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DOES ESG MATTER FOR FINANCIAL PERFORMANCE? INSIGHTS FROM FRENCH FIRMS

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ABSTRACT

This study examines the impact of Environmental, Social, and Governance (ESG) performance and financial structure on the corporate performance of French firms. Using a 15-year panel dataset covering 100 companies from 2010 to 2024, financial performance is assessed by four indicators: Economic Value Added (EVA), Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q. To address potential endogeneity and the persistence of performance, the analysis employs dynamic panel estimations via the System Generalized Method of Moments (GMM). The results reveal a heterogeneous and context-dependent relationship between ESG practices and financial outcomes. Specifically, the impact of ESG initiatives appears more pronounced in the long term. While the ESG score has a neutral effect on EVA and ROE, it exhibits a small but statistically significant short-term negative effect on ROA and Tobin's Q, likely reflecting compliance costs and upfront investments in sustainability. Additionally, financial structure emerges as a key determinant of both operational efficiency positively affecting ROE and Tobin's Q and market valuation. Firm size consistently shows a strong negative and significant effect on EVA, ROA, and Tobin's Q, suggesting that larger firms may experience inefficiencies associated with scale.

KEYWORDS: ESG, Financial Performance, Debt, Dynamic Panel, French Firms.

1. INTRODUCTION

In recent years, the concept of ESG (Environmental, Social, and Governance) has transitioned from a voluntary corporate initiative to a core element of strategic management and investment evaluation. Stakeholders—including investors, regulators, and consumers—now increasingly expect firms to exhibit responsible practices that harmonize financial objectives with social and environmental sustainability. Embedding ESG considerations into corporate strategies enables firms to better anticipate and respond to challenges while promoting innovation, resource efficiency, and sustainable competitive advantage. Consequently, ESG performance has become a fundamental driver of long-term corporate value, linking financial success with ethical conduct and positive societal impact.

The relationship between ESG performance and financial performance is supported by a multifaceted theoretical framework, including stakeholder theory, the Resource-Based View (RBV), and agency theory, all suggesting that ESG practices can influence financial outcomes. A substantial body of international research has highlighted a positive association, with one meta-analysis finding that roughly 90% of studies report either a positive or neutral link between ESG and financial performance. Firms with strong ESG performance often experience lower earnings volatility, a reduced cost of capital, and enhanced investor confidence. However, this relationship is not universal, as some studies report neutral or negative effects, often due to the initial costs of ESG investments or contextual factors.

Focusing on the French context, where ESG transparency and reporting have been shown to enhance investor confidence and reduce perceived risk, this study aims to contribute to the ongoing debate. We examine the impact of ESG performance and financial structure on the corporate performance of French firms. Using a 15-year panel dataset covering 100 companies from 2010 to 2024, financial performance is assessed using a comprehensive set of four indicators: Economic Value Added (EVA), Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q. To account for potential endogeneity and the persistence of financial performance over time, the analysis employs dynamic panel estimations via the System Generalized Method of Moments (GMM).

The preliminary findings reveal a heterogeneous and context-dependent relationship between ESG practices and financial outcomes. Specifically, the ESG score has a neutral effect on EVA and ROE but exhibits a small but statistically significant short-term negative effect on ROA and Tobin's Q. Additionally, financial structure and firm size emerge as key determinants, with larger firms consistently showing a strong negative effect on several performance indicators. This suggests that the impact of ESG initiatives may be more pronounced in the long term, likely reflecting compliance costs and upfront investments in sustainability in the short term.

The remainder of this study is structured as follows. Section 2 outlines the conceptual framework for ESG and financial performance. Section 3 reviews the theoretical framework linking ESG to financial outcomes. Section 4 presents the literature review and develops the study's hypotheses. Section 5 details the research methodology, including the sample, variable measures, and the System GMM model specification. Section 6 presents and discusses the main empirical findings. Finally, Section 7 concludes the research, focusing on key contributions and practical policy implications.

1.1. Conceptual Framework

1.2. ESG Performance

The ESG (Environmental, Social, and Governance) concept encompasses a set of non-financial criteria used to evaluate a company's sustainability and overall responsibility. Kotsantonis, Pinney, and Serafeim (2016) view ESG as an indicator of an organization's capacity to manage risks and opportunities related to environmental, social, and governance factors. According to Eccles and Klimenko (2019), ESG serves as a strategic measure of resilience and long-term value creation. Likewise, Fatemi, Glaum, and Kaiser (2018) describe ESG as a non-financial performance metric that complements traditional economic indicators by reflecting a firm's reputation, transparency, and ethical management. Sullivan and Mackenzie (2020) further argue that embedding ESG principles within corporate strategy strengthens investor confidence and lowers perceived risk.

In recent years, ESG has transitioned from a voluntary corporate initiative to a core element of strategic management and investment evaluation. Stakeholders—including investors, regulators, and consumers now increasingly expect firms to exhibit responsible practices that harmonize financial objectives with social and environmental sustainability. Embedding ESG considerations into corporate strategies enables firms to better anticipate and respond to regulatory, environmental, and reputational challenges while promoting innovation, resource efficiency, and sustainable competitive

advantage. Furthermore, the proliferation of ESG data and the adoption of standardized reporting frameworks, such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB), have significantly improved transparency and comparability across industries. Consequently, ESG performance has become a fundamental driver of long-term corporate value, linking financial success with ethical conduct and positive societal impact.

1.3. Financial Performance

Financial performance reflects a firm's capacity to generate favorable economic and financial outcomes through its operations. According to Richard et al. (2009), it comprises three key dimensions: accounting performance, economic performance, and market performance. Accounting performance focuses on profitability indicators derived from financial statements, such as return ratios and earnings measures. Economic performance, on the other hand, captures the firm's efficiency in using its resources to create real economic value beyond accounting profits. Finally, market performance represents how investors perceive the firm's growth potential and risk profile through stock market valuation. Together, these dimensions provide a comprehensive view of how well a company manages its assets, equity, and strategic investments to achieve long-term value creation. In this study, financial performance is assessed using four main indicators: Economic Value Added (EVA), Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q. These indicators provide a multidimensional assessment of corporate financial performance. They collectively encompass internal operational efficiency, profitability from both managerial and investor perspectives, and external market valuation, offering a comprehensive framework for evaluating a firm's financial health and long-term value creation.

