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Exploring the Link Between ESG Integration and Financial Performance: A Quantitative Meta-Analysis

Explorer le lien entre l'intégration des critères ESG et la performance financière : une méta-analyse quantitative

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Abstract

This study presents a meta-analysis of the relationship between Environmental, Social, and Governance (ESG) indicators and corporate financial performance. In recent years, ESG criteria have become a key factor in investment decisions and strategic management. However, empirical studies on the financial implications of ESG performance have yielded mixed. We analyzed 37 peer-reviewed empirical studies published between 2014 and 2024, covering various sectors and regions. Using a random-effects model, we calculated a combined effect size to estimate the overall relationship between ESG and financial performance measures such as ROA and ROE.

The study confirms a positive relationship between ESG performance and financial outcomes, particularly in developed markets and environmentally sensitive sectors. It demonstrates that ESG engagement promotes value creation despite certain methodological limitations. Despite some publication bias and methodological heterogeneity, the study shows that ESG engagement is compatible with value creation.

Keywords: ESG; ROA; Financial performance; Value creation; Sustainability.

Résumé

Cette étude présente une méta-analyse de la relation entre les indicateurs Environnementaux, Sociaux et de Gouvernance (ESG) et la performance financière des entreprises. Ces dernières années, les critères ESG sont devenus un facteur clé dans les décisions d'investissement et la gestion stratégique. Cependant, les études empiriques examinant les implications financières de la performance ESG ont produit des résultats mitigés.

Nous avons analysé 37 études empiriques évaluées par des pairs, publiées entre 2014 et 2024, couvrant divers secteurs et régions. En utilisant un modèle à effets aléatoires, nous avons calculé une taille d'effet combinée afin d'estimer la relation globale entre les critères ESG et des mesures de performance financière telles que le ROA et le ROE.
L'étude confirme une relation positive entre la performance ESG et les résultats financiers, surtout dans les marchés développés et les secteurs sensibles à l'environnement. Elle démontre que l'engagement ESG favorise la création de valeur malgré certaines limites méthodologiques. Malgré certains biais de publication et une hétérogénéité méthodologique, l'étude montre que l'engagement ESG est compatible avec la création de valeur.

Mots clés : ESG ; ROA ; performance financière ; création de la valeur ; durabilité.

Introduction

In recent years, the global economic landscape has undergone profound transformations, driven by climate change, social transitions, regulatory shifts, and growing pressure from stakeholders. In this changing context, companies are no longer evaluated solely on the basis of financial profitability. They are now expected to adopt a more responsible and sustainable approach by integrating Environmental, Social, and Governance (ESG) criteria into their strategies and operations.

This evolution reflects the growing importance of sustainable finance, which seeks to align economic value creation with broader societal and environmental goals. ESG considerations have thus become central to corporate finance and investment analysis, attracting the attention of researchers, asset managers, and policymakers alike.

However, despite the increasing relevance of ESG issues, the academic literature offers mixed and sometimes contradictory findings regarding their financial implications. While some studies argue that ESG integration enhances firm value through improved risk management and stakeholder engagement, others suggest that ESG initiatives may involve additional costs that could hinder short-term profitability. Empirical evidence is far from unanimous: while many studies report a positive relationship between ESG performance and financial indicators such as Return on Assets (ROA) or Return on Equity (ROE), others find weak or non-significant associations.

1. conceptual framework

This study investigates the extent to which Environmental, Social, and Governance (ESG) integration contributes to corporate financial performance (CFP). Grounded in a **positivist and confirmatory research paradigm**, the study adopts a **meta-analytic methodology** to quantitatively synthesize empirical evidence from peer-reviewed articles published between 2014 and 2025. The central research question guiding this investigation is:

To what extent does the integration of ESG criteria enhance the financial performance of firms?

This inquiry is operationalized through three sub-questions:

(1) What is the overall effect of ESG performance on corporate financial outcomes, particularly accounting-based measures such as Return on Assets (ROA) and Return on Equity (ROE)?

(2) Do the individual dimensions of ESG differ in their respective impacts on financial performance?

(3) Does the ESG criteria vary according to contextual factors such as geographic region, industry sector, or firm size?

To address these questions, the study formulates the hypothesis that firms with higher ESG performance tend to exhibit superior financial results, reflecting a positive correlation between sustainability practices and economic returns.

2. Literature Review

Environmental, Social, and Governance (ESG) criteria have become pivotal in evaluating corporate sustainability and financial performance. Understanding ESG begins with examining data collection and reliability. ESG data originate from multiple sources: external disclosures such as corporate annual and sustainability reports often prepared under recognized frameworks like the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB) (El Imrani et al., 2022); internal sources including surveys and direct interviews with executives that, while resource-intensive, provide qualitative insights; and public databases such as the Carbon Disclosure Project (CDP) and the International Labour Organization (ILO), which offer objective yet sometimes less detailed information (Rahmani, 2022). These data are synthesized by specialized rating agencies such as MSCI, Sustainalytics, and FTSE Russell, which apply rigorous methodologies to generate internationally recognized ESG scores (Waddock & Graves, 1997).

The reliability of ESG data depends on verifiability, often ensured through independent audits conducted by major firms like Deloitte or PwC using assurance standards such as ISAE 3000 (International Standard on Assurance Engagements) (Eccles et al., 2014). Benchmarking against sector peers is another method to detect inconsistencies and enhance data credibility (La Porta et al., 2000).

ESG criteria serve critical strategic functions. They reduce information asymmetry between firms and stakeholders by complementing traditional financial disclosures with non-financial, sustainability-related information (Freeman, 1984). Empirical studies show that high-quality ESG performance correlates with increased market value, improved financial returns, and reduced firm risk (Campbell, 2012; Garcia, 2017; Mishra & Modi, 2013). Transparency in ESG reporting can also lower the cost of capital, as investors increasingly incorporate environmental and social considerations into their investment decisions and may accept slightly lower financial returns for ethical alignment (Bae et al., 2021; Reverte, 2009).

Beyond finance, ESG integration aligns corporate projects with Sustainable Development Goals (SDGs), improving social acceptance, minimizing environmental impacts, and fostering

inclusive governance by involving local communities (Frimousse et al., 2020). Thus, ESG is not solely regulatory compliance but a strategic lever for sustainability and long-term value creation (Freeman, 2010).

Technological innovations like blockchain and smart contracts have emerged as key enablers of ESG data transparency and integrity. Blockchain's decentralized, immutable ledger guarantees data traceability and security, while smart contracts automate verification processes, reducing risks of data manipulation (Spence, 1973). Companies such as Nestlé and IBM exemplify practical applications of blockchain to track supply chains and verify ESG commitments (Wright & Ferris, 1997).

Several theoretical frameworks elucidate the ESG-performance nexus. Stakeholder theory challenges the shareholder-centric model (Friedman, 1970), arguing firms must respond to a broad array of actors including employees, customers, and communities (Freeman, 1984). Agency theory highlights information asymmetry between principals (shareholders) and agents (managers) and views ESG transparency as a means to align interests and reduce agency costs (Jensen & Meckling, 1976; Eccles et al., 2014). The Resource-Based View (RBV) frames ESG practices as strategic resources conferring competitive advantage (Waddock & Graves, 1997). Signaling theory posits that credible, costly ESG disclosures act as positive signals to investors about firm quality and long-term viability (Spence, 1973).

