examination of data collected from worldwide banks located in 18 different countries and found that CSR-prone banks outperformed non-CSR banks in terms of their capacity to make a profit and their efficiency. The theoretical framework of stakeholder theory suggests that social performance ought to have a beneficial influence on the financial performance of banks as corporations (Gangi et al., 2019) . In a study that included 162 banks from 22 different countries, Wu and Shen discovered that the financial performance of banks was favorably impacted by the corporate social performance of those institutions (Wu & Shen, 2013). According to the findings of Siueia et al. (2019), corporate social responsibility has a beneficial impact on the financial performance of the banking sector in Sub-Saharan Africa. It was discovered by Simpson and Kohers (2002) that there was a favorable correlation between the social performance of the bank and its Return on Assets. On the other hand, according to agency theory, corporate social responsibility ought to have a negative relationship with the financial success of corporations. This is because shareholders are deprived of expenses that are allocated towards social aims. There are, in fact, a number of unfavorable relationships between social success and financial performance, according to the relevant research (Dragomir et al., 2022). Within the Italian banking business, Soana (2011) discovered that there is no evidence to support the existence of a substantial association between corporate social responsibility (CSR) and financial success. To determine the connection between

sustainability reports and the value of banks in the European stock markets, Carnevale and Mazzuca (2014) discovered that the effect on profits per share was small, whereas the impact on stock price was negative. Due to the complex nature of the banking industry and the extensive regulatory environment, banks have unique characteristics, and regulators play a vital role in pressuring financial institutions to create robust and secure governance frameworks. The agency theory hypothesis asserts that better corporate governance is positively associated with improved performance (John et al., 2016). The quality of governance is determined by several aspects, including cultural diversity and gender equality within the board, the size of the board, the competence and experience of directors, the independence of directors, the presence of CEO-chairperson duality, executive compensation, and risk governance (Esteban-Sanchez et al., 2017; Menicucci & Paolucci, 2023; Soana, 2011). Several studies have shown that implementing strong corporate governance practices leads to improved financial performance and mitigates agency difficulties (Esteban-Sanchez et al., 2017; Orazalin & Mahmood, 2019; Soana, 2011). At a more granular level, the implementation of governance principles enhances performance by enhancing reputation, intensifying oversight, and reducing mismanagement (Menicucci & Paolucci, 2023). In the same direction, Peni and Vähämaa (2012) discovered that banks with more robust corporate governance processes had greater profitability in 2008. These banks also experienced lower Tobin's Q and stock returns during the crisis of 2008-2009. However, they saw better stock returns in the time after the crisis. This analysis was conducted on a sample of big publicly listed US banks. According to this discussion, we can formulate the following hypothesis:

H2: The correlation between each pillar of ESG (Environmental, Social, and Governance) and financial performance is significantly different across studies.

A more extensive cross-national analysis elucidates that the association between Environmental, Social, and Governance (ESG) performance and financial performance (FP) is profoundly influenced by institutional, economic, and cultural frameworks. For example, a comprehensive investigation encompassing 882 banking institutions across both developed and emerging markets in the aftermath of the 2008 financial crisis demonstrated that engagement in ESG practices markedly improved both accounting-based and market-based performance—especially among banks situated in developing nations, where enhancements in governance and stakeholder trust exerted a more significant influence (A. Buallay et al., 2021). These findings highlight that ESG initiatives—encompassing the quality of governance, social accountability, and environmental management—can augment firm value during periods of global volatility.

Nonetheless, empirical evidence across various studies exhibits a lack of consistency. A principal source of this variation is attributed to the utilization of

non-standardized ESG data sources. The majority of empirical investigations depend on third-party ESG ratings supplied by organizations such as Bloomberg, Thomson Reuters (Refinitiv), or tailored content analyses of sustainability disclosures. These providers employ divergent evaluation methodologies, scoring criteria, and weightings, which may result in inconsistencies in ESG evaluations for identical firms (Berg et al., 2022; Christensen et al., 2022). For instance, while Bloomberg may prioritize transparency and environmental disclosures, Refinitiv tends to allocate more significance to governance frameworks. This variability restricts the comparability of findings and may elucidate, at least in part, the differing outcomes observed across studies (Chatterji et al., 2016).

In a similar vein, disparities in the measurement of FP introduce an additional dimension of inconsistency. Commonly employed indicators encompass Return on Assets (ROA), Return on Equity (ROE), Tobin's Q, and Earnings per Share (EPS). These metrics encapsulate various aspects of financial performance—ROA and ROE signify internal operational efficiency and profitability, whereas Tobin's Q reflects market valuation and investment perception (Velte, 2022; Wang et al., 2016). The selection of financial metric may, therefore, affect the direction and intensity of the observed ESG–FP relationship, contingent upon whether the analysis centers on accounting-based or market-based outcomes (Aouadi & Marsat, 2018).

Collectively, the inconsistency in both ESG data sources and FP metrics across studies engenders substantial heterogeneity in effect sizes and complicates the endeavor to formulate generalizable conclusions. This necessitates the development of the ensuing hypotheses:

H3: Different ESG data sources will result in significantly different effect sizes across studies.

H4: Different banking FP measurements (ROA, ROE, and TQ) will result in significantly different effect sizes across studies.