Economic Value Added (EVA) quantifies the economic value a firm generates above the cost of the capital it utilizes. According to Stewart (1991), EVA is calculated as net operating profit after taxes minus the total cost of invested capital. Young and O'Byrne (2001) emphasize that EVA reflects a company's capacity to create sustainable shareholder value by ensuring that returns exceed the costs of both equity and debt financing. A positive EVA signals that the firm is creating wealth for its shareholders, whereas a negative EVA indicates value destruction. Compared to traditional accounting metrics, EVA is regarded as a superior performance measure because it explicitly accounts for the cost of capital, aligning managerial decisions with shareholder interests and promoting long-term value creation.

Return on Assets (ROA) evaluates a firm's economic profitability by measuring how effectively its assets generate earnings. Gitman and Zutter (2015) prove that ROA reflects management's efficiency in converting the firm's assets into net income. A higher ROA indicates superior operational performance, optimal resource utilization, and effective asset management. This metric is particularly useful for assessing the efficiency of corporate strategies, as it encompasses both operational execution and investment decisions. In capital-intensive sectors, ROA provides a vital benchmark for comparing performance across firms with varying asset structures.

Return on Equity (ROE) assesses a firm's financial profitability from the perspective of its shareholders. Brigham and Ehrhardt (2017) argue that ROE reflects a company's ability to generate returns on the equity invested by its owners. An ROE above the industry average indicates strong financial performance, effective capital management, and prudent reinvestment of earnings. This metric is particularly important for investors and analysts, as it signals the firm's capacity to deliver sustainable returns compared to its peers. However, unusually high ROE values may also reflect elevated financial leverage, which increases risk, underscoring the need to interpret ROE alongside other performance indicators.

Tobin's Q is a measure of market performance, calculated as the ratio of a firm's market value to the replacement cost of its assets. Tobin (1969) notes that a Q greater than 1 indicates that the market values the firm above its recorded asset base, reflecting positive investor expectations for future growth and profitability. Conversely, a Q below 1 signals potential undervaluation or weak market confidence. Chung and Pruitt (1994) argue that Tobin's Q captures investor sentiment and serves as a proxy for stock market valuation, incorporating both tangible and intangible elements of firm value, such as innovation, reputation, and ESG initiatives. As such, this metric links financial and non-financial aspects of firm performance, providing insights into how external stakeholders perceive the company's long-term strategic potential

1.4. Theoretical Framework

The relationship between Environmental, Social, and Governance (ESG) performance and financial performance is supported by a multifaceted

theoretical framework.

1.5. Stakeholder Theory

The stakeholder theory offers a perspective on capitalism that emphasizes the importance of addressing the interests of various groups connected to a firm, encompassing environmental, social, and ethical dimensions (Mainardes et al., 2011). It posits that firms should generate value not only for shareholders but also for all stakeholders, including employees, customers, communities, and the environment. This approach suggests that companies have both ethical and strategic responsibilities to consider the environmental and social consequences of their operations.

According to Freeman (1984), firms can achieve sustainable long-term value by meeting the expectations of a broad range of stakeholders. In this context, ESG-oriented practices—such as sustainable supply chain management, employee well-being initiatives, and environmentally responsible operations—play a crucial role in building stakeholder trust and loyalty. These initiatives often yield measurable benefits, including greater customer satisfaction, lower staff turnover, and enhanced brand reputation, which collectively improve financial performance. By integrating stakeholder interests into their strategies, firms not only meet ethical and social expectations but also reinforce their long-term competitiveness and resilience.

1.6. Resource-Based View (RBV)

The Resource-Based View supported by Barney (1991) provides a complementary perspective by framing ESG practices as strategic resources that are valuable, rare, inimitable, and non-substitutable. Firms that develop robust ESG capabilities as advanced environmental management systems, innovative social programs, or strong governance structures can achieve sustained competitive advantages that are difficult for competitors to replicate. For instance, a company that integrates energy-efficient technologies into its core operations not only reduces costs but also positions itself as a market leader in sustainability, which can attract environmentally conscious consumers and investors. Similarly, strong corporate governance practices embedded in ESG strategies, such as transparent reporting and ethical leadership, can enhance credibility in capital markets, reducing perceived risk and lowering the cost of capital. RBV thus provides a strategic rationale for why ESG performance can contribute directly to financial performance over the long term.

1.7. Agency Theory

Agency theory offers a perspective on firms as legal constructs that serve as a nexus for contractual relationships between principals (shareholders) and agents (managers) (Jensen & Meckling, 1976). Conflicts can arise when agents' interests diverge from those of principals, as managers may not always act in the best interest of shareholders. Within this framework, managers are expected to allocate corporate resources in ways that maximize shareholder value while avoiding actions that could divert resources or undermine shareholder objectives. Aligning managerial incentives with long-term strategic goals, including environmental sustainability, enhances accountability and decision-making.

Agency theory underscores the critical role of governance in mitigating conflicts of interest. Weak oversight or poorly aligned incentives can result in suboptimal decisions and increased agency costs. ESG practices, particularly in the governance domain, provide mechanisms to better align managerial behavior with shareholder objectives, thereby reducing risk and improving efficiency. Measures such as independent boards, executive compensation tied to sustainability performance, and ethical codes of conduct help ensure that managerial decisions account for both financial and non-financial outcomes. By curbing opportunistic behavior and promoting responsible management, robust ESG governance supports value creation and strengthens both operational and market performance.