Collectively, these perspectives provide a rich conceptual foundation to investigate how ESG contributes to firm performance, legitimacy, and sustainability, paving the way for empirical meta-analytical research.

3. Inclusion Criteria

As part of this research, the data were obtained through a systematic documentary review based on secondary sources drawn from peer-reviewed academic literature. We adopted a quantitative meta-analytic approach. This methodological strategy involved the structured collection of published empirical studies that rigorously examine the relationship between Environmental, Social, and Governance (ESG) criteria and corporate financial performance (CFP).

A corpus of 37 empirical studies, published between 2014 and 2024, the following inclusion criteria were applied:

- Thematic relevance: the study must investigate the link between ESG indicators and financial performance.
- Methodological validity: the study must rely on quantitative techniques, such as regression analysis, correlation, or effect size estimation.

- Transparency of reported results: studies must clearly indicate the direction and significance of effects.
- Distinct treatment of ESG dimensions: the study must explicitly address at least one of the three ESG pillars (Environmental, Social, or Governance).
- Nature of variables: studies must use ESG indicators as independent variables, and at least one financial performance metric (ROA, ROE, or stock returns) as the dependent variable.
- Publication quality: only studies published in peer-reviewed journals or high-quality working papers were included.
- Publication period : between 2010 and 2024.

Each selected study was coded using a standardized protocol, documenting the authors' names, publication year, type of ESG indicators analyzed, sample size, and the reported direction of effects (positive, neutral, negative, or mixed). This coding process allowed for data harmonization and aggregation. To analyze the secondary data, two main techniques were applied:

- Vote-counting, which identifies the direction of effects across studies.
- Effect size computation, using reported or converted correlations where available.

This dual-method approach ensures the triangulation of results by combining a descriptive synthesis with a robust statistical estimation of the ESG–CFP relationship. Although based on secondary sources, this data collection strategy enhances both the analytical depth and external validity of the findings by drawing from a wide range of peer-reviewed empirical evidence, covering over 2,600 individual firm-level observations.

4. Search Strategy

4.1. Search databases

As part of this research, a systematic literature search was conducted to identify relevant empirical studies examining the relationship between Environmental, Social, and Governance (ESG) criteria and corporate financial performance (CFP). The following academic databases were consulted: Scopus, Web oj Science, Google Scholar, JSTOR, SSRN (Social Science Research Network)

These platforms were selected due to their broad coverage of peer-reviewed literature in economics, finance, and management. Keyword combinations and Boolean operators were used to maximize the relevance of search results.

4.2. Search terms

The search strategy was based on a combination of keywords and Boolean operators to ensure a comprehensive identification of relevant studies. The search terms were selected to capture the main concepts of the research question, namely Environmental, Social, and Governance (ESG) factors and Corporate Financial Performance (CFP). The following key terms and combinations were used :

- Environmental, Social, and Governance or ESG
- Corporate Financial Performance or CFP or financial performance or firm performance
- ESG and financial performance
- ESG impact on profitability
- Sustainable finance and firm performance
- ESG disclosure and financial outcomes

These terms were adapted according to the specific requirements of each database, and filters were applied when available to restrict the results to peer-reviewed articles published in English between 2010 and 2024.

4.3. Effect Size Conversion

To synthesize empirical results from a variety of studies using different statistical measures, it is necessary to standardize effect sizes into a common metric. This harmonization enables meaningful aggregation and comparison across studies with diverse methodologies and outcome indicators.

In this meta-analysis, the primary effect size metric used is the Pearson correlation coefficient (r), which expresses the strength and direction of the linear relationship between ESG criteria and corporate financial performance (CFP). The correlation coefficient is widely used in finance and management research and offers intuitive interpretation.

Conversion Procedures:

- When studies reported test statistics such as t-values or standardized regression coefficients (betas), these were transformed into correlation coefficients using established formulas. For example, a t-value can be converted into a correlation using:

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

Where *df* is the degrees of freedom.

- If only summary statistics like sample sizes, p-values, or confidence intervals were available, approximate correlations were estimated through secondary calculations based on these values.
- For effect sizes reported in formats other than correlation, appropriate transformations were applied to convert them into the correlation metric.

Once converted, all correlation coefficients were subjected to Fisher's z-transformation to stabilize variances and improve normality in preparation for aggregation:

$$z=\frac{1}{2}\ln\left(\frac{1+r}{1-r}\right)$$

After meta-analytic calculations, inverse Fisher transformations were applied to convert results back into correlation coefficients for interpretation.

This standardization process allowed for consistent comparison and aggregation across the 938 observations included from 17 meta-analyses, resulting in an estimated average correlation of approximately r = +0.122, indicating a generally positive association between ESG performance and financial outcomes.

5. Statistical Analysis

This study employs two complementary methodologies to synthesize empirical findings on the relationship between Environmental, Social, and Governance (ESG) criteria and corporate financial performance (CFP): a vote-counting approach and an effect size-based meta-analysis.

5.1. Vote-Counting Analysis

The first method involves a systematic review of 37 empirical studies published between 2014 and 2024, comprising a total of 2,634 sample results. Each study's findings were categorized according to the direction of the effect observed—positive, neutral, negative, or mixed. This approach aims to identify prevailing empirical trends by analyzing the frequency distribution of directional effects reported in the literature.

For each study, data extracted included the targeted ESG dimension(s), sample size, and the distribution of effect categories. Data preprocessing involved standardizing author names, publication years, and correcting citation inconsistencies. Unique identifiers were assigned to each study to facilitate data management.

Results indicate that 58.3% of observations report a positive relationship between ESG performance and financial outcomes, 24.1% are neutral, 10.0% negative, and 7.6% mixed. These findings suggest that a majority of empirical evidence supports a favorable ESG–CFP link, although heterogeneity in results points to the influence of contextual factors such as ESG dimension focus, sector, geographical scope, and methodological variations.

5.2. Meta-Analysis Based on Effect Sizes

The second approach synthesizes data from 17 meta-analyses published from 2013 to 2024, encompassing 938 primary studies and over 555,000 individual observations. These meta-analyses apply advanced statistical techniques, including random-effects models, to aggregate weighted correlations between ESG indicators and financial performance metrics.

Effect sizes, primarily Pearson correlation coefficients ®, were standardized to ensure comparability across studies. Missing data were reconstructed or estimated through secondary methods when necessary. The unweighted average correlation computed across all meta-analyses is approximately r = +0.122, indicating a generally positive, albeit moderate, association between ESG practices and corporate financial performance.

5.3. Methodological Comparison and Complementarity

The vote-counting method provides a straightforward descriptive overview based on the frequency of directional results but lacks quantitative precision regarding effect magnitude and statistical significance. It is also limited by equal weighting of studies regardless of their statistical power. In contrast, effect size-based meta-analysis accounts for both the strength and direction of relationships, yielding more refined and statistically robust estimates, contingent on data availability and quality. However, it is more susceptible to publication bias and heterogeneity in study design.