4 Methodology

This study employs a meta-analytic approach to synthesize empirical findings on the relationship between ESG performance and financial performance (FP) in the banking sector. Meta-analysis is a statistical method that combines results from multiple studies to derive an overall effect estimate, offering greater precision and insight into patterns and heterogeneity across the literature (Hunter & Schmidt, 2004; Moeyaert et al., 2017). Furthermore, meta-analysis allows for the examination and elucidation of discrepancies among studies in the overall relationship, thereby enabling researchers to delve into the sources of heterogeneity and potential biases across different investigations. By applying a systematic and replicable process, this methodology enhances the reliability of conclusions that inform both academic

inquiry and policy development (Moeyaert et al., 2017). To the best of our knowledge, there is no such study that Meta has analyzed the relation between ESG and financial performance in the banking industry.

To ensure the comprehensiveness of the data, we followed a three-stage sampling strategy based on (Wang et al., 2016) and adhered to the PRISMA framework (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) for transparency and rigor (Shivhare & Shunmugasundaram, 2023). The iterative execution of the database search was conducted to guarantee the comprehensive capture of all potentially pertinent articles. In the subsequent phase, we meticulously examined the reference lists of the identified publications to reveal additional relevant studies. Ultimately, a search of Google Scholar utilizing the same keywords resulted in the identification of an additional 54 articles. Studies that employed CSR as a surrogate for ESG—when congruent with the environmental, social, and governance dimensions of ESG—were likewise incorporated as it is detailed in table II. This preliminary procedure culminated in the identification of 459 articles, which were subsequently assessed in accordance with the PRISMA protocol according to (Harrer et al., 2021) (As shown in figure 1).

To finalize the sample, we instituted a comprehensive set of inclusion and exclusion criteria. Duplicate entries were discerned through the utilization of a spreadsheet and subsequently eliminated. Only articles published in the English language were preserved in the final selection. Book chapters and purely theoretical studies devoid of quantitative findings were excluded from consideration. Similarly, papers that addressed CSR in a limited context—without encompassing all dimensions of ESG—were discarded.

[Table II around here.]
[figure 1 around here.]

Upon the identification of qualifying studies, only those presenting empirical findings with unequivocal statistical outputs were incorporated. These outputs included correlation coefficients (r), univariate F statistics, t-values, or chi-square results. Where applicable, regression coefficients were transformed into correlation coefficients in accordance with the conversion protocols delineated by (Peterson & Brown, 2005). Studies were excluded if they relied exclusively on multivariate models or utilized datasets that were already represented within other included studies, to prevent duplication and ensure the independence of observations.This meticulous filtering process yielded a definitive sample of 28 empirical studies, comprising 196 effect sizes (refer to Appendix 1 for the complete enumeration of included studies).

To investigate the relationship between banks' ESG performance and financial performance (FP), we implemented a multi-level meta-analysis model to accommodate the statistical interdependencies among effect sizes. Such dependencies arise when multiple effect sizes are derived from the same dataset—such as instances

where a study employs multiple performance metrics. Conventional meta-analytic methodologies presuppose independence among effect sizes, which may yield biased outcomes when such dependencies are overlooked. Numerous strategies exist to mitigate this concern, including the selection of a singular effect size per study, averaging outcomes, or modifying the unit of analysis (Hunter & Schmidt, 2004).

Nevertheless, multi-level modeling offers a more statistically sound resolution. The three-level model employed in this investigation accounts for:

Level 1: Sampling variance inherent within each effect size

Level 2: Variance present within studies (e.g., multiple outcomes per publication)

Level 3: Variance among studies

This framework facilitates a more precise estimation of effect sizes while recognizing the nested structure of the data (Assink, Wibbelink, et al., 2016). Figure (2) illustrates the concept of multilevel meta-analysis. The parameters ϵ_k and ζ_k are included in a random-effects model to account for the presence of two distinct sources of variability. The first one is attributed to the sampling error (ϵ_k) in individual research, leading to deviations in their estimations of the genuine impact size (θ_k). The second factor, ζ_k, represents the heterogeneity across studies, which arises from the variation in the genuine effect size of each paper, denoted by k.

[FIGURE 2 AROUND HERE]

4.1 Variable definitions and measurements:

Environmental, Social, and Governance (ESG) represents a composite measure of a bank's non-financial performance. It reflects the extent to which banks engage in practices that promote sustainability, ethical behavior, and transparent governance. ESG performance is typically measured using composite scores provided by reputable databases such as Thomson Reuters and Bloomberg, or through self-reported disclosures in banks' financial and non-financial statements, including annual and sustainability reports (Azmi et al., 2021; Ersoy et al., 2022).

Financial Performance (FP) is assessed using a variety of accounting-based and market-based indicators. The three most commonly used metrics in the literature are Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q, as defined below:

Return on Assets (ROA)

Return on Assets (ROA) is a financial indicator that evaluates a bank's profitability in relation to its overall assets, highlighting how effectively the bank utilizes its resources to produce net earnings. It is calculated as follows:

$$\text{ROA} = \left(\frac{\text{Net Income}}{\text{Total Assets}} \right) \times 100 \tag{1}$$

This formula is widely adopted in financial performance studies(Cornett et al., 2016; Esteban-Sanchez et al., 2017).

Return on Equity (ROE)

Return on Equity (ROE) captures the return generated on shareholders' equity and reflects a firm's capacity to use internal equity to produce earnings. It is computed using the formula:

$$\text{ROE} = \left(\frac{\text{Net Income}}{\text{Total Equity}} \right) \times 100 \tag{2}$$

This indicator is also frequently applied in banking performance research (A. M. Buallay et al., 2019; Shakil et al., 2019).