1.8. Trade-off Theory

The Trade-off Theory of capital structure, as proposed by Myers (1977), suggests that firms determine an optimal level of debt by weighing the tax benefits of leverage against the potential costs of financial distress, including bankruptcy risk and debt-related agency costs. This approach highlights that while debt can enhance firm value through tax shields, excessive leverage increases exposure to financial vulnerability, making the choice of capital structure a critical strategic decision. When ESG considerations are incorporated, the framework extends beyond traditional financial metrics to include operational, reputational, and governance-related risks that can significantly impact firm value. By investing in ESG initiatives as robust governance systems, ethical labor practices, environmental compliance, and socially responsible supply chain

management firms can mitigate the likelihood and severity of events that may trigger financial distress.

ESG initiatives help mitigate operational disruptions, regulatory penalties, and reputational risks, thereby reducing the potential costs associated with leverage and enabling firms to maintain higher debt levels without proportionally increasing financial risk. In addition, strong ESG practices signal prudent and forward-looking management to investors, which can boost market confidence, strengthen credit ratings, and lower the firm's cost of capital.

Robust ESG governance as independent boards and performance-linked executive incentives aligns managerial decisions on leverage and investments with long-term strategic objectives, reducing debt-related agency conflicts. Moreover, ESG-driven improvements in operational efficiency and sustainability stabilize cash flows, further decreasing the likelihood of financial distress and enhancing the predictability of returns for both debt and equity holders.

1.9. Legitimacy Theory

The legitimacy theory serves as a framework for understanding why organizations engage in voluntary environmental and social disclosures, aiming to maintain their social contract and ensure recognition of their objectives. It is closely aligned with stakeholder theory, with the former often considered an extension of the latter.

According to Suchman (1995), legitimacy is a generalized perception that an organization's actions are desirable, proper, or appropriate within a socially constructed system of norms, values, and beliefs. This perspective suggests that companies disclose information strategically to mitigate criticism, reflecting an implicit social contract grounded in accepted societal values and norms.

Within this framework, firms operate under societal expectations, and adherence to ESG standards signals conformity to these norms, thereby enhancing social approval and stakeholder trust. Conversely, failure to meet these expectations can lead to reputational damage, regulatory scrutiny, and diminished consumer support, ultimately affecting financial performance.

Consequently, ESG engagement functions not only as a strategic resource but also as a critical mechanism for preserving legitimacy and sustaining market access.

Table 1 resumes the contributions of all theories in explaining the link between ESG and financial performance.

Table 1: Theoretical Framework on the Relationship between ESG Practices and Financial Performance.

Theory	Key assumption	Contribution
Stakeholder Theory (Freeman 1984)	Firms generate value for a broad range of stakeholders, rather than focusing solely on shareholders.	ESG efforts respond to stakeholder demands, building relational capital and supporting enduring financial outcomes.
Agency Theory (Jensen and Meckling 1976)	Firms function as a nexus of contracts, where conflicts can arise between managers (agents) and shareholders (principals).	ESG practices align managerial decisions with shareholders' long-term interests, mitigating agency costs and curbing short-term behavior.
Legitimacy Theory (Suchman 1995)	Firms pursue social legitimacy by adhering to societal norms.	Integrating ESG improves a company's legitimacy and public perception, which helps reduce regulatory and reputational threats.
Resource-Based View (RBV) (Barney 1991)	Firms achieve a competitive advantage by leveraging resources that are valuable, rare, inimitable, and non-substitutable.	ESG capabilities serve as strategic resources that enhance operational efficiency, foster differentiation, and support long-term profitability.
Trade-off Theory (Myers 1977)	Firms strategically manage the trade-off between the costs and benefits of financing to maximize long-term firm value.	ESG initiatives reduce operational, environmental, and financial risks, facilitating more efficient leverage decisions and lowering the firm's cost of capital.

This table summarizes key theories and their contributions in explaining how environmental, social, and governance (ESG) initiatives impact a firm's financial outcomes.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. The impact of ESG performance on financial performance

Over the past two decades, scholarly attention has increasingly focused on the relationship between non-financial performance measured through Environmental, Social, and Governance (ESG) criteria and firms' financial performance. This relationship is supported by multiple theoretical frameworks, including stakeholder theory, the resource-based view, legitimacy theory, and agency theory, which collectively suggest that ESG practices can influence financial outcomes by affecting risk management, reputation, operational efficiency, and strategic capabilities.

A substantial body of research highlights a positive association between ESG performance and

financial outcomes. Friede, Busch, and Bassen (2015), in a meta-analysis of over 2,000 studies, find that roughly 90% report either a positive or neutral link between ESG and financial performance. Similarly, Velte (2017) demonstrates that European firms with higher ESG scores outperform peers across both accounting- and market-based measures. Broadstock et al (2021) further show that firms integrating ESG principles exhibited greater resilience during the COVID-19 pandemic, underscoring the protective role of sustainable practices in periods of heightened economic uncertainty.

The mechanisms behind these benefits are multifaceted. Firms with strong ESG performance often experience lower earnings volatility, reduced cost of capital, better access to financing, and enhanced investor confidence. Operationally, ESG initiatives improve efficiency, mitigate environmental and social risks, and stimulate innovation. For instance, robust environmental practices often lead to energy savings and waste reduction, while socially responsible initiatives—such as fair labor policies and community engagement—enhance employee satisfaction, retention, and productivity. Governance-oriented practices, including board independence, transparency, and ethical management, strengthen stakeholder trust, reduce agency costs, and positively influence stock market performance. Collectively, these findings suggest that ESG is more than a reputational or compliance tool; it functions as a strategic lever that simultaneously enhances operational efficiency, manages risk, strengthens stakeholder relationships, and supports sustainable financial returns.

Despite these positive results, some studies report neutral or negative effects of ESG on financial performance. Krüger (2015) and Hong and Kacperczyk (2009) argue that the costs of ESG investments particularly in low-margin industries may temporarily reduce profitability. Naughton, Wang, and Yeung (2019) note that the financial benefits of ESG are highly context-dependent, influenced by the maturity of financial markets, regulatory frameworks, and institutional environments.