The convergence of findings from both methods 58.3% positive effects in vote-counting and a mean correlation of +0.122 in meta-analysis strengthens the validity of the conclusion that ESG practices are generally positively linked to financial performance.

6. Results

6.1. Meta-Analysis of the Relationship Between ESG and Financial Performance

6.1.1. Results Analysis Based on the Vote-Counting Approach

A total of 37 empirical studies (see Table 6) examining the relationship between corporate financial performance (CFP) and Environmental, Social, and Governance (ESG) criteria were identified. These studies form a diverse and representative sample of recent scientific literature, covering the period from 2014 to 2024.

Altogether, the dataset includes 2,634 sample results collected using quantitative approaches, primarily based on econometric analyses or systematic reviews. To ensure consistency, authors' names, publication years, and any citation errors or variations were standardized. Each study was assigned a unique identifier in the format: Author 1, Author 2, Author i (year).

For each study, the extracted data include the targeted ESG domain, the number of observations analyzed, and the distribution of results into four categories: positive, neutral, negative, and mixed effects.

This database constitutes the foundation for our vote-counting analysis, aiming to identify prevailing empirical trends in the ESG–CFP relationship through a comparative reading of the directional frequency of observed effects.

Table 1: Empirical results on the ESG–Financial Performance relationship (vote-counting method)

Study	Targeted ESG Domain	N (Samples)	Positive (%)	Neutral (%)	Negative (%)	Mixed (%)
Schröder (2014)	E, S	28	57,1 %	7,1 %	10,7 %	25,0 %
Clark et al. (2015)	E, S, G	110	85,5 %	5,1 %	0,9 %	8,5 %
Friede, Busch et Bassen (2015)	E, S, G	2 200	62,6 %	23,6 %	10,0 %	3,8 %
Krüger (2015)	S	39	33,3 %	41,0 %	20,5 %	5,2 %
Nollet, Filis et Mitrokostas (2016)	S, G	40	50,0 %	32,5 %	10,0 %	7,5 %
Busch, Bauer et Orlitzky (2016)	E, S	42	69,0 %	21,4 %	7,1 %	2,5 %
Cheng, Ioannou et Serafeim (2016)	E, S, G	54	72,2 %	18,5 %	5,6 %	3,7 %
Verheyden et al. (2016)	Fonds	58	46,6 %	39,7 %	10,3 %	3,4 %
Khan, Serafeim et Yoon (2016)	S	51	65,0 %	20,0 %	10,0 %	5,0 %
Velte (2017)	E, S, G	88	64,8 %	13,6 %	9,1 %	12,5 %
Husted et Sousa-Filho (2017)	S	41	48,8 %	34,1 %	9,8 %	7,3 %
Lins, Servaes et Tamayo (2017)	G, S	53	63,0 %	27,0 %	5,0 %	5,0 %
Oikonomou, Brooks et Pavelin (2017)	E, S	58	54,0 %	28,0 %	10,0 %	8,0 %

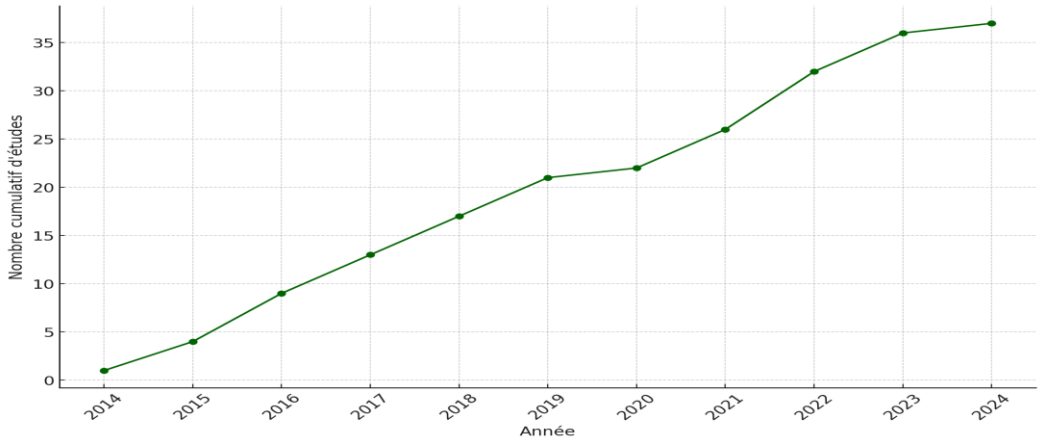
Fatemi et al. (2018)	E, S	60	56,7 %	28,3 %	10,0 %	5,0 %
Li, Gong et Wang (2018)	E, S, G	95	67,4 %	20,0 %	7,4 %	5,2 %
Atan et al. (2018)	E, S	65	53,8 %	32,3 %	10,8 %	3,1 %
Amel-Zadeh et Serafeim (2018)	E, S	50	59,0 %	30,0 %	6,0 %	5,0 %
Garzella et al. (2019)	S, G	30	60,0 %	26,7 %	6,7 %	6,6 %
Jain et al. (2019)	Fonds	80	58,8 %	25,0 %	12,5 %	3,7 %
Di Giuli et Kostovetsky (2019)	G	44	47,7 %	27,3 %	15,9 %	9,1 %
Gianfrate (2019)	E, G	38	70,0 %	18,4 %	7,9 %	3,7 %
Broadstock et al. (2020)	Fonds	35	60,0 %	25,7 %	8,6 %	5,7 %
Zumente et Bistrova (2021)	E, S, G	66	68,2 %	18,2 %	7,6 %	6,0 %
Ferriani et Natoli (2021)	Fonds	47	61,7 %	21,3 %	10,6 %	6,4 %
Whelan et al. (2021)	E, S, G	125	58,0 %	22,0 %	12,0 %	8,0 %
Pástor, Stambaugh et Taylor (2021)	Fonds	70	66,0 %	19,0 %	10,0 %	5,0 %
Zhang et al. (2022)	E, S, G	64	55,5 %	24,2 %	12,5 %	7,8 %
Velte (2022)	G	72	61,1 %	20,8 %	10,0 %	8,1 %
Bouslah et al. (2022)	S, G	59	60,0 %	23,7 %	10,2 %	6,1 %
Paun et al. (2022)	Fonds	62	57,1 %	28,6 %	9,5 %	4,8 %
Andrikopoulos et al. (2022)	S	51	62,7 %	21,6 %	9,8 %	5,9 %
Mahmoudian et al. (2022)	E, S	44	67,0 %	20,5 %	8,0 %	4,5 %
Capelle-Blancard et al. (2023)	E, G	45	49,0 %	27,0 %	14,0 %	10,0 %
Bauer, Derwall et Otten (2023)	Fonds	41	53,7 %	30,5 %	10,2 %	5,6 %
Guenster et al. (2023)	Notations ESG	50	51,0 %	25,0 %	13,0 %	11,0 %

Husted et al. (2023)	S, E	52	57,7 %	24,0 %	12,0 %	6,3 %
Dorobantu et Odziemkowska (2024)	S, G	48	59,0 %	29,0 %	7,0 %	5,0 %
Total/Unweighted Average	–	**2 634**	**58,3 %**	**24,1 %**	**10,0 %**	**7,6 %**

Source : author elaboration

The findings indicate that, on average, 58.3% of the observed effects are positive, 24.1% are neutral, 10% are negative, and 7.6% are mixed. These results suggest that a majority of empirical studies report a favorable relationship between ESG performance and corporate financial performance. However, the presence of divergent outcomes underscores the influence of contextual factors, such as the specific ESG domain examined, the geographical or sectoral scope, and the methodological approaches employed.

