EVALUATING THE FINANCIAL PERFORMANCE OF THE EGYPTIAN SUSTAINABLE FINANCE FIRMS USING CONVENTIONAL AND MODERN METRICS

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Abstract

This paper evaluates the financial performance of the Egyptian companies included in the Egyptian sustainability index (S&P/EGX ESG index), over the period 2010-2023. Environmental, social and governance (ESG) rating is measured in this study by three different methods. Both panel data and cross-sectional data regression models are employed, using modern as well as conventional financial performance metrics. Tobin's Q ratio, and Economic value added (EVA) are the modern performance metrics used in this study. The results support the superior performance of companies included in the Egyptian sustainability index, compared to other counterparts excluded from this index. However, there is no strong evidence supports the positive relationship between ESG ratings and financial performance. The results are validated by using univariate analyses. In addition to repeating the study after excluding financial sector. The findings of this research is expected to benefit prospected investors, portfolio managers, and policy makers.

Keywords: Sustainable Finance, S&P/EGX ESG Index, Financial Performance, Economic Value Added (EVA), Egypt.

ملخص

يقيم هذا البحث الأداء المالي للشركات المصرية المدرجة بمؤشر الاستدامة المصري(S&P/EGX ESG) ، خلال الفترة 2010-2023. ولقد تم قياس تصنيف الأداء البيئي والاجتماعي وحوكمة الشركات (ESG) في هذه الدراسة

بثلاث طرق مختلفة. وتم توظيف نماذج الانحدار للبيانات اللوحية والبيانات المقطعية، باستخدام مؤشرات الأداء المالي

الحديثة والتقليدية على حد سواء. ولقد تم استخدام كل من نسبة Tobin's Q والقيمة الاقتصادية المضافة (EVA)

كمقياسين حديثين للأداء في هذه الدراسة. وتدعم النتائج الأداء المتفوق للشركات المدرجة في مؤشر الاستدامة المصري،

مقارنة بالشركات المماثلة الأخرى المستبعدة من هذا المؤشر. ومع ذلك، لا يوجد دليل قوي يدعم العلاقة الإيجابية بين

تصنيفات ESG والأداء المالي. وتم التحقق من صحة النتائج باستخدام التحليلات أحادية المتغيرات، علاوة على تكرار

الدراسة بعد استبعاد القطاع المالي. ومن المتوقع أن تعود نتائج هذا البحث بالفائدة على المستثمرين المحتملين، ومديري

المحافظ، وصانعي القرار.

الكلمات المفتاحية: التمويل المستدام، مؤشر S&P/EGX ESG، الأداء المالي، القيمة الاقتصادية المضافة (EVA)،

مصر.

1. Introduction

To enhance the transparency of companies listed on the stock market and highlight their dedication to social, environmental, and governance concerns, the United Nations initiated a campaign in 2009 to foster sustainable financial markets. This initiative coincided with the increase in investors' attention toward environmental risks and issues (Aydoğmuş et al, 2022).

The Egyptian Stock Exchange took a pioneering role among leading financial markets by embracing the initiative and introducing the S&P/EGX ESG Sustainability Index (Henceforth ESG index for brevity index), marking the first index in the MENA region and the second globally after India. Developed by the Egyptian Institute of Directors and its Standard Foundation in collaboration with Standard & Poor's, this index encompasses three dimensions: environmental, social, and governance. The environmental aspect (Side E) encompasses factors like emissions and waste, while the social aspect (Side S) focuses on areas such as board practices and supply chain management. The governance aspect (Side G) addresses corporate sustainability monitoring, incentives, and board composition. These dimensions are usually considered in decision-making processes of responsible corporate management. Although these ESG dimensions are not being traditionally incorporated into financial analyses, their financial implications are important (Muzanya, 2022).

The main purpose of ESG index is to enhance companies' performance concerning their practices across the three dimensions it encompasses. Corporate sustainability performance entails organizations' capability to promote environmental stewardship, establish robust governance, and foster social welfare, all while creating value for shareholders. Achieving this involves efficiently managing environmental resources, achieving positive social connections, and upholding disciplined behavior (Barbosa et al., 2023).

Stakeholders such as clients, shareholders, employees, and other concerned parties expect businesses to actively pursue improved sustainability performance and to transparently

communicate their environmental, social, and governance efforts. However, from a business perspective, this entails an investment, and often promote firms' management to ask about the financial rationale for such expenditures and the feasibility of this investment (Aydoğmuş et al., 2022).

As time progresses and the global landscape evolves, driven by various changes, companies are finding that profit is no longer their sole motivation for conducting business. Instead, they are increasingly recognizing the responsibility they bear toward the society in which they operate (El-Hendawy et al., 2021). Historically, companies primarily served the interests of their owners, but the increased pressure from stakeholders has led to a growing emphasis on the concept of sustainable development. This approach emphasizes the importance of meeting the needs of the present generation without ignoring the ability of future generations to meet their own needs (De Castro Sobrosa Neto et al., 2020; Barbosa et al., 2023).

The growing interest in environmental, societal, and governance issues has sparked extensive discussions within academic circles regarding the impact of performance across these dimensions on financial performance. Among the various theories discussed, shareholder and stakeholder theories present the foundational concepts for most researchers. The shareholder theory argues that management should prioritize serving the interests of the owners alone. However, Freeman (1983), the developer of the stakeholder theory, challenges this notion, arguing that entities beyond owners, such as employees, suppliers, unions, customers, and other groups hold significant importance for a company's survival and welfare (Ahlklo & Lind, 2019).

While some research findings align with the shareholder theory, others support the stakeholder theory. On the one hand, some views the integration of ESG dimensions as burdensome for companies, leading to unnecessary costs that hamper competitiveness, particularly costs associated with activities like environmental protection and charitable work. Consequently, shouldering the burdens of social responsibility could potentially lead to a decline in operational efficiency and profitability.   On the other hand, others argue that allocating resources to social performance strategies yields substantial organizational benefits, including access to superior resources, more efficient employees, effective marketing of products and services, reduced transaction costs stemming from positive reputation and brand recognition, and increased innovation rates (Iqbal et al., 2012; Kulakova, 2018; De Castro Sobrosa Neto et al., 2020). Accordingly, governance standards should not be perceived solely as costs but rather as sources of competitive advantage (Barbosa et al., 2023).

Given these conflicting outcomes, researchers were prompted to undertake the current study to assess the impact of ESG ratings on the financial performance of companies included in the ESG index in the Egyptian stock market. Egypt's stock market is among the leading emerging financial markets that introduced this index in 2010. The index comprises 30 companies recognized for their high levels of environmental, social, and corporate governance practices.

The Egyptian Stock Exchange annually assesses companies listed on the market through three distinct evaluations. The first involves quantitative assessment, wherein values are assigned to the company's performance concerning environmental, societal, and governance practices. The

second evaluation is qualitative, where companies are rated on a scale from 1 to 5 based on various factors such as the availability of information and news through websites and corporate social responsibility documents. The third evaluation is composite, which combines the quantitative and qualitative assessments to form a group of the top 100 companies based on their scores. From this group, the top 30 companies are selected to comprise the ESG index (Otaify, 2021). These companies undergo annual reviews, with some maintaining their position within the index while others may exit if their rating falls below that of companies outside the index (Abdelmalak, 2024).