Recent studies further emphasize firm- and context-specific contingencies. Fu et al. (2023) find that ESG enhances financial outcomes especially when firms pursue digital transformation strategies, though the benefits may decline over time. Wang (2025) highlights that ESG disclosure drives technological innovation, investment efficiency, and overall financial performance, emphasizing transparency as a key strategic factor. Wu (2025) shows that strong governance structures amplify ESG's positive effects on financial stability. Moreover, regional and cultural contexts play a significant role: Bai (2024) reports moderately positive ESG-financial performance links in Chinese and Korean firms, while evidence in other regions is weaker or non-significant.

Focusing on France, recent studies confirm the growing importance of ESG in corporate valuation. Capelle-Blancard and Petit (2019) and Boiral, Heras-Saizarbitoria, and Brotherton (2020) demonstrate that ESG transparency and reporting enhance investor confidence, reduce perceived risk, and contribute to long-term financial stability. Firms implementing comprehensive ESG strategies are thus better positioned to attract long-term investors, maintain competitive advantage, and achieve sustainable growth. Then, we advance the following hypotheses:

H1: ESG engagement has a positive impact on the financial performance of French companies.

H1a: ESG has a positive effect on the EVA of French companies.

H1b: ESG positively influences the ROA of French companies.

H1c: ESG improves the ROE of French companies.

H1d: ESG has a positive effect on the market valuation (Tobin's Q) of French companies.

2.2. Control Factors

The literature research provide many control factors that actively shape how ESG activities are implemented and the extent to which they can translate into financial value as Firm size, Firm Age, Market Value and Leverage. In fact, Firm size captures the economic and organizational scale of a company and is commonly measured using the logarithm of total assets or total sales (Dang and Yang 2018). Larger firms typically have greater financial, technological, and human resources, which can facilitate higher investments in ESG initiatives, such as sustainable supply chains, energy-efficient technologies, or corporate social programs. These investments may improve operational efficiency, reduce regulatory and reputational risks, and ultimately enhance financial performance. Additionally, Becchetti and Trovato (2011) argue that large firms benefit from greater visibility and public scrutiny, which can incentivize them to adopt more rigorous ESG practices. In essence, firm size not only provides the capacity to invest in ESG but also shapes the firm's incentives to maintain a positive public image, both of which can mediate the ESG–financial performance link.

Firm Age is another control factor explored in the literature. It measured as the number of years since establishment, reflects accumulated experience, market knowledge, and institutional learning (Coad and al Teruel, 2016). Older firms often have established relationships with stakeholders, which can facilitate ESG adoption and integration into strategic planning. For instance, longstanding supplier or community networks may encourage firms to engage in sustainable practices to maintain trust and legitimacy. However, Loderer and Waelchli (2010) highlight that older firms can also suffer from organizational inertia, reducing their responsiveness to emerging ESG trends and innovation opportunities. Therefore, firm age may exert a dual effect: it provides the knowledge and stability to implement ESG initiatives effectively, but it can also slow adaptation to novel sustainability practices, potentially moderating the ESG–financial performance relationship.

The literature also examined Market Value which calculated as the product of stock price and outstanding shares, represents investors' perceptions of a company's growth prospects, risk profile, and overall stability (Fama and French, 1992). Firms with high market value are often under greater scrutiny from investors, analysts, and the public, which can create pressure to adopt robust ESG practices. Such firms may strategically use ESG initiatives to signal long-term value creation, reduce perceived risk, and strengthen market confidence. Consequently, market value may serve both as a motivator for ESG adoption and as a channel through which ESG performance translates into improved financial outcomes, particularly in terms of stock performance and firm valuation.

Leverage is another control factor that acts on the relationship between ESG and financial performance. It measures the extent to which a firm finances its operations through debt relative to equity. Financial theory supported by Modigliani and Miller (1958) suggests that leverage can amplify returns on equity when the firm earns more on its assets than the cost of debt. At the same time, excessive leverage increases bankruptcy risk and limits managerial flexibility to invest in ESG initiatives (Myers 2001). Firms with moderate leverage can invest in ESG practices without jeopardizing financial stability, enhancing long-term profitability and risk management. Conversely, highly leveraged firms may deprioritize ESG due to liquidity constraints or risk aversion, which can weaken the ESG–financial performance linkage. Therefore, leverage acts as both a constraint and a strategic factor in how ESG initiatives impact firm performance.

3. RESEARCH METHODOLOGY

3.1. Sample And Data

This study examines 100 French listed companies over the period 2010–2024, excluding financial firms due to their distinctive regulatory and accounting environments. The sample covers a range of industries, including manufacturing, services, technology, and consumer goods, ensuring broad representativeness. The chosen period reflects the consistent availability of ESG and financial data and coincides with the growing prominence of social and environmental responsibility in the French corporate sector since the 2010s. It also captures major exogenous shocks as the COVID-19 pandemic, the energy crisis, and rising inflation that may have impacted the relationship between ESG practices and financial performance, enhancing the temporal relevance of the analysis. ESG performance data were obtained from Refinitiv Eikon and cross-validated with annual reports, while accounting and market performance metrics (EVA, ROA, ROE, and Tobin's Q) were collected from Bloomberg and company filings. Control variables were sourced from the same databases.

3.2. Variables Measures

3.2.1. Independent Variables

The study's main explanatory variable is the ESG score, which reflects a firm's overall non-financial performance. Provided by specialized rating agencies, it encompasses three dimensions: Environmental (E), assessing ecological impact management: Social (S), evaluating stakeholder and community responsibility; and Governance (G), measuring transparency and ethical management. Standardized on a 0–100 scale, higher scores indicate stronger commitment to sustainability, making ESG a comprehensive indicator of a firm's sustainable management and non-financial value creation.

To more precisely isolate the impact of ESG scores on financial performance, several control variables are incorporated into the model. Firm size (FirmSize) is measured as the natural logarithm of total assets, capturing scale effects and investment capacity. Firm age (FirmAge) denotes the number of years since incorporation, reflecting organizational experience and structural stability. Market value (MarketValue) is calculated as the product of share price and outstanding shares, representing investor perceptions of financial strength and reputation. Debt is measured by the ratio of total debt to total

assets, indicating the firm's financial structure and leverage risk.