Tobin's Q

Tobin's Q is a market-based performance metric that compares a firm's market valuation to the replacement cost of its assets. It serves as a proxy for investor perception and long-term growth potential. It is defined as:

$$\text{Tobin's Q} = \frac{\text{Market Value of Equity} + \text{Book Value of Liabilities}}{\text{Book Value of Total Assets}} \tag{3}$$

This formula follows the approach used by Gangi et al. (2019) and Peni and Vähämaa (2012), and is commonly employed in governance and ESG-related studies to assess market performance.

4.2 Data preparation and processing:

After collecting the data, some calculations were performed before processing. First, some studies did not report the correlation coefficient; instead, they provided β or t statistics with a degree of freedom. According to Peterson and Brown (2005), β can be converted to correlation using the following equation if beta ranges from 0.5 to -0.5:

$$r = \beta + 0.5\lambda \tag{4}$$

Where r is the correlation, β is the regression coefficient and λ equals one when β is non-negative and 0 when β is negative. In some cases (i.e. when the regression is not in the range 0.5 and -0.5 so it can not be converted to correlation), t-statistics and degree of freedom are used to calcualte the correlation coefficient based on the following formula (Hunter & Schmidt, 2004):

$$r = \sqrt{\frac{t^2}{t^2 + df}} \tag{5}$$

Here, t represents the t-statistic, and df denotes the degrees of freedom. To correct for the non-normal distribution of sample correlation coefficients, the correlations were transformed into Fisher's z-scores using the following formula (Hunter & Schmidt,

2004):

$$Z = 0.5 \times \log\left(\frac{1+r}{1-r}\right) \tag{6}$$

Subsequently, the z-coefficients were averaged and weighted according to the formula (Hunter & Schmidt, 2004):

$$V = \frac{1}{N-3} \tag{7}$$

Where N is the number of observations for each study. We then recalculate the corrected r using z using the above-mentioned formula after fitting the model to get a result. Table III delineates the descriptive statistics pertinent to the meta-analytic investigation of the correlation between Environmental, Social, and Governance (ESG) factors and Financial Performance (FP). The aggregate corrected correlation coefficient observed between ESG and FP is 0.1118, signifying a positive relationship, accompanied by a standard deviation of 0.0452, a minimum value of 0.0238, and a maximum value of 0.2009. The Environmental dimension yields a corrected correlation of 0.0591, which implies a modest positive effect on financial performance, whereas the Social dimension reveals a corrected correlation of 0.0439, indicating a comparatively weaker yet still positive association. Conversely, the Governance factor reveals the least influence on financial performance, evidenced by a corrected correlation of merely 0.0158, which encompasses negative values within its spectrum, thereby signifying variability in the impact of governance practices across the analyzed studies. The analysis incorporates a total of 28 studies and 196 effect sizes, covering the temporal span from 2010 to 2023. This extensive dataset accentuates the disparate levels of influence that various ESG components impose on financial performance within the banking sector, thereby illuminating the necessity for further investigation into these dynamics in subsequent research endeavors.

[TABLE III AROUND HERE]

A common concern in meta-analysis is publication bias, which highlights the significance of the quality of data in meta-analyses. The effectiveness of meta-analytic methods is limited to the available data. Thus, distorted data will lead even the most sophisticated statistical model to replicate underlying biases. The impact of publication bias and associated concerns on the outcomes of meta-analyses can be substantial, potentially resulting in the overestimation of treatment effects, the neglect of adverse effects, or the reinforcement of unfounded theories (Harrer et al., 2021). We used Egger's regression test, which is a widely used quantitative method that tests for publication bias in the meta-analyzed studies (Peters et al., 2006). The findings in Table IV reveal that no substantial asymmetry in the funnel plot or publication bias was identified in this examination. The statistical significance level (p-value) surpasses the threshold of significance (0.05), and the confidence interval

for the intercept encompasses zero, indicating a lack of compelling evidence for asymmetry. A confidence interval that envelops zero (or encompasses both positive and negative values) implies that the estimated intercept is not significantly distinct from zero. Within the realm of investigating funnel plot asymmetry, an intercept that is not significantly distinct from zero signifies the absence of asymmetry evidence in the funnel plot. This was the case for ESG data and the subcategories (E, S, and G).

[TABLE IV AROUND HERE]

Two primary models were evaluated: the fixed-effects model and the random-effects model. The fixed-effects approach assumes that all studies share the same true effect size, and any variation in observed effects is due to sampling error. In contrast, the random-effects model acknowledges that true effect sizes may differ across studies, attributing variations to both actual differences (variance component) and sampling error (Stanley & Doucouliagos, 2012). The random-effects model is typically favored from a methodological standpoint. To choose the model, we test for homogeneity using R as

$$H_0 : \beta_1 = \beta_2 = \ldots = \beta_k \tag{8}$$

The results of the Q-test are displayed in Table V, since the p-value is less than 0.05, we reject the null hypothesis and conclude that effect sizes are not equal and the random effect model should be used in the meta-analysis model. It also gives an indicator of the importance of considering several moderators to explain the existence of heterogeneity among studies.

[TABLE V AROUND HERE]

5 Results and discussion

The result of multilevel analysis to reach a conclusion regarding the hypothesis highlights the overall relation between ESG and banking FP is shown in table VI. There is notable diversity in the impact magnitudes, as demonstrated by the notably small p-value (< 0.0001) for the chi-square statistic, suggesting a wide range of effects, which we will try to minimize by considering moderating effects. The comprehensive meta-analysis framework reveals a statistically significant aggregate effect size ($p = 0.0129$), with a calculated effect size of 0.11183, highlighting a meaningful correlation. The confidence interval of 95% spans from 0.0238 to 0.2009, providing a range within which the true effect size is likely to fall. Given that the p-value (0.0129) falls below the conventional threshold of 0.05, it allows us to reject the null hypothesis and affirm that there exists a substantial positive association between ESG and the financial performance of banking institutions, as inferred from this meta-analysis.