This study seeks to test the relationship between ESG ratings and financial performance in the Egyptian stock market. ESG ratings are expressed in three different ways. In addition, several financial performance measures are employed by combining traditional measures, represented by return on equity (ROE), return on assets (ROA) and return on capital employed (ROCE) ratios, with two modern measures, represented by Tobin's Q, and economic value added (EVA). Employing EVA is considered as the most important contribution of the current study. Up to the researchers' knowledge, this issue has not been studied before using EVA measure. The study also aims to test whether there are significant differences in financial performance between companies included in the ESG index and companies included in its parent EXG100 index, but excluded from ESG index during the period extending from 2010, the year the ESG index was launched, until 2023.

Furthermore, two robustness checks are performed to confirm the accuracy of results. First, univariate analyses are employed to compare the performance of ESG firms versus non-ESG firms, by employing independent samples t test, and Mann-Whitney U test. Second, the study is completely repeated after excluding financial sector.

The remaining sections of this study are organized as follows: Research objectives and its importance are presented in sections 2 and 3 respectively. Section 4 shows relevant prior studies, followed by variables and hypotheses in section 5. These hypotheses are formulated based on relevant literature and the related theoretical framework. Afterwards, data, sample selection, and research methods are discussed in section 6. In section 7, results are presented and discussed. Then, robustness checks are conducted in section 8. Finally, the study end with summary and conclusions in section 9, followed by the list of references that were used, and the appendices related to the analyses after excluding financial sector.

2. Research Objectives

The purpose of this study is twofold as follows:

1. To investigate the impact of ESG ratings on financial performance metrics. Due to the uncertainty around the potential relationship between ESG and financial performance, several measures of financial performance are used, using three different methods to express ESG ratings. To achieve this objective, value-based financial performance (EVA) metric as well as accounting-based (ROE, ROA and ROCE) and market-based (Tobin's Q) financial performance metrics are employed.

2. To find out whether there are significant differences in financial performance between companies included in the S&P/EGX ESG index and companies not included in this index but included in its parent EXG100 index.

3. Research Importance

1. Developed countries have received more emphasis in prior research on the association between ESG ratings and financial performance than emerging countries. In order to validate this association and add to the body of literature already in existence, our study is applied on Egypt as a leading emerging market in the North Africa and Middle East (MENA) region in developing sustainability index.

2. Using EVA as a modern financial measure is one of the main contributions of this study. In addition, ESG ratings are measured using three different ways using the suitable panel data and cross-sectional data analyses.

3. Comparing the performance of ESG and non-ESG firms at firm level, rather than conducting the comparison using market indices.

4. The findings of this research is expected to benefit prospected investors, portfolio managers, and policy makers, not only in the Egyptian context, but also in other similar countries in the region.

4. Literature Review

The impact of ESG on financial performance has attacted the attention of many researchers around the world. Some studies are conducted in single countries, whether is in Egypt or in other countries. Other studies are applied on several countries. Therefore, three groups of studies are discussed. The first group includes studies on single countries other than Egypt. The second group discussed studies conducted on Egypt. The third group shows studies applied on several countries or regions.

The studies of Iqbal et al. (2012), De Castro Sobrosa Neto et al. (2020), Zaz (2021), Muzanya (2022), Chininga (2022), and Fu & Li (2023) are some related studies conducted in the first group, which includes single countries other than Egypt. Iqbal et al. (2012) examine the effect of corporate social responsibility (CSR) on the financial performance of 156 listed firms in Pakistan using regression analysis during 2010-2011 years. They find insignificant impact of CSR on return on assets (ROA) and return on equity (ROE).

In Brasil, De Castro Sobrosa Neto et al. (2020) compare the financial performance of the Brazilian companies included in the Brazilian Corporate Sustainability Index (ISE) with other companies that constitute the Sao Paulo Stock Exchange Index. They employ the non-parametric Mann-Whitney U Test, year by year, for comparison using 40 firms over the period 2014-2018. ROA, ROE, and return on invested capital (ROIC) are the financial performance metrics employed in the study. The difference is only significant (with positive sign) based on ROA metric only in 2018. In addition, Zaz (2021) investigates the relationship between corporate governance and firm performance in 62 firms using 682 observations in Finland using regression analysis. Corporate governance is represented in their study by board size, board diversity, CEO duality and board meetings variables. Financial performance is measured in their study by ROA and ROE. A

significant and positive relationship is detected using both financial metrics, only for board diversity and CEO duality variables.

The purpose of Both Muzanya (2022) and Chininga (2022) studies is to examine the impact of ESG ratings on financial performance in South Africa using panel data regression models. Muzanya (2022) employs fixed effects regression model over the period 2011-2019, using 70 firms and 630 firm/year observations. A significant negative relationship is found based on all financial performance measures used, namely ROA, share price growth, and ROIC. Whereas the time frame of Chininga (2022)'s study is 2015-2019, using fixed and random effects regression models, based on annual data of 40 firms. Although ROA, Tobin's Q and abnormal returns are used to measure performance, the relationship is only significant (with negative sign) when using Tobin's Q. Furthermore, a significant positive influence of ESG on financial performance, measured by ROA, is documented in the study of Fu & Li (2023) in China. Panel data regression model is employed in their study over the period 2015-2021, using 2,256 A-share listed firms, and 15,710 unbalanced panel observations.

Regarding studies applied on Egypt as a single country (the second group), the most related studies are Abd ElBar et al. (2017), Aboud & Diab (2018, 2019), Shaban (2019), EL-Hindawy et al. (2021), Bakheet et al. (2021), and Abdelmalak (2024). In the study of Abd ElBar et al. (2017), the impact of social responsibility disclosure on stock prices of 10 listed Egyptian firms is examined during the 2011-2015 period. Using simple regression and Pearson correlation coefficient, this impact is insignificant.

In 2018 and 2019, two studies are conducted on the Egyptian context over the period 2007-2016 by Aboud and Diab to study the impact of ESG on firm value and firm performance, respectively. In Aboud & Diab (2018)'s study, the 30 firms included in the ESG index is used as the treatment group. Whereas the EGX100 firms and all listed firms in the Egyptian stock market are treated as control groups. The findings show that ESG disclosure has significant positive influence on firm value measured by Tobin's Q ratio based on regression analysis. On the other hand, the study of Aboud & Diab (2019) utilizes OLS pooled regression on the 100 most active Egyptian companies. A positive impact of ESG ratings on financial performance measured by ROA is found.

Shaban (2019) finds significant positive effect of sustainability disclosure on firm value of 45 Egyptian firms. Firm value is measured in the study by share's market value from 2010 to 2017, using fixed effects regression model. Furthermore, the impact of environmental, social, and governance components on the financial performance (measured by ROA and ROE) of 30 Egyptian firms included in the EGX ESG index is studied separately by Bakheet et al. (2021). While the impact is significant and positive for environmental and governance components, it is insignificant in case of the social component.