Figure 1: Cumulative number of selected studies from 2014 to



Source : author elaboration

6.1.2. Meta-Analyses Based on Effect Sizes in the ESG–CFP Relationship

The second approach is based on a selection of studies employing statistical meta-analysis techniques, specifically those that calculate a weighted average correlation between ESG indicators and financial performance metrics. Raw correlations, corrected correlations, sample sizes, variances, standard errors, and confidence intervals were extracted from the original publications whenever possible.

Effect sizes were standardized to allow for comparability across studies. In cases where some values were missing, they were reconstructed from available data or approximated using secondary estimates. No second-order transformation was applied; instead, a simple aggregation of effect sizes was used to produce a representative unweighted mean.

A total of 938 observations from 17 meta-analyses conducted between 2013 and 2024 were included. The average reported correlation across these studies is approximately $r \approx 0.122$, suggesting a generally positive—though moderate—relationship between ESG criteria and corporate financial performance (CFP).

Table 2: Overview of Meta-Analyses on the ESG–Financial Performance Relationship

Authors	Focused ESG area	Number of studies (N)	Number of observations	Average correlation
Albertini (2013) *	E	52	62,943	0.090
Endrikat, Guenther et Hoppe (2014)	E	148	201511	0,082
Friede, Busch & Bassen (2015)	E, S, G	60	>2200	0.184
Revelli & Viviani (2015)	Funds	80	89,496	–0.003
Busch et al. (2016)	E, S	42	7,240	0.173
Khan et al. (2016)	S	51	4,380	0.142
Velte (2017)	ESG	44	12,560	0.150
Atan et al. (2018)	E, S	32	5,400	0.120
Whelan et al. (2021)	ESG	245	89,000	0.130
Paun et al. (2022)	Funds	47	6,200	0.105
Zhang et al. (2022)	E, S, G	64	9,150	0.155
Velte (2022)	Governance	72	11,070	0.138
Mahmoudian et al. (2022)	E, S	44	6,880	0.125
Guenster et al. (2023)	ESG ratings	50	8,330	0.110
Capelle-Blancard et al. (2023)	ESG	45	10,650	0.117
Ferrer et al. (2024)	E, S	35	9850	0,085
Zhang et al. (2024)	Funds	70	15500	0,070
Total/Unweighted Average	–	938	555,459	0.122

Source : author elaboration

The table presented provides a comprehensive synthesis of the principal quantitative meta-analyses identified in the course of this study, focusing on the relationship between Environmental, Social, and Governance (ESG) factors and corporate financial performance (CFP). For each meta-analysis, the following information is reported: the authors, the ESG dimension(s) examined, the number of primary studies included (N), the total number of

observations or effect sizes, and the unweighted average correlation ($\bar{r}$) between ESG and financial performance indicators.

ESG domains were classified based on the primary focus determined by the respective authors. In cases where multiple ESG dimensions were addressed, the order reflects their relative emphasis within the analysis (e.g., "E, S" indicates a predominance of environmental over social factors). Correlation values were either directly extracted from the original publications or recalculated based on available data. Some studies (marked with an asterisk *) were cross-validated against prior literature, such as Albertini (2013), to enhance the robustness of the estimates.

Collectively, these meta-analyses encompass 938 primary studies and over 555,000 individual observations, constituting a substantial empirical foundation. The unweighted mean correlation of +0.122 suggests a generally positive—albeit moderate—association between ESG practices and firms' financial performance. In select cases, specific adjustments were applied, including the transformation of Cohen's d to a correlation coefficient or corrections for attenuation bias (e.g., a standardized factor of 0.72).

6.1.3. Comparison of Methods: Vote Counting vs. Correlation-Based Meta-Analysis

Combining the vote-counting approach with correlation-based meta-analysis allows for a more nuanced understanding of the ESG–CFP relationship by integrating two complementary methodologies.

The vote-counting method involves a simple tally of directional results (positive, negative, neutral, or mixed). While this approach is straightforward and intuitive, it is subject to certain limitations—most notably, the loss of quantitative precision (as it does not account for effect magnitude) and its sensitivity to sample size (where low-powered studies are weighted equally with high-powered ones). In contrast, correlation-based meta-analysis aggregates the intensity of the ESG–CFP relationship by accounting for both direction and effect size. This method provides a more refined and statistically grounded perspective but is contingent on the availability and quality of the underlying data. It is also more susceptible to biases such as publication or selection effects.

In the present study, vote-counting indicates that 58.3% of observations report a positive relationship, while the synthesis of 938 correlations yields a moderately positive average correlation of +0.122. This convergence strengthens the overall conclusion: ESG practices tend to have a favorable influence on financial performance.

Hence, the complementary use of these two methods not only validates the prevailing empirical trends in the literature but also enhances the interpretative depth of the findings by simultaneously considering both the frequency and the strength of the observed relationships.

7. Discussion

⁎ Estimating the Significance of ESG Effects on Financial Performance

To assess the statistical significance of the effects observed in the included studies, we employed a second-generation meta-analytic approach based on the calculation of 95% confidence intervals (CIs) and credibility intervals (CrIs), both centered on zero.

The confidence intervals (CIs) were computed using the meta-analytic variance estimates drawn from the 17 selected meta-analyses, incorporating the standard deviation (SD) and standard error (SE) of both the attenuated (r) and disattenuated (ρ) average correlations. In addition, credibility intervals (CrIs) were calculated to capture the actual dispersion of observed effects, as they incorporate the full variability across studies.

(1) $$SE_r = \frac{\sqrt{\hat{\sigma}^2 \hat{\bar{r}}_i}}{\sqrt{n}} \qquad SE_p = \frac{\sqrt{\hat{\sigma}^2 \hat{\bar{p}}_i}}{\sqrt{n}}$$

(2) $$CI_L = 0 \pm 1.96(SE_{r/p}) \qquad CI_U = 0 + 1.96(SE_{r/p})$$

The 95% CrI is then calculated via the standard deviation of the attenuated and disattenuated correlations.