3.2.2. Dependent Variables

Financial performance, the dependent variable in this study, is measured using four complementary indicators capturing distinct aspects of profitability and value creation. Economic Value Added (EVA) reflects the net economic value generated after accounting for the cost of invested capital, with positive values indicating shareholder wealth creation. Return on Assets (ROA) assesses operational efficiency by relating net income to total assets. Return on Equity (ROE) evaluates profitability from the shareholders' perspective, measuring the ability to generate returns on invested equity. Finally, Tobin's Q gauges market performance by comparing market value to the book value of assets, reflecting investor perceptions of the firm's performance and growth potential. Table 2 summarizes the measures the main variables

Table 2: Descriptive Of Variables. Provides A Descriptive Of The Main Measures Of Variables.

Variables	Measures
Independent Variables	
ESG score	Standardized on a 0–100 scale, it is comprehensive indicator of a firm's sustainable management and non-financial value creation.
FirmSize	The logarithm of the total assets
FirmAge	The number of years since incorporation
MarketValue	The product of share price and outstanding shares
Debt	The ratio of total debt to total assets
Dependent Variable: Financial Performance	
EVA	Net economic value created after deducting the cost of capital
ROA	Net income ÷ Total assets
ROE	Net income ÷ Shareholders' equity
TOBIN Q	Market value ÷ Book value of assets

3.3. Specification Of Model

To examine the impact of ESG performance on financial performance within a dynamic framework, this study employs a dynamic panel regression model estimated using the System Generalized Method of Moments (System GMM) developed by Arellano and Bover (1995) and Blundell and Bond (1998). This approach is motivated by several considerations. First, firms' financial performance often exhibits persistence over time, as indicators such as EVA, ROA, ROE, and Tobin's Q are influenced by their past values. Static models fail to capture this temporal dependence. Second, the System GMM estimator effectively addresses endogeneity a common issue in the ESG–performance relationship by using lagged variables as internal instruments, mitigating reverse causality that may arise if more profitable firms are also more likely to adopt ESG practices. Additionally, System GMM accounts for unobserved firm-specific effects, such as organizational culture, management strategies, or internal structures, which may simultaneously affect ESG adoption and financial outcomes. The method is also robust to typical panel data issues, including heteroskedasticity, autocorrelation, and correlation between firm-specific effects and explanatory variables. Supporting diagnostic tests, such as the Hausman test, the Wooldridge test for autocorrelation, and the Breusch–Pagan test for heteroskedasticity, confirm the suitability of a dynamic model over fixed- or

random-effects alternatives. Then, System GMM is particularly appropriate for assessing the dynamic relationship between ESG and financial performance in French firms, correcting for endogeneity, accommodating firm-level heterogeneity, and ensuring robust and reliable empirical results.

The general model employed in this study, which examines the direct impact of the ESG score on financial performance while incorporating control variables and dynamic effects, can be formulated as follows:

$$\begin{aligned}\text{Performance}_{it} = {} & \alpha_0 + \alpha_1 \text{Performance}_{i(t-1)} \\ & + \beta_1 \text{ESGScore}_{it} + \beta_2 \text{FirmAge}_{it} \\ & + \beta_3 \text{FirmSize}_{it} + \beta_4 \text{MarketValue}_{it} \\ & + \beta_5 \text{DebtRatio}_{it} + \varepsilon_{it}\end{aligned}$$

where:

- i represents the firm,
- t denotes the time period, and
- ε is the idiosyncratic error term.

For each indicator of financial performance, a specific model is presented:

Model 1:

$$\begin{aligned}\text{EVA}_{it} = {} & \alpha_0 + \alpha_1 \text{EVA}_{i(t-1)} + \beta_1 \text{ESGScore}_{it} \\ & + \beta_2 \text{FirmAge}_{it} + \beta_3 \text{FirmSize}_{it} \\ & + \beta_4 \text{MarketValue}_{it} + \beta_5 \text{DebtRatio}_{it} \\ & + \varepsilon_{it}\end{aligned}$$

Model 2:

$$\begin{aligned}\text{ROA}_{it} = {} & \alpha_0 + \alpha_1 \text{ROA}_{i(t-1)} + \beta_1 \text{ESGScore}_{it} \\ & + \beta_2 \text{FirmAge}_{it} + \beta_3 \text{FirmSize}_{it} \\ & + \beta_4 \text{MarketValue}_{it} + \beta_5 \text{DebtRatio}_{it} \\ & + \varepsilon_{it}\end{aligned}$$

Model 3 :

$$\begin{aligned}\text{ROE}_{it} = {} & \alpha_0 + \alpha_1 \text{ROE}_{i(t-1)} + \beta_1 \text{ESGScore}_{it} \\ & + \beta_2 \text{FirmAge}_{it} + \beta_3 \text{FirmSize}_{it} \\ & + \beta_4 \text{MarketValue}_{it} + \beta_5 \text{DebtRatio}_{it} \\ & + \varepsilon_{it}\end{aligned}$$

Model 4:

$$\begin{aligned}\text{Tobin'sQ}_{it} = {} & \alpha_0 + \alpha_1 \text{Tobin'sQ}_{i(t-1)} + \beta_1 \text{ESGScore}_{it} \\ & + \beta_2 \text{FirmAge}_{it} + \beta_3 \text{FirmSize}_{it} \\ & + \beta_4 \text{MarketValue}_{it} + \beta_5 \text{DebtRatio}_{it} \\ & + \varepsilon_{it}\end{aligned}$$