In a more related study, EL-Hindawy et al. (2021) examine the impact of ESG on firm performance of 66 non-financial Egyptian firms over the 2010-2018 period. Both fixed effects panel regression model and GLS regression models are employed. Financial performance is measured in their study by ROA, ROE and Tobin's Q. The results are sensitive to the financial

performance measure employed. To clarify, the relationship is significant and positive based on ROE, significant and negative when using ROA, and insignificant relying on Tobin's Q.

In a more recent study, Abdelmalak (2024) employs fixed effects regression model on 200 Egyptian firms included in the EGX EWI 100 index from July 2007 to August 2023; to examine the relationship between ESG and firm performance. The relationship is significant and positive between ESG and stock returns, ROA, and return on sales (ROS). However, the relationship is insignificant using ROE as a financial metric.

The third group of studies, which encompasses studies conducted on several countries or regions, includes Kulakova (2018), Ahlklo & Lind (2019), Dinca et al. (2022), and Aydoğmuş et al. (2022), among others. Kulakova (2018) investigates the impact of ESG scores of 166 firms, belong to 35 emerging and frontier markets including Egypt, on firm value measured by Tobin's Q from August 2016 to October 2017. Principal component and regression analyses are used, and a significant positive sign is found between ESG score and firm value.

Ahlklo & Lind (2019) use fixed-effects regression model to investigate the relation between ESG score and financial performance on 207 firm-year observations of Nordic countries, over the period 2016-2018. While the relationship is significant and negative based on Tobin's Q, it is insignificant based on ROA and yearly stock returns. Moreover, the relationship between ESG score, and firm value is investigated in the automative industry by Dinca et al (2022) during the 2015-2020 period. They find mixed results using 131 firms from Asia, Europe, Latin America, Caribbean and North America, based on Structural Equation Modelling (SEM) using a cross-lagged panel model (CLPM).

Furthermore, Aydoğmuş et al. (2022) examine the impact of ESG performance on firm performance measured by Tobin's Q and ROA in 1720 firms, and 14043 firm/ year observations in 7 Regions, in addition to USA and China. The results of the fixed-effects regression models document significant positive relationship impact of ESG performance on firm performance.

After presenting related studies in the previously mentioned three groups of studies. It is evident that the rsults are mixed. When using ROE to measure financial performance, although some studies find a positive relationship between ESG and ROE, such as EL-Hindawy et al. (2021) and Bakheet et al. (2021) in Egypt, and Zaz (2021) in Finland, other studies document insignificant relationship, such as Abdelmalak (2024) in Egypt, Iqbal et al. (2012) in Pakistan, and De Castro Sobrosa Neto et al. (2020) in Brazil.

Based on ROA, some studies find positive relationshp (e.g., Aboud & Diab, 2019; Bakheet et al., 2021; Abdelmalak; 2024 in Egypt, and De Castro Sobrosa Neto et al., 2020; Zaz, 2021; Aydoğmuş et al., 2022; Fu & Li, 2023 in other countries), other studies document negative relationship (e.g., EL-Hindawy et al., 2021in Egypt; Muzanya, 2022 in South Africa), and insignificant relationship is concluded in a third group of studies (e.g., Iqbal et al., 2012; Ahlklo & Lind, 2019; Chininga, 2022). Furthermore, ESG is related positively with Tobin's Q in the study of Aboud & Diab, 2018 in Egypt, and in Kulakova (2018) and Aydoğmuş et al. (2022) studies in other countries. This relationship is negative in Ahlklo & Lind (2019) and Chininga (2022) studies, and insignificant according to EL-Hindawy et al. (2021).

The variation in results could be attributed to several factors, with one of the primary reasons being the diversity in the metrics employed to gauge financial performance. Whereas some studies use accounting measures such as return on equity (ROE), return on assets (ROA), and return on invested capital (ROIC), others use market- based measures such as tobin's Q, stock price, or stock returns. In addition, the same financial performance metric could be calculated differently in different studies. For example, although ROA and ROE are calculated in most studies based on net income, they are calculated in other studies (e.g., Aboud & Diab, 2019; EL-Hindawy et al., 2021; Chininga, 2022) based on operating profits. In addition, different measures are also employed to measure Tobin's Q. Therefore, the choice of measurement metric and how it is calculated, can significantly impact the results obtained.

The differences in findings can also be affected by the diversity of countries sampled across various studies, each possessing unique characteristics and contexts. For instance, while certain studies focused on emerging economies such as Egypt, others examined different regions with their own distinct attributes, (e.g., Aboud & Diab, 2018 & 2019; Otaify, 2021; Bakheet et al., 2021), Other studies encompassed a combination of developing and developed countries to identify the main differences between these two categories (e.g., Hörnmark, 2015). Furthermore, some studies are applied on frontier markets (e.g., Kulakova, 2018).

The most related studies conducted on Egypt are Aboud & Diab (2018, 2019), El-Hindawy et al. (2021), and Abdelmalak (2024) Economic value added (EVA) is not employed in these studies when measuring financial performance. More specifically, financial performance is measured in the study of Aboud & Diab (2018) by Tobin's Q, whereas it is measured by ROA in the study of Aboud & Diab (2019). In addition, ROA, ROE, and Tobin's Q metrics are employed by El-Hindawy et al. (2021), and return on sales (ROS), ROA and ROE are used in the study of Abdelmalak (2024). In our study, both conventional and modern measures of financial performance are employed. Whereas ROE, ROA and ROCE are used as accounting conventional metrics, Tobin's Q represents a market moder proxy for financial performance and firm value. In addition, economic value added (EVA) is employed as a modern metric. Up to our knowledge, EVA has not been studied before in this issue until the time of conducting this study.

ESG rating is measured in the study of Aboud & Diab (2019) using two methods. The first is by ranking companies included in the S&P/EGX ESG index ascendingly based on their ESG weights in the index. Afterwards, as this index includes 30 firms each year, the number 30 is assigned to the company with the highest weight, 29 is assigned to the company with the second highest weight and so on, till assigning the number 1 to the company with the lowest weight. The second method is using dummy variable equals 1 if the company is included in the ESG index and equals 0 otherwise. These two methods used to measure ESG rating are two out of the three methods employed in our study to measure ESG.

The time frame of Aboud & Diab (2018, 2019) studies is 2007-2016. In addition, it covers the period 2010-2018 in the study of El-Hindawy et al. (2021). However, our study covers the period from the inception of the S&P/EGX ESG index in 2010 to the last available data of this index in 2023. Although the study of Abdelmalak (2024) covers recent period till 2023, there are some

differences between this study and ours related to using EVA as a modern financial performance metric, employing univariate and cross-sectional analyses at firm level, and measuring ESG ratings differently. In addition, the current study employs regression models based on both cross-sectional and panel data. In addition to using univariate analyses in the robustness checks.