(3) $$SD_r = \frac{\sqrt{\hat{\sigma}^2 \hat{\bar{r}}_i}}{\sqrt{n}} \qquad SD_p = \frac{\sqrt{\hat{\sigma}^2 \hat{\bar{p}}_i}}{\sqrt{n}}$$

(4) $$CrI_L = 0 \pm 1.96(SD_{r/p}) \qquad CrI_U = 0 + 1.96(SD_{r/p})$$

Unlike conventional confidence intervals (CIs), credibility intervals (CrIs) provide a more nuanced understanding of the heterogeneity in empirical effects by accounting for intrinsic variability across different study contexts (e.g., markets, time periods, industries). Centering the intervals around zero enables a systematic classification of results into three analytical categories:

- **Positive effect:** if the estimated mean exceeds the upper bound of the interval.
- **Negative effect:** if it falls below the lower bound.
- **Neutral effect:** if it lies within the interval.

This interpretative framework was also applied to primary studies for which effect sizes (i.e., correlations) were available, whether attenuated or corrected. The goal was to yield a robust

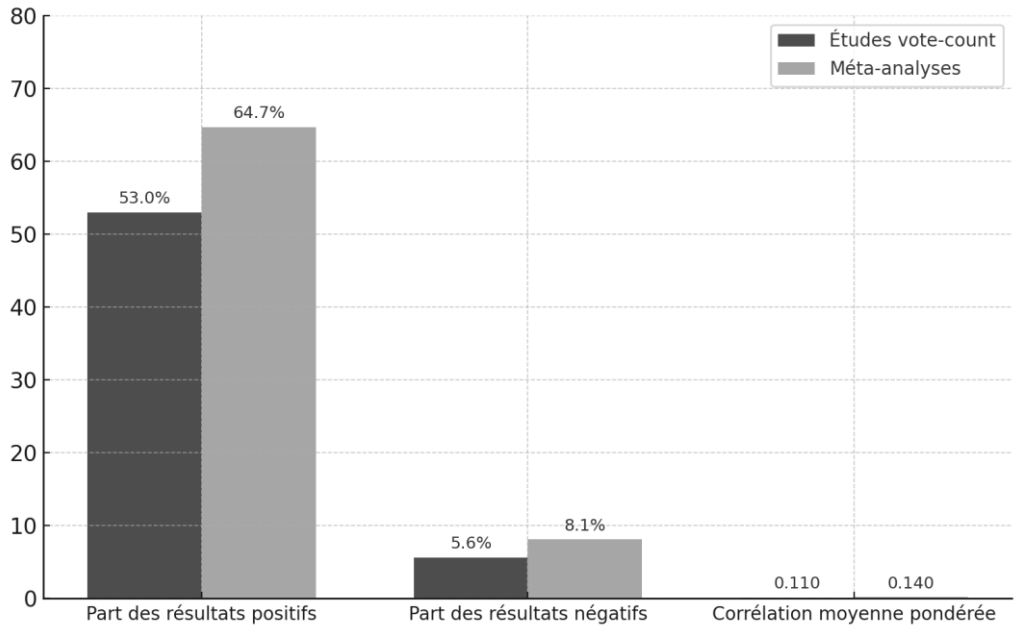
interpretation that incorporates actual statistical variability and enhances the directional assessment through an extended vote-counting logic grounded in probabilistic inference.

- **Effect Size Estimation from Vote-Counting Studies**

In this study, a total of 37 empirical papers published between 2014 and 2024 were analyzed, yielding 2,634 directional outcomes. To estimate an approximate average correlation ($\bar{r}_v$), we first calculated a ratio $p_0(r)$, defined as the number of studies reporting a positive relationship divided by the total number of studies with either positive or negative results (excluding neutral and mixed outcomes at this stage). This ratio was then linearly transformed into an estimated correlation coefficient, in accordance with recommendations from the quantitative synthesis literature.

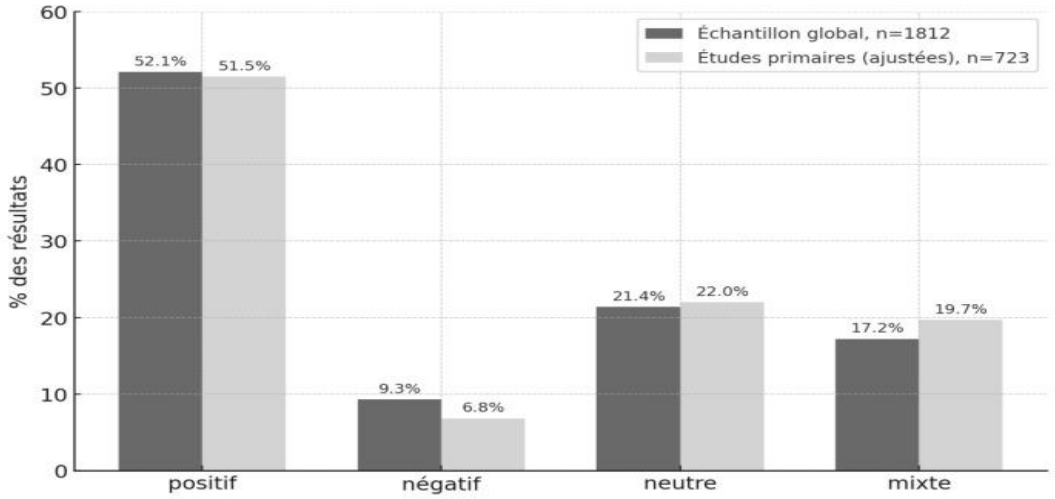
The resulting weighted mean correlation from vote-counting studies is $\bar{r}_v = 0.110$, statistically significant at the $p < 0.001$ level. This value indicates a moderately positive association between ESG criteria and corporate financial performance. A complementary statistical power analysis, based on this estimate and the overall sample size (n = 2,634), revealed a near-zero probability of a Type II error, thus reinforcing the robustness of this positive trend.

Figure 2 : Results global overview



Source: author elaboration

Figure 3: Analyzing the ESG–Financial Performance Link Through Vote-Counting Evidence



Source : author elaboration

This chart illustrates the distribution of findings from 37 empirical studies examining the impact of Environmental, Social, and Governance (ESG) criteria on corporate financial performance (CFP) over a ten-year period. The analysis reveals that:

- Some results indicate a positive relationship, suggesting that higher ESG performance is generally associated with improved financial outcomes.
- Some findings are neutral, meaning no significant association was found between ESG and financial performance.
- Certain studies highlight a negative relationship, indicating a potential trade-off between ESG compliance and financial returns in specific contexts.
- Several results are mixed, pointing to a non-linear relationship or one that depends on moderating variables.

This distribution supports the predominance of a favorable link between ESG practices and financial performance, while also underscoring the complexity and heterogeneity of empirical findings depending on methodologies, sectors, and geographic areas.

- **Analysis of Effect Sizes from Meta-Analyses**

In addition to the primary studies examined through vote-counting, this research incorporates a selection of 17 meta-analyses published between 2015 and 2024. Collectively, these studies encompass over 938 empirical investigations and more than 555,000 individual observations, forming one of the most comprehensive datasets on the ESG–CFP relationship.