[TABLE VI AROUND HERE]

Regarding the hypothesis of testing the significance of the relation between the different components of ESG (E, S, and G), we performed a multilevel meta-analysis to take into consideration the multiple measures of financial performance. In addition, we sub-grouped the results to three combined effect sizes, Environmental, social, and governance which can be illustrated in Table VII. The findings demonstrate that the Environmental (E) aspect has a statistically significant positive correlation with financial performance ($p < 0.01$). Conversely, the Governmental (G) aspect does not exhibit a statistically significant relationship with financial performance, as shown by its higher p-value, even though the whole relation is positive. Similarly, the Social (S) aspect also displays a statistically significant positive correlation with financial performance, supported by its low p-value and significance level. These results affirm the hypothesis that the associations between each ESG pillar and financial performance differ among various studies. This result was also approved by the Heterogeneity test with p-value < 0.0001which leads to rejecting the null hypothesis that all pillars are equal and concluding that there is a significant difference among studies. Specifically, the Environmental and Social pillars reveal significant positive associations with financial performance, while the Governmental pillar does not demonstrate a significant relationship. It can be easily shown in Figure 3.

[TABLE VII AROUND HERE]

[FIGURE 3 AROUND HERE]

For the third hypothesis, test results are shown in Table VIII. The assessment for residual heterogeneity (QE) reveals noteworthy residual heterogeneity among the various studies conducted. This residual heterogeneity level is observed to be lower compared to the fundamental model without moderation, thus highlighting the significance of the data source as an explanatory factor for the varying outcomes obtained. The examination of moderators (QM) indicates that at least one of the moderators (sources) exerts a notable impact on the final result. Specifically, "Bloomberg" emerges as a moderator with a substantial positive influence on the outcome ($p = 0.0016$), whereas "Thomson Reuters" and "content analysis" do not exhibit statistically significant effects ($p > 0.05$). Put differently, the findings put forth suggest that the selection of ESG data source plays a crucial role in influencing the effect sizes observed across the range of studies conducted. This underscores the importance of carefully considering and selecting the data sources when conducting research in this domain for more accurate and reliable results to be obtained.

[TABLE VIII AROUND HERE]

To account for the role of the different measurements of the financial performance and the impact on the relation between ESG and FP, we sub-grouped the data based on the measurement and got the results as in Table VIII. The residual heterogeneity test

(QE) reveals a notable presence of residual heterogeneity in various studies, albeit at a lower magnitude compared to the basic model. Specifically, the variable "ROE" demonstrates a noteworthy positive impact on the outcome ($p = 0.0102$), whereas "ROA" and "TQ" do not exhibit statistically significant effects ($p > 0.05$). These findings imply that the metric for financial performance (ROE) plays a substantial mediating function in the correlation between ESG and financial performance, in contrast to ROA and TQ, which lack significant mediating roles. The QM statistic evaluates the null hypothesis concerning the absence of disparity in effect magnitudes among diverse measures of banking financial performance (ROA, ROE, and TQ). Since the p-value (0.0176) is less than the conventional significance level of 0.05, we reject the null hypothesis and conclude that there are significant differences in effect sizes among the different banking financial performance measurements. In other words, the results suggest that the choice of banking financial performance measurement significantly influences the effect sizes observed across studies.

[TABLE IX AROUND HERE]

Each measure of the financial performance can be also figured using the forest plot. Figure 4 is a forest plot for the ROA effect and it can be concluded that the overall effect size is close to zero with a confidence interval of [-0.05 – 0.05]. The majority of studies reported a non-significant relation between ESG and financial performance using ROA for instance(Alamsyah & Muljo, 2023; Bătae et al., 2021; El Khoury et al., 2021). On the other hand, only a small number of studies showed a significant positive or negative correlation between studies for example (Al-Jalahma et al., 2020; Jaiwani & Gopalkrishnan, 2023). The figure also indicates that no significant outliers exist among studies. On the other side, using ROE as a measure of financial performance gives an overall significant and positive effect size of 0.13 with a confidence interval of [0.05 – 0.022] at a 95% level of significance (figure 5). Unlike ROA, most studies concluded positive and significant positive results when ROE is used (A. Buallay, 2019; Dragomir et al., 2022; Tunio et al., 2020). Only four studies reported zero effect size (A. Buallay et al., 2020; Indrasuci & Rokhim, 2023; Lamanda, 2023; Zaman & Ellili, 2022) and only one study with negative effect size (Al-Jalahma et al., 2020). When taking into consideration the TQ results, it seems from Figure 6 that the level of heterogeneity among studies is higher than ROA and ROE. This can be because TQ is a measure that considers the market value of stocks. The overall effect is positive 0.11 and non-significant at 95% level [-0.05 – 0.26]. Only one study reported zero effect size (Indrasuci & Rokhim, 2023). All other studies ranged from positive (Zahid et al., 2023) to negative (Bătae et al., 2020).