5. Variables and Hypotheses

5.1 Hypotheses Development:

Since the 1970s, when ESG gained prominence, there has been a significant amount of research in this field. Friede et al. (2015) found more than 2000 studies investigating the link between ESG performance and financial performance. Despite this extensive research, the conclusions are still unclear and sometimes contradictory (Karlsson & Sparring, 2023). The previously discussed studies illustrate the inconsistency and disparity in results among empirical studies regarding the relationship between ESG ratings and financial performance. Previous studies have produced a range of results, including positive, negative, mixed, and inconclusive relationships between ESG ratings and financial performance (Chininga, 2022).

Various theories have been utilized to justify the association between ESG ratings and financial performance, encompassing shareholder theory, stakeholder theory, agency theory, stewardship theory, resource dependency theory, and legitimacy theory. Notably, shareholder and stakeholder theories are commonly applied to comprehend this relationship in this context. Therefore, we will start discussing these two theories, followed by discussing other mentioned related theories**.**

Economist Milton Friedman, an early advocate of shareholder theory (Known as stockholder theory), posited that companies' primary obligation is to maximize shareholder wealth. Any involvement in activities beyond this goal could be viewed as harmful to a free-market economy. Thus, allocating corporate resources toward objectives other than profit maximization might be considered a form of stealing (Friedman, 1970; Hagéus & Nyhrén, 2021). Essentially, stakeholders such as employees, customers, suppliers, and broader society should not take preference over the interests of shareholders. Shareholder theory contends that corporate social responsibility is nonexistent because moral responsibilities are attributed solely to individuals rather than corporate entities. In a capitalist system, a corporate manager serves as an agent of the firm's owners, and he bears direct responsibility to his employers (Muzanya, 2022). In other words, this theory doesn't support the positive association between ESG practices and financial performance.

On the other hand, stakeholder theory suggests positive relationship between ESG practices and financial performance. This theory argues that company executives have responsibilities to a broader range of stakeholders beyond just the shareholders. Formulated by Freeman (1984), this theory defines stakeholders as entities or individuals who can impact or are impacted by the firm's activities, including those who have a direct or indirect association with and benefit from the firm such as customers, employees, suppliers, and political entities. The theory asserts that firms are accountable to all stakeholders and must safeguard their interests, including maximizing shareholders' wealth (Abdullah, 2022).

The relationship between firms and stakeholders is important; as stakeholders involved in the firm's operations can play an important role in helping firms to balance among environmental, social, and economic dimensions. Consequently, superior sustainability performance can attract highly skilled employees, enhance marketing effectiveness, and reduce the risk of regulatory actions, thereby leading to improved financial performance for shareholders (Hagéus & Nyhrén, 2021). Therefore, stakeholder theory suggests that ESG ratings are likely to positively impact financial performance. By cultivating a green, environmentally friendly corporate image through long-term corporate development strategies rather than prioritizing short-term gains, companies may secure long-term gains.

Agency theory focuses on the principal-agent relationship. In this framework, the principal, typically a business owner, shareholder, or investor, appoints an agent, often a manager or employee, to act on their behalf. Conflicting interests between the principal and agent can arise, known as the "agency problem," if the agent prioritizes personal interests over those of the principal. The separation of control and ownership can increase such conflicts. Effective corporate governance practices help mitigate agency costs, minimizing or avoiding conflicts and ultimately enhancing firm performance (Zaz, 2021).

Moreover, corporate social responsibility (CSR) can be perceived as a remedy to the agency problem. By demonstrating a commitment to socially responsible practices, corporations signal to stakeholders, including shareholders, that they are acting in their best interests, even if it means sacrificing short-term profits (Zakariaee, 2023). Therefore, financial performance is expected to ameliorate according to this theory.

In contrast to agency theory, the stewardship theory suggest that the interests of managers and shareholders are aligned. Stewardship theory confirms the presence of ethical and professional motivations among managers and shareholders, aiming to mitigate conflicts between the two parties. It posits that managers are trustworthy individuals who act as stewards, safeguarding and maximizing owners' wealth without prioritizing their own economic gains. This perspective suggests that corporate governance should empower managers rather than merely controlling them (EL-Hindawy et al., 2021). Consequently, the implementation of corporate governance practices and social environmental responsibility policies is anticipated to strengthen financial performance.

Resource dependency theory (Also known as resource-based theory), asserts that a firm's value is determined by its resources, which are translated into capabilities and, ultimately, profitability. Long-term outperformance compared to peers is achievable if a firm prioritizes environmental care, enabling the regeneration of natural resources and their transformation into capabilities. Enhancements in social and governance aspects also augment a firm's resources by improving employee's quality of life and ensuring efficient resource utilization (Whelan et al., 2021; Karlsson & Sparring, 2023).

Finally, the legitimacy theory posits that a company's right to existence is validated through a social contract between the company and society. Violating this contract leads to reduced customer demand and increased government regulations. This theory highlights the importance of corporations' roles within society and the transition from firm-individual relationships to firm-

society integration. Accordingly, companies should act in the best interests of all stakeholders to maintain their legitimacy and their right to exist (Aboud & Diab, 2019; Whelan et al., 2021; Karlsson & Sparring, 2023). Sparring, 2023). Therefore, this theory expects a better performance for companies more engaged in ESG practices.

Based on the arguments of the previous theories, it is evident that although each theory has its own justification to the relationship between ESG and financial performance, all these theories but shareholder theory expect a better financial performance in companies concerned in ESG practices.

The empirical evidence regarding the financial performance of ESG companies is inconclusive. Several empirical results document a positive association between ESG rating and financial performance such as Aboud & Diab (2018, 2019), Kulakova (2018), Bakheet et al. (2021), Zaz (2021), Aydoğmuş et al. (2022), and Fu & Li (2023). However, some studies show a negative impact of ESG rating on financial performance, such as Muzanya (2022), who supports shareholder theory. In addition, the relationship is insignificant according to the study of Iqbal et al. (2012). The last group of studies find mixed relationship between ESG ratings and financial performance (e.g., Ahlklo & Lind, 2019; De Castro Sobrosa Neto et al., 2020; EL-Hindawy et al., 2021; Chininga ,2022; Dinca et al., 2022; Abdelmalak; 2024). More specifically, the studies of EL-Hindawy et al. (2021) and Abdelmalak (2024) document mixed results in the Egyptian context. EL-Hindawy et al. (2021) examine the impact of ESG scores on financial performance of 66 non -financial firms in Egypt from 2010-2018. They find a positive relation between ESG score and ROE and a negative relation between ESG score and ROA. In addition, the relationship is positive when using ROA, and insignificant when employing ROE according to Abdelmalak (2024).

Additionally, Friede et al. (2015) conducted a comprehensive review and analysis of more than 2000 studies on ESG factors and discovered that about 90% of them reported a positive association between ESG considerations and financial performance. Therefore, based on the findings of the previous study, as well as other supporting studies discussed in this section, these two hypotheses are formulated as follows:

H1: *"The impact of ESG ratings on financial performance is significantly positive"*.