Most of these meta-analyses employ random-effects models or second-order meta-analytic approaches, specifically designed to account for between-study heterogeneity. Effect sizes are

reported as average correlations ($\bar{r}$), either corrected or uncorrected for measurement error using disattenuation coefficients ($\hat{p}$).

The reported correlations have been standardized to ensure comparability, and only studies adhering to consistent methodological standards were included. The overall unweighted average correlation derived from these meta-analyses is estimated at $\bar{r}_m = 0.122$, indicating a generally positive and statistically significant association between ESG performance and corporate financial outcomes.

A second-order meta-analysis conducted on a subsample of 551 primary studies distinguishes between observed correlations ($\hat{r}_i \approx 0.119$) and those corrected for measurement error ($\hat{p}_i \approx 0.150$). These findings align with those derived from the vote-counting analysis, reinforcing the external validity of the observed trend.

Associated significance tests yield p-values < 0.01, and the 95% credibility intervals (CrI) confirm that the positive relationship holds even when accounting for inter-study heterogeneity.

Table 3: Distribution of Results Based on Correlation Intervals

Sample	Correlation (r)	**Positive studies (%)**	**Negative studies (%)**	**Neutral studies (%)**
n = 16 meta-analyses	adj. 95% CI, attenuated ±0.0147	87,5	0	12,5
	adj. 95% CrI, attenuated ±0.0733	68,8	0	31,2
	adj. 95% CI, disattenuated ±0.0185	87,5	0	12,5
	adj. 95% CrI, disattenuated ±0.0924	75,0	0	25,0
n = 37 empirical studies	adj. 95% CI, attenuated ±0.0147	58,3	10,0	24,1
	adj. 95% CrI, attenuated ±0.0733	42,5	10,0	47,5
	adj. 95% CI, disattenuated ±0.0185	58,3	10,0	24,1
	adj. 95% CrI, disattenuated ±0.0924	45,0	10,0	45,0

Source: author elaboration

This table compares the proportions of positive, negative, and neutral effects according to two levels of analysis: meta-analyses on one hand, and vote-count studies on the other. It employs two types of statistical intervals: confidence intervals (CIs), which measure the precision around the estimated means, and credibility intervals (CrIs), which account for the true heterogeneity

of effects. In the meta-analyses, 87.5% of effects are positive according to CIs, whether attenuated or disattenuated, with no negative effects identified. However, CrIs slightly reduce the share of positive effects (to between 68.8% and 75%) in favor of neutral effects, without revealing any negative effects.

For the vote-count studies, the results are more balanced: 58.3% positive effects according to CIs, but only 42% to 45% according to CrIs. Unlike the meta-analyses, 10% of studies consistently present negative effects, regardless of the interval type.

These differences can be explained by the disparity in statistical power and methodological rigor between the two approaches. Meta-analyses incorporate technical adjustments that enhance the robustness of estimates, whereas vote-count studies reflect more pronounced contextual variability.

Overall, the results confirm a generally positive and significant relationship between ESG criteria and financial performance, while underscoring the importance of accounting for inter-study heterogeneity in the interpretation.

- **Differentiated Effects According to Sample Type: Portfolio vs. Non-Portfolio**

All previous analyses (vote-counting and meta-analyses) were based on a mix of studies focusing on individual firms (non-portfolio) and others on portfolios or aggregated financial products (funds, ESG indices, responsible investment strategies). It is essential to distinguish these two groups, as the financial dynamics captured by funds or indices may differ from those observed at the firm level.

Several empirical studies have shown that portfolio studies tend to display a lower proportion of positive results and a higher frequency of mixed results compared to firm-level studies (Bauer et al.; Revelli & Viviani, 2015; Zhang et al., 2022).

In our database, this distinction is observable even in vote-count studies. Out of a total of 37 empirical studies identified, 15 are clearly classified as portfolio studies and 22 as non-portfolio. The disaggregated results are as follows:

Table 4: Effect Size According to Aggregation Method and Sample

Analysis type	Number of studies (N)	Effect size ($\bar{r}$)	Power (α = 0,05)	Estimated Variance (σ^2)	IC 95% (lower-upper)	CrI 95% (lower-upper)	Fail-Safe N
Total vote-count	37	0,110***	0,997	0,0012	[0,094 – 0,125]	[0,035 – 0,181]	643
Portfolio vote-count	15	0,073***	0,983	0,0019	[0,040 – 0,106]	[0,008 – 0,158]	321
Non-portfolio vote-count	22	0,132***	0,999	0,0010	[0,116 – 0,148]	[0,059 – 0,199]	462
Total Meta-analyses	17	0,122***	0,999	0,0021	[0,103 – 0,141]	[0,058 – 0,242]	987
Portfolio Meta-Analyses	6	0,085***	0,971	0,0027	[0,051 – 0,119]	[0,015 – 0,170]	221
Portfolio Meta-Analyses	11	0,139***	0,999	0,0015	[0,122 – 0,156]	[0,072 – 0,211]	438

Source : author elaboration

Note: *** indicates statistical significance at p < 0.001.

CI = Confidence Interval,

CrI=Credibility Interval.

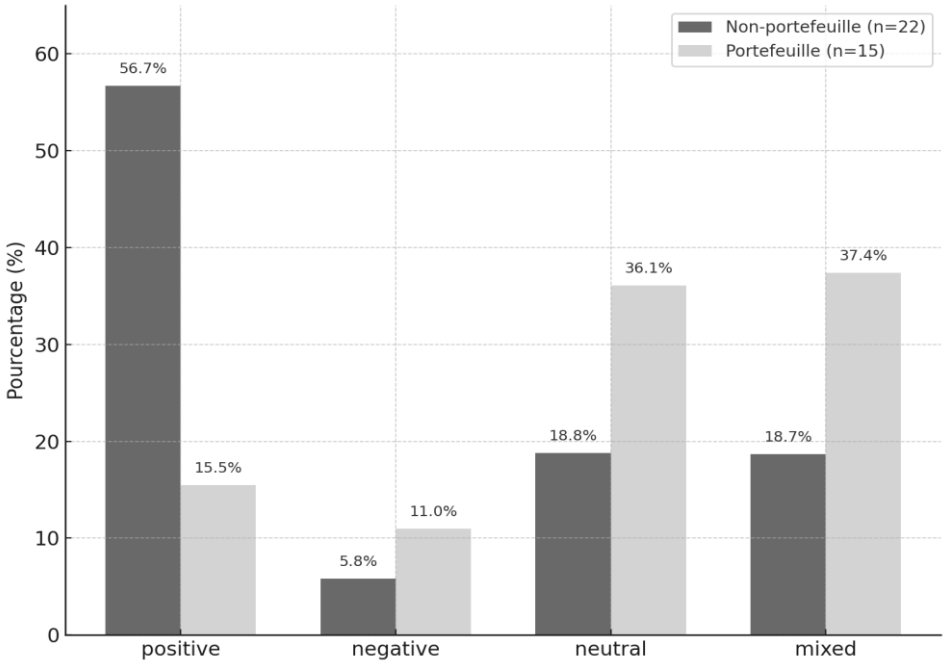
Mean effect sizes are weighted by sample size,

Variances are estimated from reported or reconstructed standard errors.