[FIGURE 4 AROUND HERE]
[FIGURE 5 AROUND HERE]
[FIGURE 6 AROUND HERE]

Our findings reinforce Stakeholder and Stewardship theories by showing that strategically enacted ESG practices—particularly those targeting environmental sustainability and social responsibility—yield measurable profitability gains, especially when measured by ROE, which most directly reflects equity-holder value creation. They also challenge Agency and Trade-off perspectives that treat ESG as a cost burden, since even accounting for high heterogeneity, the net effect of ESG engagement on bank performance is positive and economically meaningful. The non-significant Governance result suggests that, in highly regulated banking environments, incremental governance improvements may offer fewer additional performance benefits than environmental or social initiatives.

From a practical standpoint, this study highlights the importance of selecting ESG ratings that capture comprehensive sustainability dimensions—such as those provided by Bloomberg—and using ROE as the primary financial metric when evaluating the bottom-line effects of ESG programs in banks. By aligning the choice of ESG data and performance measures with their demonstrated predictive power, analysts and policymakers can more accurately assess and compare the value created by sustainability efforts. Finally, the persistently high residual heterogeneity underscores the need for future research to explore contextual moderators—such as regional regulations, crisis versus non-crisis periods, and potential non-linear ESG effects—using longitudinal and causal identification strategies.

6 conclusion

This sector-specific meta-analysis elucidates the intricate relationship between Environmental, Social, and Governance (ESG) engagement and banking financial performance (FP). By synthesizing 28 empirical studies encompassing 196 effect sizes through a three-level random-effects model, we ascertain a small-to-moderate yet statistically significant positive correlation between ESG and FP ($r = 0.112$, 95 % CI [0.024, 0.201], $p = 0.0129$). A detailed examination of this relationship reveals that both the Environmental ($r = 0.059$, $p = 0.0102$) and Social ($r = 0.044$, $p = 0.0102$) dimensions contribute substantially to performance enhancements, while the Governance aspect fails to achieve statistical significance. These findings substantiate Stakeholder and Stewardship theories—emphasizing ESG as a strategic asset that cultivates reputational capital, bolsters risk management, and ultimately augments long-term value—thereby contesting perspectives that depict ESG primarily as a financial liability.

Our subgroup analyses yield additional insights. Return on Equity (ROE) is identified as the financial metric most sensitive to ESG engagement ($r = 0.131$, $p = 0.0102$), highlighting that investments in ESG initiatives translate into enhanced distributable earnings for shareholders rather than merely inflating operational

expenditures. Furthermore, effect sizes demonstrate variability contingent upon the ESG data provider (e.g., exhibiting greater strength for Bloomberg ratings in comparison to Thomson Reuters or content-analysis evaluations), which indicates methodological divergences among providers rather than the existence of a single "optimal" source. Consequently, we advocate for researchers and practitioners to (a) meticulously evaluate multiple ESG ratings to ascertain sensitivity, (b) promote increased transparency from all data vendors concerning their scoring methodologies, and (c) interpret governance scores within the context of regulatory standards.

The practical implications of our findings suggest that banks and investors should prioritize ESG initiatives that significantly impact ROE—particularly those related to environmental and social programs—and adopt a triangulated approach across ESG data sources when making sustainability-linked lending or investment decisions. Policy implications necessitate the standardization of ESG disclosures and the accountability of third-party raters, which would mitigate inconsistencies and enhance the reliability of sustainability metrics.

Future research endeavors should aim to disentangle causality through quasi-experimental or longitudinal methodologies, investigate stakeholder perceptions (e.g., customers, employees) as potential moderating variables, and explore how the dynamics of ESG and FP evolve during crises or across diverse cultural and institutional frameworks. Additionally, examining non-linear effects of ESG and the influence of technological advancements (e.g., digital banking, fintech) in amplifying ESG outcomes presents a promising avenue for exploration. By addressing these research trajectories, scholars can build upon our robust, sector-focused findings to delineate a clearer, action-oriented roadmap for sustainable banking.

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List of Tables.

Table II: Search items and number of results studies.

Try No.	**Keywords**	**No. of articles**
1	"environmental, social, and governance performance" or "environmental, social, and governance index" or "environmental, social, and governance rating" or "environmental, social, and governance score" or "corporate social responsibility disclosure" or "ESG performance" or "ESG rating" or "ESG index" or "ESG score " or "SCR disclosure" and banking performance	WoS: 27 out of 125 Scopus: 22 out of 69
2	ESG and banking performance	WoS: 31 out of 194 Scopus: 31 out of 96
3	CSR and banking performance	WoS: 72 out of 641 Scopus: 47 out of 207
4	Corporate social responsibility and banking performance	WoS: 107 out of 1148 Scopus: 68 out of 269

Note: The search terms are reiterated and documented without the use of parentheses in order to encompass a broad range of articles, which can subsequently be refined and filtered.

Table III: Descriptive statistics.

Variable	**Mean**	**SD**	**Min**	**Max**
Overall ESG → FP (Corrected r)	0.1118	0.0452	0.0238	0.2009
Environmental → FP (Corrected r)	0.0591	0.0227	0.0147	0.1038
Social → FP (Corrected r)	0.0439	0.0227	-0.0288	0.0603
Governance → FP (Corrected r)	0.0158	0.0227	-0.0006	0.0884
Total Number of Studies	28			
Total Number of Effect Sizes	196			
Years of Publication	2010 to 2023			

Table V: Q-test for Heterogeneity.

Factor	**Q-value**	**df**	**P-value**	**Heterogeneity**
ESG	2574.7616	49	<0.0001	Exist
E	1817.2585	47	<0.0001	Exist
S	563.4446	47	<0.0001	Exist
G	224.9802	49	<0.0001	Exist

Note: Q-value is Cochran's Q test; df is the degree of freedom.