This main hypothesis could be divided into these sub-hypotheses:

H1a: "The impact of ESG ratings on EVA is significantly positive".

H1b: "The impact of ESG ratings on ROE is significantly positive".

H1c: "The impact of ESG ratings on Tobin's Q is significantly positive".

H1d: "The impact of ESG ratings on ROA is significantly positive".

H1e: "The impact of ESG ratings on ROCE is significantly positive".

H2: *"There is a significant difference between financial performance of firms included in the S&P/EGX ESG index and those not included in this index but included in its parent EXG100 index"*.

This main hypothesis could be divided into these sub-hypotheses:

H2a: "There is a significant difference between EVA of firms included in the S&P/EGX ESG index and those not included in this index but included in its parent EXG100 index".

H2b: "There is a significant difference between ROE of firms included in the S&P/EGX ESG index and those not included in this index but included in its parent EXG100 index".

H2c: "There is a significant difference between Tobin's Q of firms included in the S&P/EGX ESG index and those not included in this index but included in its parent EXG100 index".

H2d: "There is a significant difference between ROA of firms included in the S&P/EGX ESG index and those not included in this index but included in its parent EXG100 index".

H2e: "There is a significant difference between ROCE of firms included in the S&P/EGX ESG index and those not included in this index but included in its parent EXG100 index".

5.2 Measuring Variables:

The current study tests the effect of ESG ratings on the financial performance in light of some control variables. Accordingly, ESG ratings is the independent variable, and financial performance represents the dependent variable. Table (1) presents the variables used in this study, and how to calculate each variable.

Table 1: The measurement of study variables

Type	Variable	Symbol	Variable Definition
Dependent	Economic Value Added	LNEVA	The natural log of EVA, Where EVA equals: $Invested\ Capital\ (ROIC - WACC)$
Dependent	Return on Equity	ROE	$\dfrac{Net\ Income\ before\ Tax}{Owners\ Equity}$
Dependent	Tobin's Q	TOBINQ	$\dfrac{Firm's\ Market\ Value}{Total\ Assets}$
Dependent	Return on Assets	ROA	$\dfrac{EBIT}{Total\ Assets}$
Dependent	Return on Capital Employed	ROCE	$\dfrac{EBIT}{Capital\ Employed}$
Independent	ESG Score	SCORE	ESG relative score based on the firm's weight in the S/P ESG index. It ranges from 30 for the best firm, to 1 for the worst one.

Independent	ESG Frequency	FREQ	The number of years the company has been included in the ESG index. It ranges from 1 to 14.
Independent	ESG Dummy	ESGD	Dummy variable equals 1 if the company is included in the ESG index and equals 0 otherwise.
Control	Total Assets	LNTA	The Natural Logarithm of total assets.
Control	Leverage	LEV	$\dfrac{Total\ Liabilities}{Total\ Assets}$

First- The Dependent variables (Financial performance metrics):

Financial performance is measured in this study using economic value added (EVA), return on equity (ROE), Tobin's Q, return on assets (ROA) and return on capital employed (ROCE). EVA is one of the most famous modern metrics of financial performance; because of its innovative method of dealing with the company's real profitability, in contrast to accounting measures. It is presented by both Stern and Stewart in 1982 and represents an extension of the concept of residual income or economic profit. it serves as an integrated framework for decision making, which in turn helps to redirect energies and resources to create sustainable value for parties related to the company. It is a good measure that expresses the amount of addition that the company must achieve for shareholders. Therefore, some analysts believe that focusing on this measure means that they are on the right path towards maximizing owners' wealth. EVA could be measured by multiplying the value of invested capital by EVA spread; where EVA spread is the difference between return on invested capital (ROIC) and weighted average cost of capital (WACC) (Algebaly, 2019).

ROE represents one of the most important and comprehensive conventional performance measures, because it considers the return of both finance and investment decisions. That is because it could be measured by multiplying ROA (which represents the return of investment decisions) by equity multiplier (which represents the return of finance decisions). It expresses the amount of profits achieved for each pound invested in equity. ROE is measured in this study based on net income before tax, rather than after tax as commonly used. This could be justified by the fact that tax is not controllable by firm's management. Therefore, to evaluate firm's management effectively, the evaluation should rely on controllable factors. El-Hendawy et al. (2021) measure ROE based on operating profits rather than net income after tax.

By the same token, ROA should also be measured before tax. It should also be measured before interests in order to get a consistent equation. Therefore, ROA is measured by dividing earnings before interest and tax (EBIT) by total assets. ROA is one of the famous conventional measures of financial performance. It expresses the amount of profits achieved for each pound invested in total assets. It is argued that ROA is better than other financial performance metrics in reflecting the efficiency of resource allocation (Fu & Li, 2023). Aboud & Diab (2019) and El-Hendawy et al. (2021), among others, measure ROA based on operating profits, rather than net income after tax.

Tobin's Q is developed in 1969 by james Tobin, a Nobel Prize winner in economics. It represents a firm's investment or growth opportunities (Fu et al., 2016). It could be used as one of the modern financial performance measures. It is also considered a proxy for firm value, as low Tobin's Q ratio—between 0 and 1—means that it costs more to replace a firm's assets than the firm is worth. A Tobin's Q above 1 means that the firm is worth more than the cost of its assets. Because Tobin's assumption is that firms should be worth what their assets are worth, anything above 1.0 theoretically indicates that a company is overvalued (www.Investing.com). Following Davidson & Lededakis (1998) and Fu et al. (2016), among others, Tobin's Q is measured in this study by dividing firm's market value by the book value of total assets, where firm's market value is the sum of market value of common stocks and the book values of debts and preferred stocks. It is argued that while more complex estimates of Tobin's q can be calculated, this simple measure produces unbiased and conservative estimates (Davidson & lededakis, 1998; Fu et al., 2016).

ROCE is a measure used to analyze company's efficiency in terms of capital management. There are various reasons why companies should track ROCE. ROCE provides a comprehensive measure of a company's overall performance by considering both profitability and capital efficiency. It helps assess the effectiveness of capital allocation decisions and the ability to generate returns on invested capital. Therefore, ROCE allows for meaningful comparisons between companies operating in different industries and highlights a company's ability to generate profits from the capital it employs. ROCE is an important metric for investors as it reflects the company's ability to generate returns on their investment. A consistently high ROCE indicates that the company is generating attractive returns, which can create confidence in investors and potentially attract more capital. ROCE also provides a long-term perspective on a company's profitability and efficiency. It considers the profitability generated over an extended period and relates it to the capital employed.