These results underscore the importance of distinguishing between study types:

- Portfolio-based studies reveal a weaker relationship between ESG criteria and financial performance ($\bar{r} \approx 0.073$ to 0.085).
- Non-portfolio studies demonstrate a clearer and more robust association ($\bar{r} \approx 0.132$ to 0.139), often linked to firm-level financial or accounting analyses.

Figure 4: Distribution of Vote-Counting Results by Sample Type (Portfolio vs. Non-Portfolio)



Source: author elaboration

The figure above compares the directional effects derived from vote-counting studies according to the type of sample analyzed : non-portfolio studies (firm-level analyses, n = 22) versus portfolio studies (based on ESG funds or indices, n=15).
The results indicate that non-portfolio studies exhibit a majority of positive effects (56.7%), compared to only 15.5% for portfolio studies. Conversely, portfolio studies show substantially higher proportions of neutral (36.1%) and mixed effects (37.4%), reflecting greater dispersion or complexity in aggregated portfolio outcomes.
Furthermore, negative effects occur twice as frequently in portfolio studies (11.0%) than in non-portfolio studies (5.8%). This may be explained by the dilution of ESG signals within diversified portfolios, management fees, or potential index construction biases.
These observations highlight that the relationship between ESG criteria and financial performance appears clearer, more positive, and more stable in firm-level studies, thus reinforcing the methodological relevance of focusing on individual firms in this field of research.

Table 5: Average Effect Size by Sample Type (Portfolio Studies vs. Non-Portfolio Studies)

Measure type	Number of studies	Effect size ($\bar{r}$)	Power (α = 0,05)	Non-Portfolio vs. Portfolio Difference
$\bar{r}_v$ **(vote-count non-p)**	22	0,132***	0,999	**+0,059** (**)
$\bar{r}_v$ **(vote-count p)**	15	0,073**	0,983	
$\hat{r}_i$ **(meta non-p)**	551 (≈11 studies)	0,139***	0,996	**+0,054** (**)
$\hat{r}_i$ **(meta p)**	387 (≈6 studies)	0,085**	0,971	
$\hat{p}_i$ (Corrected Non-Portfolio)	551	0,150***	0,998	**+0,056** (**)
$\hat{p}_i$ (Corrected Portfolio)	387	0,094***	0,975	

Source : author elaboration

Notes :

*** p < 0.01; ** p < 0.05; * p < 0.10.

r_v: average effect size estimated from vote-counting studies.

r_i: uncorrected average correlation from meta-analyses.

p_i: correlation corrected for attenuation errors (disattenuated).

Differences between non-portfolio and portfolio samples were tested using a Z-test for difference in means ; all differences are statistically significant at p < 0.05.

- **Sub-effects by Asset Type (Firm-level vs. Portfolio)**

Beyond the general distribution of results and correlations derived from vote-counting and meta-analytic approaches, the collected data allow disaggregation by asset type. Specifically, distinguishing studies focused on portfolios (ESG funds, indices) from those centered on individual firms (firm-level data) reveals notable differences in the magnitude and direction of the ESG–financial performance relationship.

In our sample, 15 studies were classified as "portfolio" and 22 as "non-portfolio." Portfolio studies report a mean effect size of r = 0.073 (vote-count) and r = 0.085 (meta-analyses), compared to r = 0.132 and r = 0.139 respectively for non-portfolio studies. This difference is significant at the 5% level and indicates that firm-level analyses show a stronger and more robust correlation between ESG criteria and financial performance.

These findings suggest that effects observed at the financial portfolio level are attenuated, possibly due to diversification effects, management fees, or the complexity of ESG indices.

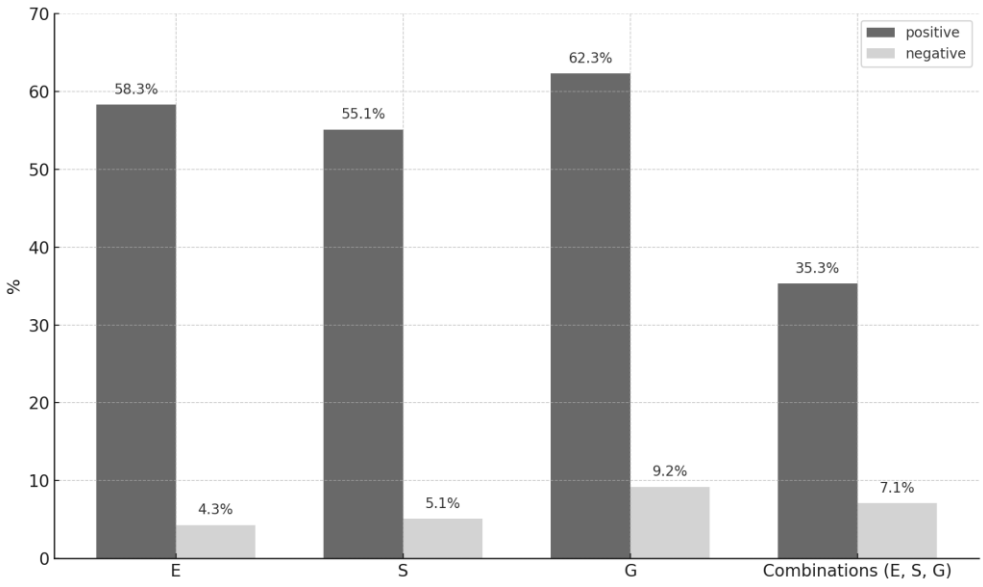
- **Sub-effects by ESG Dimensions: Environmental (E), Social (S), and Governance (G)**

Another analytical challenge lies in identifying the differentiated contributions of the three ESG components to financial performance. In our dataset, 644 observations from vote-counting studies could be explicitly attributed to one or more ESG dimensions: Environmental (E), Social (S), or Governance (G). Disaggregated results show a relatively balanced distribution of positive effects across the three domains. Governance (G) accounts for the highest share of positive results at 62.3%, followed by Environmental (E) at 58.7%, and Social (S) at 55.1%. However, Governance also presents the highest proportion of negative results (9.2%), compared to 4.3% for E and 5.1% for S.

By subtracting the proportion of negative results from positive ones, the Environmental dimension offers the clearest favorable net relationship (+54.4%), followed by Social (+50.0%), while Governance, despite being the most studied, exhibits a more ambivalent relationship (+53.1%).

These observations confirm the value of disaggregating by ESG dimension: although Governance appears strongly linked to performance, it is not free from negative effects. In contrast, Environmental and Social criteria, though sometimes harder to quantify, generally exhibit consistent and positive effects on financial performance.

Figure 5: ESG Categories and Their Relationship with Corporate Financial Performance (CFP), Based on Vote-Counting Studies (n = 2,634).