Table IV: Egger's regression test for publication bias.

Factor	**b**	**CI**	**Z**	**P-value**
ESG	0.0661	[-0.0463 – 0.1786]	0.3288	0.7423
E	0.0267	[-0.1267 – 0.0734]	1.6896	0.0911
S	0.0652	[-0.1374 – 0.0070]	2.6832	0.073
G	0.0534	[-0.0032 – 0.1101]	-0.8939	0.3714

Note: Limit Estimate (as sei → 0); b is the intercept, and CI is the confidence interval at 95%.

Table VI: H1 multi-level test results (Relationship of ESG-FP).

K	**N**	**Corrected** r	**SE**	**Z value**	**95% CI**	**P-value**	**Q-test**	**P**
50	35047	0.11183	0.0452	2.4855	[0.0238 – 0.20097]*	0.0129	2574.76	<.0001

*Note: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 and p is the p-value for the Q test, K is the number of effect sizes, CI is the confidence interval at 95%, and N is the number of observations.*

Table VII: The different components of ESG.

Pillar	**K**	**N**	**Corrected** r	**SE**	**Z value**	**95% CI**	**P-value**
E	48	35287	0.059131	0.0227	2.6093	[0.0147 – 0.1038]**	0.8539
S	48	35287	0.043872	0.0227	1.9335	[-0.0288 – 0.0603]	0.0102
G	50	35905	0.015799	0.0227	0.6975	[-0.0006 – 0.0884]	0.618

QE(df = 147) = 3683.785, p-val < 0.0001

*Note: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1, K is the number of effect sizes and N is the number of observations, QE is Cochran's Q test with df = degree of freedom.*

Table VIII: The moderating effect of the source of data results.

Source	**K**	**N**	**Corrected** r	**SE**	**Z value**	**95% CI**	**P-value**
Bloomberg	18	12171	0.162059	0.0519	3.1483	[0.0617 – 0.2653]**	0.0016
Thomson Reuters	27	21319	0.030391	0.0404	0.7535	[-0.0487 – 0.1095]	0.4872
Others	5	131	0.094121	0.0962	0.98805	[-0.0943 – 0.2830]	0.3268

Q (df = 47) = 1912.78, p-val = 0.0096

Test of Moderators (coefficients 1:3): QM(df = 3) = 11.4407, p-val = 0.0096

*Note: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 and p is the p-value for Q test, K is the number of effect sizes and N is the number of observations. Q is the Cochran's test and QM is the Cochran's Q statistics for moderating effect.*

Table IX: The moderating effect of FP measurement results.

Measure	**K**	**N**	**Corrected** r	**SE**	**Z value**	**95% CI**	**P-value**
ROA	17	10164	0.069587	0.0529	0.1841	[-0.0940 – 0.1135]	0.8539
ROE	18	12343	0.130944	0.0513	2.5675	[0.0312 – 0.2322]*	0.0102
TQ	15	12540	0.101048	0.0550	1.8675	[-0.0051 – 0.2104]	0.618

QE(df = 47) = 2310.99, p-val < 0.0001

Test of Moderators (coefficients 1:3): QM(df = 3) = 10.1135, p-val = 0.0176

*Note: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1, K is the number of effect sizes and N is the number of observations, QE is Cochran's Q test with df = degree of freedom. QM is the Q test for moderating effect.*

List of Figures.

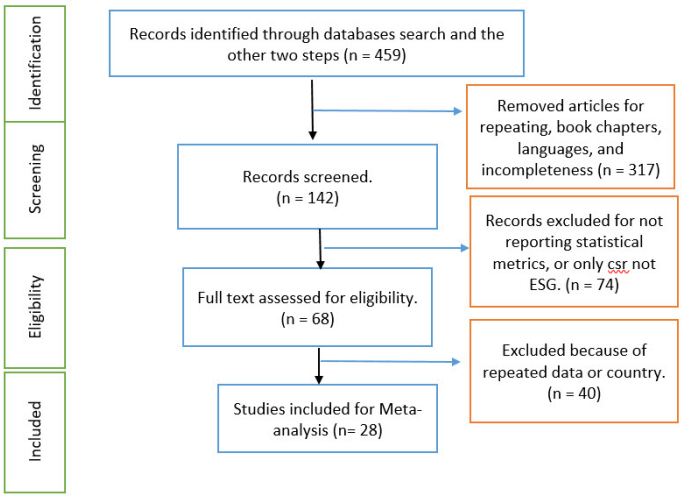

Figure 1: PRISMA model (Shivhare & Shunmugasundaram, 2023) edited by the author.

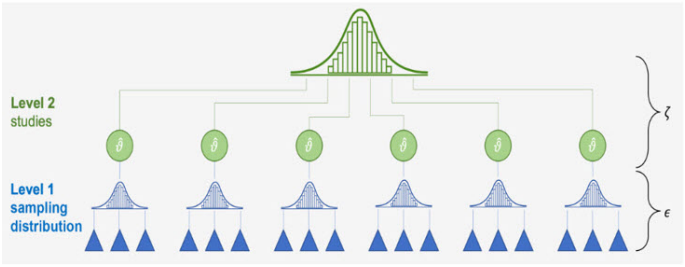

Figure 2: Multi-level meta-analysis illustration (Harrer et al., 2021).