Second- The independent variable (ESG rating):

Out of a pool of 100 Egyptian companies, 30 are included in the S&P/EGX ESG index (ESG index for brevity). The companies are graded using an inventive score-weighting system. For this reason, the ESG ratings are determined in our study using three proxies. The first one is by ranking companies included in the ESG index ascendingly based on their ESG weight in the index. Afterwards, as this index includes 30 firms each year, the number 30 is assigned to the company with the highest weight, 29 is assigned to the company with the second highest weight and so on, till assigning the number 1 to the company with the lowest weight. The second proxy is the ESG frequency, which equals the number of years the company has been included in the ESG index. Since the study covers 14 years from 2010 to 2023, this measure ranges from 1 to 14 for companies included at least once in the ESG index. The third proxy is using dummy variable equals 1 if the company is included in the ESG index and equals 0 otherwise.

Third- Control variables:

Financial leverage and firm size are the control variables used in this study. They are used as control variables in most similar studies (e.g., Aboud & Diab, 2018, 2019; Aydoğmuş et al.,

2022; Fu & Li, 2023; Abdelmalak, 2024). Leverage ratio refers to the ratio of firm's debts, and commonly measured by dividing total liabilities to total assets. Firm size is proxied in our study, as commonly measured, by the natural logarithm of total assets. Using the natural log often gives better estimates and reduces skewness, heteroskedasticity, and range of data.

Figure (1) presents the theoretical framework of the study, which shows the relationship among variables.
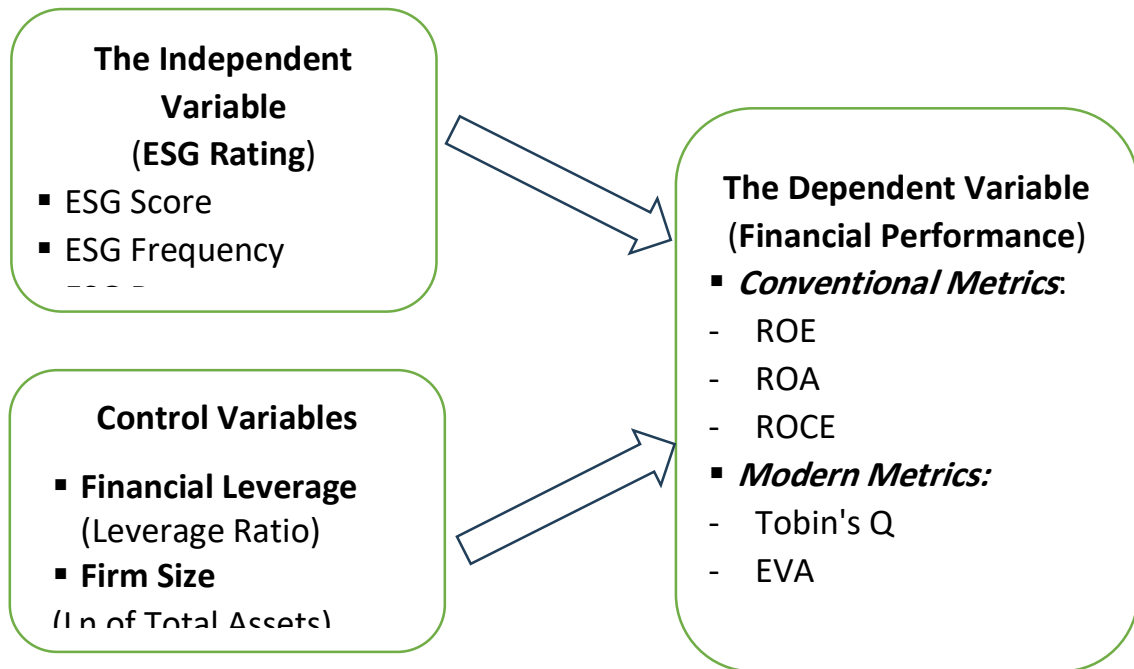
Figure1: The Theoretical Framework of the Study

6. Methodology:

This section discusses data used in the study and their sources, as well as identifying the samples used in the study. Afterwards, research methods are discussed at the end of this section.

6.1 Data and Sample

The purpose of this study is to evaluate the performance of sustainable finance firms. Therefore, the Egyptian stock market is a suitable country to achieve this purpose; because it introduced the S&P/EGX ESG Sustainability Index in 2010 as the first S&P sustainability index in the Middle East and North Africa (MENA) region, and the second index in the world after India. In addition, the Egyptian stock market is one of the largest stock markets in the MENA region in terms of market capitalization and the number of listed companies. Egypt is also included in nearly all worldwide studies that focus on stock markets in the MENA region and Arab countries (Algebaly, 2022).

The study starts in 2010 with the inception of the ESG index, to the last available data in 2023, covering 14 years. In order to achieve the first objective related to examining the relationship between ESG ratings and financial performance, the names of companies included in the S&P/EGX ESG index and their weights in the index are collected from Egypt for Information Dissemination (EGID) company owned by the Egyptian Exchange. Other data related to financial performance measures, leverage and total assets are collected form financial statements from Bloomberg database, Osiris database, investing.com website, and Mubasher website.

Two types of data are used in this study. The first one is firm/year panel data for companies included in the ESG index, which encompasses 30 companies rebalanced annually at the end of July every year. Therefore, the population of panel data of this study includes 420 firm/year observations (30 firm for 14 years). Based on the availability of data, our sample included 339 firm/year observations for all financial performance measures used, except in the case of EVA we used 206 firm/year observations, because data are available to the authors from Bloomberg database until 2018 for this variable. These data are unbalanced panel data because they are collected from companies only for years of inclusion in the index.   The ESG score is the independent variable in this case and is calculated based on the ESG weights inside the index as described in the previous section.

The second type of data is cross-sectional data for companies included at least once in the ESG index from its inception in 2010, to the last available data in 2023. Cross-sectional data related to financial performance are collected in 2018 year. The authors chose to collect data in that year because it is a stable year, not affected by Covid-19 pandemic in 2019, or Ukraine war in 2022. Since the same company could be included in the index several times, only 93 firms are included in this index during the fourteen years of the study. The data of 80 firms out of these 93 firms are available to the authors in each financial performance measure, except in case of EVA which has available data for only 61 firms. The ESG rating is developed by the authors and is calculated as the frequency of the inclusion in the index during the period of study as detailed in Table (1).

Cross-sectional data are also used to achieve the second objective. This is done by comparing the financial performance of companies included in the ESG index with those not included in the ESG index but included in its parent EGX100 index. Companies used in this analysis are chosen from the list of 100 companies that constitute the EGX100 index in 2023. Since the rebalancing of companies included in the EGX100 happens twice a year (Instead of only once in case of ESG index), the number of these companies is 112 in 2023, which represents our population in that case.

The 112 companies is divided into three categories: The first one encompasses the 30 companies included in the ESG index. The second one contains 39 companies which have never been included in the index before. The last category includes the remaining 43 companies which are not included in in the ESG index in 2023 but were included at least once before 2023. The authors eliminated this third category; in order to have two distinct groups of ESG and non-ESG companies. Out of the remaining 69 companies, the financial performance data were available for

62 companies in case of all performance metrics but EVA which has available data for only 46 companies. The ESG rating is calculated in this case by a dummy variable equals 1 if the company is included in the ESG index, and 0 otherwise. Appendix (1) presents information about companies used in the study

6.2 Research Methods

Unbalanced panel data regression models, as well as OLS cross-sectional regression models are the multivariate models employed in this study. In addition, the parametric independent samples t test, and the nonparametric Mann-Whitney U test are the two univariate models used to check the robustness of results related to the second hypothesis. Three methods could be employed to apply panel data regression model, namely the pooled OLS regression model, fixed-effects regression model, and random effects regression model. In addition, fixed effects model, could be cross-sectional and period fixed effects model, cross-sectional fixed effect model, or period fixed effect model.