4. DESCRIPTIVE DATA AND EMPIRICAL RESULTS

4.1. Descriptive Statistics

Table 3 reports the descriptive statistics for all variables based on 1,500 firm-year observations. The data indicate considerable heterogeneity among firms across both financial and non-financial dimensions. The mean Economic Value Added (EVA) is positive (11.27), but its high standard deviation (212.43) suggests wide disparities in value creation performance. Accounting measures such as ROA (8.33%) and ROE (38.87%) reveal, on average, moderate to strong profitability, though substantial variability remains across firms. The average Tobin's Q (3.31) exceeds 1, implying that most firms are valued above their book value, which reflects positive market expectations. The mean ESG score (50.26) points to a moderate level of sustainability engagement, with significant dispersion indicating differing degrees of commitment among firms. In terms of firm characteristics, the average age of 54.6 years highlights a predominance of mature firms, while the mean firm size (log of assets = 7.75) denotes moderate variation in scale. Also, the mean Debt Ratio is 0.310847, though the maximum ratio is an outlier at 3.697993. In essence, the sample is characterized by a mix of mature firms with widely dispersed financial performance, market valuation, and ESG practices

Table 3: Descriptive Statistics. Presents the descriptive statistics of the variables included in our study, providing a summary of their central tendencies, dispersion, and overall distribution.

Variable	Observations	Mean	Std. Dev.	Min	Max
EVA	1,500	11.2667	212.4259	-653.341	486.3298
ROA	1,500	0.0833	0.0834	0.0016	0.5560
ROE	1,500	0.3887	0.3878	0.0068	2.7454
Tobin's Q	1,500	3.3132	3.1906	0.1476	20.9828
ESG Score	1,500	50.2577	28.9855	0.0652	99.9765
Firm Age (Years)	1,500	54.5600	28.0192	5.0000	113.0000
Firm Size (Ln of Assets)	1,500	7.7538	0.6156	6.2181	8.5168

Market Value (Ln)	1,500	8.3596	0.7057	6.2200	9.2102
Debt Ratio	1,500	0.3108	0.3934	0.0056	3.6980

4.2. Multicollinearity Analysis

Table 4 presents the correlation matrix illustrating the linear relationships among the nine variables. As expected, financial indicators display strong positive associations: Tobin's Q correlates positively with ROA (0.593) and EVA (0.4199), implying that greater profitability and value creation are reflected in higher market valuation. In contrast, the ESG Score shows minimal correlations with financial and market variables (−0.031 with Tobin's Q and −0.021 with EVA), suggesting that no straightforward linear link exists between firms' sustainability performance and their financial outcomes in this sample. A noteworthy result concerns Firm Size, which is strongly and negatively correlated with financial performance and market valuation (−0.766 with Tobin's Q, −0.718 with ROA, and −0.599 with EVA). This indicates that smaller firms tend to exhibit higher profitability and market valuation. The large magnitude of these correlations underscores the importance of controlling for firm size in subsequent analyses to mitigate potential multicollinearity issues.

Table 4: Matrix Of Correlations. Provides The Potential Correlations Among The Study Variables Providing Insight Into The Strengh And Direction Of Linear Relationship Between Each Variable.

Variables	EVA	ROA	ROE	Tobin's Q	ESG Score	FirmAge	FirmSize	MarketValue	DebtRatio
EVA	1.000								
ROA	0.399	1.000							
ROE	0.027	0.315	1.000						
Tobin's Q	0.4199	0.593	0.027	1.000					
ESG Score	-0.021	-0.001	-0.006	-0.031	1.000				
FirmAge	-0.013	-0.013	-0.059	-0.011	-0.028	1.000			
FirmSize	-0.599	-0.718	-0.037	-0.766	0.023	0.003	1.000		
Market Value	-0.002	0.009	0.004	0.476	-0.047	-0.005	-0.013	1.000	
Debt Ratio	-0.007	0.017	-0.05	0.088	0.013	-0.014	-0.016	-0.005	1.000

The Variance Inflation Factor (VIF) test was conducted to assess multicollinearity among the explanatory variables. All VIF values, including the average, equal 1, indicating no linear correlation between the independent variables. This confirms that each variable contributes uniquely to explaining financial performance, and the model is free from multicollinearity (Table 5).

Table 5: Variance Inflation Factor (VIF) Results. Presents the results of the Variance Inflation Factor (VIF) analysis used to assess the presence of multicollinearity among the independent variables in our regression models

Variable	VIF	1/VIF
ESG Score	1.00	0.996281
Market Value	1.00	0.997568
FirmAge	1.00	0.998943
FirmSize	1.00	0.998958
Debt	1.00	0.999312
Average VIF	1.00	

4.3. Hausman Test

The Hausman test was conducted to determine the appropriate specification between the fixed effects (FE) and random effects (RE) models. For all financial performance indicators (EVA, ROA, ROE, and Tobin's Q), the Chi² statistics are not significant ($p > 0.05$), indicating no systematic differences between the FE and RE estimators. Consequently, the random effects model is deemed suitable and efficient for the dataset. The consistency of the relationships between the explanatory variables and the various performance measures further confirms the absence of systematic bias due to unobserved firm-specific heterogeneity. The results of Hausman test are presented in Table 6.

Table 6: Hausman Test. Presents the results of the Hausman test used to determine the most appropriate model between fixed effects and random effects in panel data analysis.

Financial Performance	Chi²	Prob > chi²
EVA	1.00	0.9622
ROA	2.13	0.8308
ROE	4.51	0.4781
Tobin's Q	4.16	0.5265

4.4. Heteroskedasticity Test

Table 7 reports the regression outcomes and heteroskedasticity test results for the four financial performance models EVA, ROA, ROE, and Tobin's

Q. The EVA model shows no evidence of heteroskedasticity (Prob > χ^2 = 0.072), confirming the validity of classical standard errors. In contrast, the ROA, ROE, and Tobin's Q models display strong and significant heteroskedasticity (Prob > χ^2 = 0.000), indicating non-constant error variance across firms. Consequently, the use of robust or clustered standard errors is required to obtain reliable statistical inferences.

In terms of specific results, Firm Size exerts a negative and significant effect on ROA, while ESG Score and Firm Age remain statistically insignificant. For the ROE model, none of the explanatory variables show significance, suggesting that shareholder profitability is not meaningfully explained by the included factors. Regarding Tobin's Q, Firm Size, Market Value, and Debt are significant determinants of market valuation, whereas ESG Score and Firm Age exhibit no significant effect.