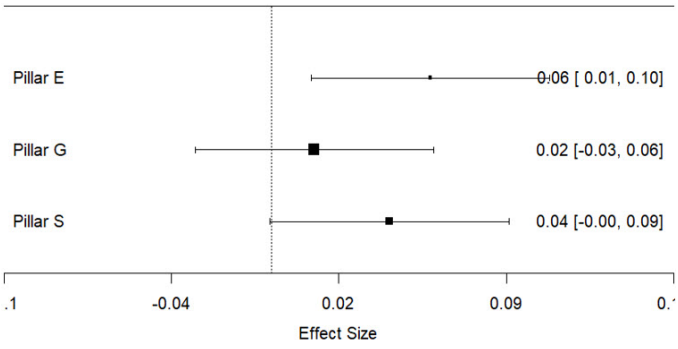

Figure 3: E, S, G, and FP forest plot. This graph was generated using R4.4.0

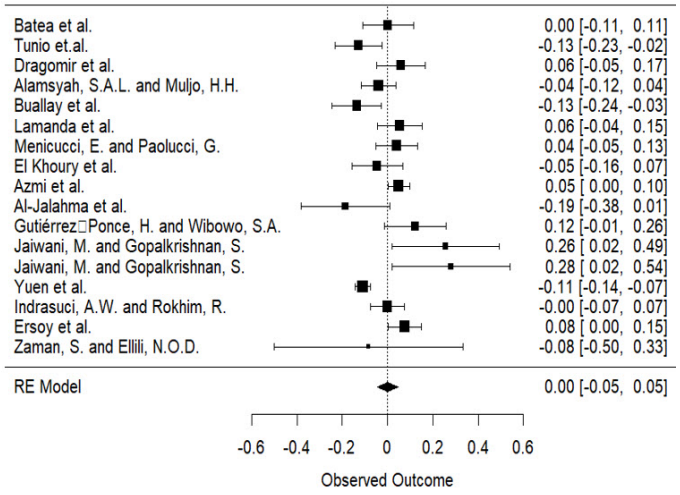

Figure 4: The forest plot of ROA. This graph was generated using R4.4.0
Note: the study of Jaiwani, M. and Gopalkrishnan,s. appeared twice as it reported two different correlations one for public banks and the other for private banks.

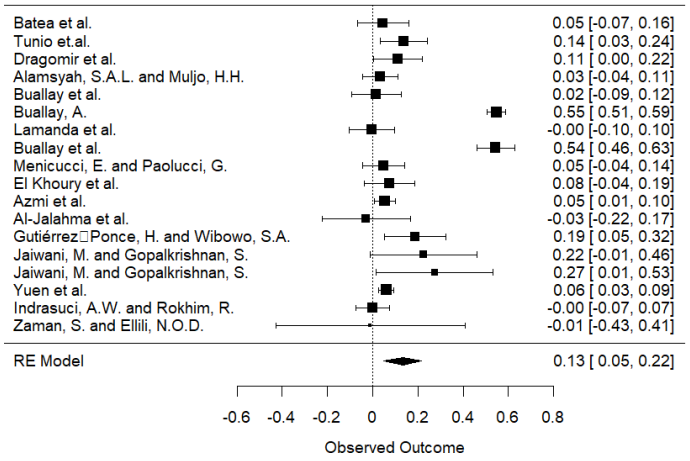

Figure 5: The forest plot of ROE. This graph was generated using R4.4.0

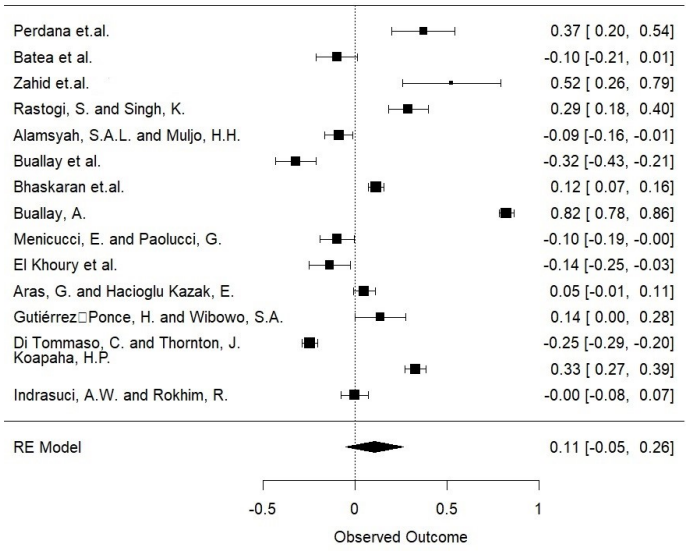

Figure 6: The forest plot of TQ. This graph was generated using R4.4.0

Appendix

Table X: Summary of Studies on ESG and Financial Performance Correlations

ID	Author	Source	Sample Size	N	Measure	ESG.corr	E.corr	S.corr	G.corr
1	Alamsyah & Muljo (2023)	Bloomberg	170	656	ROA	-0.039	-0.061	-0.0036	-0.021
		Bloomberg	170	656	ROE	0.034	0.052	0.0061	0.035
		Bloomberg	170	656	TQ	-0.088	-0.13	-0.077	-0.026
2	Al-Jalahma et al. (2020)	Thomson	26	104	ROA	-0.183			
		Thomson	26	104	ROE	-0.029			
3	Aras & Kazak (2022)	Thomson	223	1115	TQ	0.05			
4	Azmi et al. (2021)	Bloomberg	251	1757	ROA	0.0501	0.0541	0.0502	0.05811
		Bloomberg	251	1757	ROE	0.0547	0.0501	0.0502	0.0502
5	Batea et al. (2021)	Thomson	39	307	ROA	0.002	-0.316	-0.164	-0.117
		Thomson	39	307	ROE	0.046	-0.067	-0.05	0.034
		Thomson	39	307	TQ	-0.098	0.011	0.008	0.22
6	Bhaskaran et al. (2023)	Thomson	427	2130	TQ	0.114763			
7	Buallay (2019)	Bloomberg	235	2350			0.332		0.042
		Bloomberg	235	2350	ROE	0.499	0.212	0.105	0.115
		Bloomberg	235	2350	TQ	0.677	0.601	0.332	0.01
8	Buallay et al. (2020)	Bloomberg	59	327	ROA	-0.134			