To compare pooled OLS regression model with fixed-effects model, and to choose the best model of the three versions of fixed-effects models, the likelihood ratio test is employed. The null hypothesis of this test states that pooled OLS model is better. Moreover, Hausman test is used to compare fixed-effects with random-effects models under the null hypothesis of preferring random-effects model (Asteriou & Hall, 2007; Brooks and Wichmann, 2019; Algebaly, 2022). Therefore, based on the 5% significance level, the fixed-effects model is the best if P. values of both tests are 5% or less. In addition, the random effects model is better than the fixed effects one, if P. value of Hausman test is greater than 5%.

Panel data regression model could be expressed as follows:

$$FP_{i,t} = \alpha + \beta_1 SCORE_{i,t} + \beta_2 LEV_{i,t} + \beta_2 LNTA_{i,t} + \varepsilon_{i,t} \qquad \textbf{Equation (1)}$$

Where, $FP_{i,t}$ is the financial performance measure employed for firm i at year t, α is the constant, $\varepsilon_{i,t}$ is the error term of firm i at year t, and other variables are defined in Table (1).

Financial performance ($FP_{i,t}$) is measured in our study by EVA, ROE, TOBINQ, ROA and ROCE. Thus, Equation (1) could be detailed as follows:

$$EVA_{i,t} = \alpha + \beta_1 SCORE_{i,t} + \beta_2 LEV_{i,t} + \beta_2 LNTA_{i,t} + \varepsilon_{i,t} \qquad \text{Eq. (1-1)}$$

$$ROE_{i,t} = \alpha + \beta_1 SCORE_{i,t} + \beta_2 LEV_{i,t} + \beta_2 LNTA_{i,t} + \varepsilon_{i,t} \qquad \text{Eq. (1-2)}$$

$$TOBINQ_{i,t} = \alpha + \beta_1 SCORE_{i,t} + \beta_2 LEV_{i,t} + \beta_2 LNTA_{i,t} + \varepsilon_{i,t} \qquad \text{Eq. (1-3)}$$

$$ROA_{i,t} = \alpha + \beta_1 SCORE_{i,t} + \beta_2 LEV_{i,t} + \beta_2 LNTA_{i,t} + \varepsilon_{i,t} \qquad \text{Eq. (1-4)}$$

$$ROCE_{i,t} = \alpha + \beta_1 SCORE_{i,t} + \beta_2 LEV_{i,t} + \beta_2 LNTA_{i,t} + \varepsilon_{i,t} \qquad \text{Eq. (1-5)}$$

To check for the stationarity of panel data using EViews software, three tests are used namely Levin, Lin & Chu, Fisher-ADF, and Fisher-PP. These tests are used at their levels using intercept,

intercept & trend, or none. The three tests share the same null hypothesis, which states that unit root is existed. Therefore, the null hypothesis should be rejected to get a stationary panel data.

Regarding cross-sectional regression models, data are collected for all sample firms in 2018 as justified before. ESG rating is measured for each firm in these models twice. Whereas the first measure is the number of years of firm's inclusion in the ESG index; known as ESG frequency (FREQ), the second one is a dummy variable (ESGD) equals 1 if the company is included in the ESG index, and 0 otherwise. Thus, financial performance of firm i (FP$_i$) is determined in equations 2 and 3 as follows (variables are defined in Table (1)):

$$\text{FP}_i = \alpha + \beta_1\text{FREQ}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \textbf{Equation (2)}$$

$$\text{EVA}_i = \alpha + \beta_1\text{FREQ}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (2-1)}$$

$$\text{ROE}_i = \alpha + \beta_1\text{S FREQ}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (2-2)}$$

$$\text{TOBINQ}_i = \alpha + \beta_1\text{FREQ}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (2-3)}$$

$$\text{ROA}_i = \alpha + \beta_1\text{FREQ}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (2-4)}$$

$$\text{ROCE}_i = \alpha + \beta_1\text{FREQ}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (2-5)}$$

$$\textbf{FP}_i = \alpha + \beta_1\text{ESGD}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \textbf{Equation (3)}$$

$$\text{EVA}_i = \alpha + \beta_1\text{ESGD}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (3-1)}$$

$$\text{ROE}_i = \alpha + \beta_1\text{ESGD}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (3-2)}$$

$$\text{TOBINQ}_i = \alpha + \beta_1\text{ESGD}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (3-3)}$$

$$\text{ROA}_i = \alpha + \beta_1\text{ESGD}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (3-4)}$$

$$\text{ROCE}_i = \alpha + \beta_1\text{ESGD}_i + \beta_2\text{LEV}_i + \beta_2\text{LNTA}_i + \varepsilon_i \qquad \text{Eq. (3-5)}$$

Variance inflation factor (VIF) is used to check the multicollinearity problem, either in the panel or cross-sectional data. As a rule of thumb, if VIF is greater than 10, the multicollinearity problem is existed (Gujarati, 2003). Other problems that should be checked when using cross-sectional OLS regression are autocorrelation, heteroskedasticity, normality and linearity. All these problems have the same null hypothesis, which states that the problem is not existed. Therefore, based on the 5% significance level, there is no problem if P. value of the test is greater than 5%. We depended on tests available in EViews software to check these problems. and we presented the best models after dealing with these problems in the results section.

We checked for autocorrelation of residuals using both correlogram Q statistics, and serial correlation LM test (Known as Breusch-Godfrey serial correlation LM test). It could also be tested by examining the Durbin-Watson (DW) statistic. If the value of DW is 2 or nearly 2, the first-order autocorrelation problem is not existed. If this problem is existed, using lag of the dependent variables as one of the independent variables could treat this problem. In addition,

heteroskedasticity of residuals problem is checked in our study using both Breusch-Pagan-Godfrey and ARCH tests. If we encountered this problem, using transformation of variables (such as using log of the dependent variable) could overcome the problem. If not, White's heteroskedasticity-robust standard errors, or heteroscedasticity- and autocorrelation-consistent "HAC") standard errors methods could be used. It is worth mentioning that HAC estimation could solve both heteroskedasticity and autocorrelation problems (Gujarati, 2003).

Normality of residuals could be detected based on Jarque Bera statistic, which appears when running histogram normality test in EViews. If data are not normally distributed, enlarging sample size may be the solution. In addition, Ramsey RESET test available in EViews, could be used to check linearity, by making sure that the linear model is well-specified. If linearity is not fulfilled, building a non-linear model could be advised. Moreover, variable transformation and/or eliminating outliers may treat normality and/or linearity problems.