Table 7: Heteroskedasticity Test. Presents the results of the heteroskedasticity test, which examines whether the variance of the residuals in our regression models is constant across observations.

Dependent Variable	ESG Score	FirmAge	FirmSize	Market Value	Debt Ratio	Intercept	Chi² (100)	Prob > Chi²
EVA	-0.07200	-0.66100	-206.100***	-0.00100	-0.00500	1658.220***	121.38	0.072
ROA	0.00003	0.00036	-0.097***	0.00000	0.00000	0.816***	1037.18	0.000
ROE	-0.00020	0.00118	-0.021	0.00000	-0.00001	0.506**	8132.39	0.000
Tobin's Q	0.00038	0.00514	-3.927***	0.00054***	0.00043***	30.220***	2161.08	0.000

4.5. Autocorrelation Test

The final statistical assessment focused on the Wooldridge test for autocorrelation, revealing a crucial distinction among the models. The EVA model is the only one affected by temporal dependence, with a significant p-value of 0.0249 (F-statistic = 5.191) indicating the presence of first-order autocorrelation. This suggests that current EVA values are influenced by their past levels, making it necessary to employ autocorrelation-robust standard errors or dynamic approaches like the System GMM estimator for correction. In contrast, the models for ROA (p-value = 0.4852), ROE (p-value = 0.6141), and Tobin's Q (p-value = 0.2663) all showed no significant autocorrelation. This confirms that observations for ROA, ROE, and Tobin's Q are independent over time within the sample, allowing them to be considered robust within the fixed-effects estimation framework.

Table 8: Reports the Autocorrelation Test. presents the results of the autocorrelation test, which assesses whether the residuals of our regression model are correlated over time.

Dépendent Variable	Statistic-F	P-Value	Significance threshold
EVA	5.191	0.0249	0.05
ROA	0.491	0.4852	0.05
ROE	0.256	0.6141	0.05
Tobin's Q	1.250	0.2663	0.05

4.6. Estimated Results and Discussion

The results of the dynamic panel analysis using the System GMM estimator provide a nuanced view of the relationship between ESG performance and financial outcomes among French listed firms over the period 2010–2024. The estimated coefficients reveal a heterogeneous and indicator-dependent impact of ESG practices, reflecting the complexity of incorporating non-financial dimensions into corporate value creation. Our main results are presented in Table 9. They can be interpreted as follows:

For Model 1, the lagged dependent variable (L1.EVA) has a negative and significant coefficient, indicating a negative persistence effect in Economic Value Creation. Firms that achieve high EVA in a given year tend to experience a moderate downward adjustment in the following year. This mean-reversion phenomenon, consistent with the findings of Eccles et al (2014), suggests that the economic performance of responsible firms is subject to cyclical adjustments driven by strategic transition costs and alignment with sustainable objectives. Furthermore, The ESG score does not exhibit a significant effect on EVA. Our Hypothesis H1a is rejected. This finding corroborates the conclusions of Margolis et al (2009), who argue that the direct short-term impact of ESG on economic value creation is often neutral. Conversely, firm size exerts a strong negative and significant influence on EVA, consistent with Gombault et al (2017), who highlight that large corporations face structural and organizational rigidities limiting the marginal profitability of their investments. The other control variables (FirmAge, MarketValue, and Debt) are not significant.

In Model 2, the lagged variable (L1.ROA) is negative and highly significant, indicating negative persistence in asset profitability. The ESG score also has a small but significant negative effect, suggesting that stronger ESG integration may slightly reduce short-term operational returns, likely due to compliance costs, adaptation efforts, and initial investments in sustainable practices. Our Hypothesis

H1b is rejected. This result is partially consistent with the meta-analysis of Friede et al (2015), which finds that 10–15% of studies report a neutral or negative ESG–performance relationship, especially in capital-intensive sectors. However, this short-term decline may diminish over time as firms realize the intangible benefits of ESG, including improved reputation and stronger stakeholder trust (Aouadi and Marsat 2018). Firm size remains negative and significant, implying that larger firms may face managerial or operational inefficiencies that constrain asset profitability.

In Model 3, the coefficient on ROE reveals a negative persistence effect, as indicated by the significant lagged dependent variable (L1.ROE), leading us to reject hypothesis H1c. The ESG score, however, is not statistically significant, suggesting that ESG practices do not directly enhance shareholder profitability. Instead, their impact is likely indirect, operating through channels such as improved risk management, enhanced reputation, and increased investor confidence. This aligns with Clark et al. (2015), who argue that the ESG–ROE relationship largely depends on the maturity of CSR initiatives and their strategic integration within corporate governance frameworks. Furthermore, the positive and significant coefficients for MarketValue and Debt indicate that firms with stronger capitalization and effectively managed leverage tend to generate higher returns for shareholders, consistent with the findings of Velte (2017).

In Model 4, the lagged dependent variable is not significant, indicating low persistence in market valuation. In contrast, the ESG score is negative and significant, suggesting that a strong ESG orientation may be viewed unfavorably by the market in the short term, leading us to reject hypothesis H1c. This result diverges from the empirical findings of Khan et al. (2016), who report a positive ESG impact on firm valuation in the U.S., but aligns with Gond et al. (2011), who note that French investors tend to be cautious toward ESG initiatives that entail substantial transition costs or uncertain short-term returns. Additionally, FirmSize remains negative and significant, whereas MarketValue and Debt are positive and significant, confirming that well-capitalized firms with robust financial structures are associated with higher market valuations.