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ID	Author	Source	Sample Size	N	Measure	ESG.corr	E.corr	S.corr	G.corr
		Bloomberg	59	327	ROE	0.016			
		Bloomberg	59	327	TQ	-0.311			
9	Buallay et al. (2020)	Bloomberg	85	561			0.318		0.048
		Bloomberg	85	561	ROE	0.496	0.226	0.155	0.145
		Bloomberg	85	561				0.312	0.011
10	Di Tommaso & Thornton (2020)	Thomson	81	2270	TQ	-0.241	-0.016	-0.039	-0.019
11	Dragomir et al. (2022)	Thomson	333	333	ROA	0.06	-0.13	-0.04	0.01
		Thomson	333	333	ROE	0.11	0.02	0.04	0.01
12	El Khoury et al. (2023)	Thomson	46	306	ROA	-0.0455	-0.119	-0.1198	0.1145
		Thomson	46	306	ROE	0.075	0.0179	0.086	0.0132
		Thomson	46	306	TQ	-0.1369	-0.0278	-0.0293	0.2354
13	Ersoy et al. (2022)	Thomson	151	732	ROA	0.076	-0.115	0.044	0.05
14	Gutiérrez-Ponce & Wibowo (2023)	Thomson	19	209	ROA	0.121	-0.14	0.071	0.192
		Thomson	19	209	ROE	0.186	0.009	0.197	-0.101
		Thomson	19	209	TQ	0.138	-0.064	-0.177	-0.022
15	Jaiwani & Gopalkrishnan (2023)	Bloomberg	12	72	ROA	0.2512	0.2492	0.1139	0.1364
		Bloomberg	12	72	ROE	0.2209	0.2047	0.1262	0.0591
		Bloomberg	10	60	ROA	0.2732	0.2957	0.0718	0.242
		Bloomberg	10	60	ROE	0.2672	0.2893	0.0761	0.2265
16	Indrasuci & Rokhim (2023)	Thomson	142	700	ROA	-0.00003	-7.00E-05	-1.00E-05	-0.00002

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Table X – continued from previous page

ID	Author	Source	Sample Size	N	Measure	ESG.corr	E.corr	S.corr	G.corr
		Thomson	142	700	ROE	-0.0003	-7.00E-05	-1.00E-05	-0.00015
		Thomson	142	700	TQ	-0.001229	0.00013	-0.0006	-0.00072
17	Koapaha (2023)	Thomson	208	1200	TQ	0.317793			
18	Lamanda et al. (2024)	Others	26	390	ROA	0.055	-0.045	-0.0498	0.123
		Others	26	390	ROE	-0.004	-0.012	0.057	-0.009
19	Menicucci & Paolucci (2023)	Thomson	105	450	ROA	0.04	-0.318	-0.166	-0.119
		Thomson	105	450	ROE	0.048	-0.069	-0.007	0.036
		Thomson	105	450	TQ	-0.097	0.013	0.008	-0.222
20	Miralles-Quirós et al. (2019)	Thomson	166	500			0.03	0.1	0.07
		Thomson	166	500			0.06	0.04	0.08
21	Omran (2023)	Thomson	155	930			0.04347	-0.2026	0.20725
		Thomson	155	930			-0.0456	-0.2103	0.160584
22	Perdana et al. (2023)	Bloomberg	19	133	TQ	0.355875			
23	Rastogi & Singh (2022)	Thomson	34	330	TQ	0.281187			
24	Shakil et al. (2019)	Thomson	93	283			-0.035	-0.039	-0.046
		Thomson	93	283			0.003	0.02	0.006
25	Tunio et al. (2021)	Others	30	360	ROA	-0.126	0.119	-0.057	-0.193
		Others	30	360	ROE	0.136	-0.062	0.031	0.012
26	Yuen et al. (2022)	Thomson	487	3376	ROA	-0.108	-0.198	-0.087	-0.031
		Thomson	487	3376	ROE	0.061	0.049	-0.06	0.066

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ID	Author	Source	Sample Size	N	Measure	ESG.corr	E.corr	S.corr	G.corr
27	Zahid et al. (2023)	Others	19	57	TQ	0.481246	0.40006	0.34508	-0.12045
28	Zaman & Ellili (2022)	Bloomberg	5	25	ROA	-0.0837	0.3018	0.461	-0.359
		Bloomberg	5	25	ROE	-0.0101	0.3302	0.4907	-0.3335

Note: N is the number of observations. Measure is the metrics used to measure financial performance. ESG.corr is the correlation between ESG and banking financial performance. E.corr is the correlation between environmental and banking financial performance. S.corr is the correlation between social and banking financial performance. G.corr is the correlation between Governance and banking financial performance. ROA is the return on assets. ROE is the return on equity. TQ is the Tobin's Q ratio.