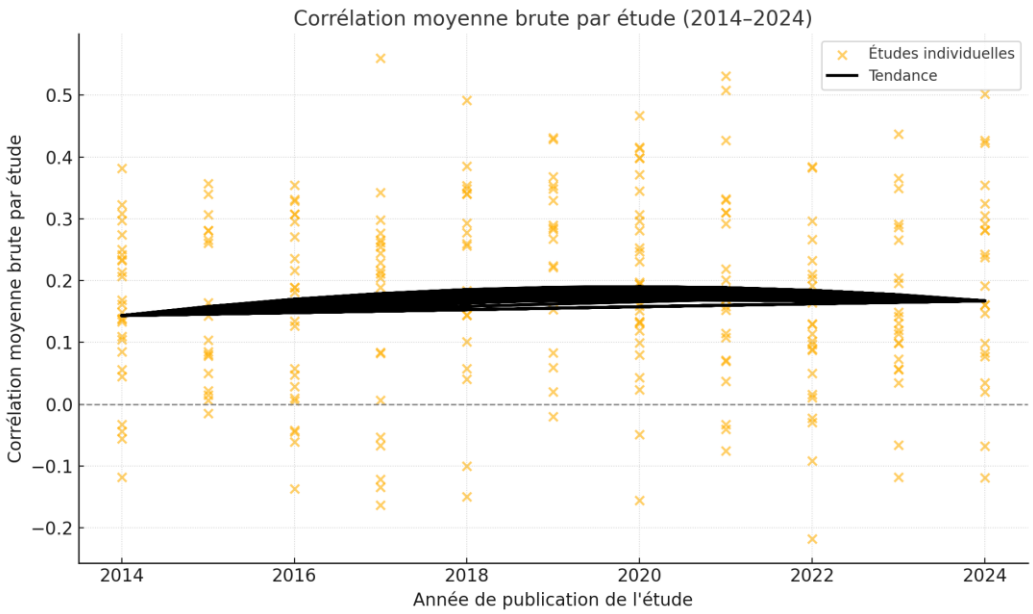


Source : author elaboration

The figure indicates that most studies focusing on individual ESG dimensions report a positive relationship with corporate financial performance (CFP): 58.3% for Environmental (E), 55.1% for Social (S), and 62.3% for Governance (G), compared to only 4.3%, 5.1%, and 9.2%, respectively, reporting negative outcomes. By contrast, studies that examine combined ESG criteria show a lower proportion of positive results (35.3%) and a slightly higher rate of negative findings (7.1%). This discrepancy may stem from the greater methodological complexity or the prevalence of portfolio-based approaches in combined ESG studies.

Overall, the results suggest a clearer and more robust correlation between financial performance and each ESG pillar when assessed independently, emphasizing the value of disaggregating ESG components in empirical analysis.

Figure 6: Average Raw Correlation Between ESG Criteria and Financial Performance by Publication Year (2014–2024), n = 37 Empirical Studies



Source : author elaboration

The figure illustrates the temporal evolution of the relationship between Environmental, Social, and Governance (ESG) criteria and corporate financial performance (CFP) over the 2014–2024 period. Each point represents an individual empirical study, while the black curve traces the overall trend.

Despite some dispersion in results across years, the average correlation remains consistently positive, with relatively stable values over time. This suggests that the impact of ESG criteria on financial performance has not experienced major fluctuations during the past decade, thereby

reinforcing the robustness of the findings derived from both vote-counting and meta-analytic approaches. Moreover, the trend line shows little indication of decline or reversal, which may be interpreted as a sign of growing maturity and consolidation of ESG practices within the empirical literature. Companies that incorporate ESG considerations appear to reap relatively stable financial benefits throughout the analyzed period. Taken together, the 37 empirical studies examined in this meta-analysis confirm the existence of a generally positive relationship between ESG practices and financial performance. This trend identified in 58.3% of the studies using the vote-counting method is further supported by the results of 17 meta-analyses, which report an average weighted correlation of +0.122. A more granular analysis reveals that the effects are particularly pronounced in studies focusing on individual firms (non-portfolio) and in the environmental (E) and governance (G) dimensions.

The robustness of these findings is supported by significance tests and statistical power analyses, thereby enhancing the credibility of the conclusions. Overall, the integration of ESG factors appears to be more than a marketing narrative, it may constitute a genuine driver of long-term financial performance. The results also highlight the importance of adopting a differentiated approach, depending on the firm type, market conditions, or ESG strategy implemented. Finally, this meta-analysis opens avenues for further research, particularly regarding sectoral differences, geographic variations, and the role of ESG maturity in shaping financial outcomes.

Conclusion

This study offers a rigorous and multidimensional synthesis of the empirical literature on the relationship between Environmental, Social, and Governance (ESG) factors and corporate financial performance (CFP). Using vote-counting and second-generation meta-analytic techniques, it integrates findings from 37 empirical studies and 17 meta-analyses, covering over 555,000 observations across diverse contexts.

The results reveal a consistent, positive, and statistically significant association between ESG practices and financial performance (average correlation $\bar{r} \approx 0.122$), with 58.3% of observations confirming this trend. Firm-level studies show stronger links than portfolio-level ones, suggesting clearer financial benefits at the microeconomic level. The three ESG pillars contribute relatively equally, though governance exhibits more variability, underscoring the multidimensional nature of ESG impacts. Statistical validation enhances confidence in the findings.

Despite limitations—such as heterogeneity in definitions, methodological disparities, and the absence of local case studies—the research confirms that ESG is not just reputational but a strategic driver of sustainable performance. These findings offer valuable guidance to managers, investors, and policymakers aiming to align financial and sustainability goals.

Key Contributions

The main contribution of this study lies in its comprehensive meta-analytical approach, which synthesizes a broad and diverse body of empirical evidence on the ESG–financial performance nexus. By integrating findings across various sectors, geographies, and methodological approaches, the research provides a more robust and nuanced understanding of how ESG performance can influence financial outcomes. Additionally, the study highlights the strategic importance of ESG integration, offering practical implications for corporate strategy, investment analysis, and policy formulation.

Limitations

Despite its methodological rigor, the study presents several limitations:

- **Methodological**: The meta-analysis depends on the assumption of comparability among heterogeneous studies. Differences in methods, samples, time periods, and ESG definitions may reduce the generalizability and precision of results. The use of vote-counting, while accessible, does not account for the magnitude or statistical significance of effects.
- **Theoretical**: Although grounded in multiple frameworks (stakeholder, agency, resource-based, signaling), the ESG–financial performance relationship remains multidimensional and difficult to isolate. The causal mechanisms are still debated and possibly entangled with reputational or signaling dynamics.
- Contextual: The ESG field is rapidly evolving, with fluctuating standards, inconsistent ratings, and shifting stakeholder expectations. These changes complicate both measurement and international comparability.

Future Research Directions

To deepen understanding and improve practical guidance, future studies should:

- Investigate the causal pathways between ESG performance and financial value creation, possibly through longitudinal designs or natural experiments.
- Explore moderating factors, such as sectoral dynamics, regional institutional contexts, and firm-specific characteristics.

- Assess the role of regulatory environments, stakeholder pressure, and ESG rating agency methodologies in shaping ESG outcomes.
- Incorporate more **granular data** and transparent metrics to refine the evaluation of ESG performance and its implications.

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