The analysis indicates that the impact of ESG on financial performance is heterogeneous, context-dependent, and time-sensitive. Persistence effects differ across performance indicators, being strongly negative for ROA and ROE, moderate for EVA, and absent for Tobin's Q. While the ESG score shows a neutral effect on EVA and ROE, it exerts a negative short-term influence on ROA and Tobin's Q. Firm size consistently has a negative and significant effect, suggesting that larger scale may introduce inefficiencies that limit financial agility. These findings are broadly in line with the international literature (Friede et al 2015; Eccles et al. 2014) while highlighting the relevance of the French institutional and sectoral context. They underscore that ESG integration remains a strategic investment whose positive financial returns tend to materialize over the long term, once firms overcome transitional costs and align their operations with sustainability principles (Fatemi et al 2018; Velte 2017; Albuquerque et al 2019).

Table 9: Estimated Results. Presents the estimated coefficients from the four regression models conducted in this study.

Dependent Variable	L1. Dependent	ESGScore	FirmAge	FirmSize	MarketValue	Debt Ratio	Intercept
Model 1 EVA	-0.151 **	0.631000	0.51100	-146.34000 ***	0.0036000	-0.0159000	1084.440 ***
Model 2 ROA	-0.345 ***	-0.000280 *	0.00040	-0.07790 ***	0.0000023	-0.0000048	0.699 ***
Model 3 ROE	-0.322 ***	-0.000039	0.00211	-0.04186	0.0000410	0.0002420 ***	0.257
Model 4 TOBIN Q	0.022	-0.005740 *	-0.00168	-3.92490 ***	0.0005310 ***	0.0007660 ***	30.507 ***

Despite the robustness of the GMM approach, this study has several limitations. First, ESG performance is measured using an aggregated score, which may obscure the distinct effects of environmental, social, and governance components. Second, the analysis focuses on a sample of 100 listed French firms, which may limit the generalizability of the findings to other countries or to non-listed SMEs. In addition, the dynamic model primarily captures short-term effects and does not fully account for the long-term impact of ESG policies. Finally, ESG data sourced from providers such as Refinitiv or Bloomberg may be subject to methodological inconsistencies across rating agencies, potentially affecting the econometric results (Berg et al 2022).

The results showing a short-term negative effect of ESG on financial performance can be interpreted in light of the French economic and regulatory context. French companies are subject to demanding sustainability and social responsibility regulations (Grenelle II Law of 2010, Decree on Non-Financial

Performance Disclosure of 2017, and the transposition of the CSRD Directive), which entail significant compliance costs and substantial short-term resource commitments. These initial investments related to the establishment of reporting systems, external audits, and internal training may temporarily reduce operational profitability before efficiency and reputational gains materialize in the medium to long term.

Moreover, the French industrial structure, characterized by the predominance of capital-intensive sectors such as manufacturing and services, reinforces this effect. In these industries, the shift toward more sustainable practices requires considerable investments in green technologies and environmental management systems. Consequently, the slight negative impact observed on ROA and Tobin's Q can be explained by the gradual nature of ESG-related benefits, which tend to emerge only after adaptation costs have been absorbed and reputational advantages consolidated.

Beyond managerial implications, these results carry strategic relevance for both investors and policymakers. For institutional investors, understanding these delayed effects is crucial; a long-term perspective is necessary to accurately assess the added value of ESG practices. Short-term fluctuations should not be interpreted as inefficiencies, but rather as an investment phase in organizational sustainability.

From a public policy perspective, the findings advocate for the stabilization of the regulatory framework and the introduction of fiscal or financial incentives (e.g., green tax credits, subsidies for sustainable innovation) to help firms absorb initial transition costs. Such measures would reduce the tension between regulatory requirements and profitability constraints, thereby facilitating a smoother and more consistent adoption of ESG standards across French firms.

4.7. Conclusion

Our empirical evidence conducted on 100 French listed firms from 2010 to 2024 and using the dynamic System Generalized Method of Moments (System GMM) reveals a complex and often contradictory short-term relationship between ESG performance and corporate financial outcomes, ultimately rejecting the hypothesis of an immediate positive impact. While the ESG score showed a neutral, non-significant effect on both Economic Value Added (EVA) and Return on Equity (ROE), it exhibited a small but statistically significant negative effect on Return on Assets (ROA) and Tobin's Q. This adverse short-term relationship can be explained by the compliance costs, initial investments in sustainable practices, and strategic transition efforts required to embed ESG principles within core business operations. The financial context also plays a crucial role, as firm size consistently exhibits a strong, negative, and significant effect on EVA, ROA, and Tobin's Q. This suggests that larger French firms may face structural and organizational rigidities that constrain their profitability and operational flexibility.

In contrast, a strong financial structure, as reflected by market value and debt ratio, is positively and significantly linked to higher ROE and Tobin's Q, highlighting that effective leverage management and solid capitalization remain key drivers of shareholder returns and market valuation. The analysis also reveals a dynamic effect, with EVA, ROA, and ROE displaying significant negative persistence, indicating a mean-reversion pattern where performance peaks are typically followed by moderate declines due to cyclical factors or substantial transition costs. Collectively, these results suggest that, in the French context, ESG integration should be regarded as a long-term strategic investment, with its full financial benefits materializing only after firms successfully absorb the initial operational and market costs

The empirical findings have important theoretical and managerial implications, especially for firms in markets such as France, where sustainability and reporting are highly emphasized. From a theoretical perspective, the study underscores that the relationship between ESG performance and financial outcomes is multidimensional and context-dependent, as reflected in the heterogeneous effects across EVA, ROA, ROE, and Tobin's Q. By addressing endogeneity and negative performance persistence, the System GMM results provide robust evidence of the short-term trade-offs associated with ESG integration, where compliance costs initially outweigh potential operational gains.

From a managerial perspective, these results indicate that ESG should be treated as a long-term strategic investment rather than a source of immediate profit. Managers must anticipate and accommodate the short-term negative effects on ROA and market valuation, viewing them as necessary transitional costs. The consistently adverse impact of firm size on profitability suggests that larger firms should prioritize addressing operational inefficiencies as part of their sustainability initiatives. In contrast, the positive link between a solid financial structure and shareholder value (ROE and Tobin's Q)

underscores the need for strong governance practices to bolster market credibility and facilitate effective financial management.

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