7. Results and Discussion

This section begins with describing data and variables used in the study, followed by the empirical results of models employed.

7.1 Descriptive Statistics

Table 2: Descriptive Statistics

	N	Mean	Median	SD	Min	Max
EVA	206	-510	-59	1390	-7659	2682
ROE (%)	339	15.9	14.6	19.2	-62.4	70.7
TOBINQ	339	1.4	1.1	1	0.12	8.3
ROA (%)	339	8.1	6.4	9.7	-25.8	43.8
ROCE (%)	339	14.8	13.7	14.9	-37.2	70.6
LEV (%)	339	57.5	63	23.6	2.7	99
LNTA	339	15.3	15.4	1.9	9	20.5
SCORE	339	15.5	16	8.5	1	30

Notes: N is the number of firm/year observations. Variables are defined in Table (2).

Table (2) presents the main descriptive statistics of variables used in the study, followed by Table (3) which illustrates the correlation matrix between each pair of regressor variables. It is evident that correlation coefficients are very low. Thus, it is expected that our regression models are free from the multicollinearity problem. In order to confirm this conclusion, the values of variance inflation factor (VIF) are obtained. VIF values are less than 2 in all panel data and cross-sectional data models employed. Since VIF values are less than 10, the multicollinearity problem is not existed (Gujarati, 2003).

Unit root tests are presented in Table (4) and show that the null hypothesis of unit root is rejected for all variables at the 1% significance level, at least once. In addition, all variables are

free from unit roots at the 1% significance level according to Levin, Lin, and Chu test with intercept. Therefore, all variables are stationary at their levels. It is also worth noting that Tables 2, 3 and 4 rely on unbalanced panel data.

Table 3: Correlation Matrix

	LEVE	*TOBINQ*	*LNTA*
LEV	1		
TOBINQ	-0.06466	1	
LNTA	0.105331	-0.1667	1

Table 4: Unit Root Tests Results

Variable	Levin, Lin, and Chu			Fisher-ADF			Fisher-PP		
	I	**I&T**	**N**	**I**	**I&T**	**N**	**I**	**I&T**	**N**
EVA	**-3.922**	-0.814	**-2.774**	35.097	25.022	**43.331**	**43.331**	**31.240**	35.652
	(0.000)	(0.208)	**(0.003)**	(0.230)	(0.124)	**(0.055)**	**(0.055)**	**(0.027)**	(0.301)
ROE (%)	**-4.263**	**-7.488**	-0.037	**45.242**	32.777	35.068	35.068	29.775	42.294
	(0.000)	**(0.000)**	(0.485)	**(0.061)**	(0.244)	(0.325)	(0.325)	(0.377)	(0.155)
TOBINQ	**-2.404**	**-10.215**	**-4.073**	**51.980**	**41.487**	**92.764**	**92.764**	**66.596**	38.945
	(0.008)	**(0.000)**	**(0.000)**	**(0.025)**	**(0.079)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.339)
ROA (%)	**-4.529**	0.098	0.545	**44.157**	25.889	**63.761**	**63.761**	**53.495**	**49.635**
	(0.000)	(0.539)	(0.707)	**(0.075)**	(0.579)	**(0.001)**	**(0.001)**	**(0.003)**	**(0.041)**
ROCE (%)	**-5.478**	**-6.596**	**-2.655**	**45.118**	**39.022**	**56.702**	**56.702**	**46.797**	**47.411**
	(0.000)	**(0.000)**	**(0.004)**	**(0.038)**	**(0.049)**	**(0.002)**	**(0.002)**	**(0.007)**	**(0.039)**
LEV (%)	**-3.024**	**-5.102**	0.202	35.571	-35.477	33.801	33.808	38.590	32.477
	(0.001)	**(0.000)**	(0.580)	(0.394)	(0.226)	(0.477)	(0.477)	(0.127)	(0.637)
LNTA	**-3.403**	4.912	37.912	20.684	9.606	20.945	20.845	29.662	8.503
	(0.000)	(1.000)	(1.000)	(0.965)	(1.000)	(0.961)	(0.961)	(0.483)	(1.000)
SCORE	**-7.646**	**-13.050**	**-2.183**	**66.885**	**51.381**	**77.971**	**77.971**	**78.970**	**68.173**
	(0.000)	**(0.000)**	**(0.015)**	**(0.001)**	**(0.009)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.001)**

Notes: This table presents three-unit root tests at variables' levels, based on three models. The first model includes the intercept (I), the second contains intercept & trend (I&T), whereas the third includes none of them (N). The statistics of the three tests are shown, and their related P. values are indicated in parentheses. Bold values in the table indicate stationarity at least at the 10% significance level. The definitions of variables are presented in Table (1).

7.2 Empirical Results

This section starts with the results of panel data regression models, followed by cross-sectional OLS regression models. The results of panel data regression are presented in Table (5). These results use ESG score (SCORE) as the independent variable which equals 30 for the best company and 1 for the worst one in each year according to ESG practices. It is worth noting that the null hypothesis of the likelihood ratio test is rejected in all models employes. That is, fixed effects

model outperforms OLS pooled regression model in all panel regression models used in this study. Therefore, the comparison should be only done between fixed and random effects models.

Table (6) measure ESG rating (the independent variable) by ESG frequency (FREQ) based on cross=sectional data. ESG frequency equals the number of years the company has been included in the ESG index, and ranges from 14 for the best company to 1 for the worst one during the fourteen years of study from 2010 to 2023.

The results of both tables (5) and (6) document insignificant relationship between ESG rating and all financial performance metrics. Therefore, the first main hypothesis H1, and all its sub-hypotheses should be rejected. This result is consistent with EL-Hindawy et al. (2021) and Abdelmalak (2024) in the Egyptian context. More specifically, EL-Hindawy et al. (2021) found insignificant relationship based on Tobin's Q metric, and Abdelmalak (2024) documented this insignificant relationship when employing ROE. Iqbal et al. (2012), Ahlklo & Lind (2019) and Chininga (2022), among others, detected this insignificant relationship using ROA in countries other than Egypt.

Table 5: The Results of Panel Data Regression Models for Firms Included in the S&P/EGX ESG Index during the 2010-2023 Period.

Independent and Control Variables	Dependent Variable				
	EVA	ROE	TOBINQ	ROA	ROCE
SCORE	4.849	-0.348	0.009	0.021	0.042
	(0.544)	(0.126)	(0.118)	(0.645)	(0.591)
LEV	-2.038	-0.130	0.021	-0.160	-0.160
	(0.395)	(0.241)	(0.000)***	(0.000)***	(0.001)***
LNTA	-211.961	0.924	-0.051	0.373	1.546
	(0.002)***	(0.463)	(0.178)	(0.184)	(0.002)***
χ^2 Statistic (P. Value)	2.346	6.488	23.577	3.390	4.384
	(0.504)	(0.090)*	(0.000)***	(0.335)	(0.223)
Method	Random-Effects	Random-Effects	Cross-Section Fixed-Effects	Random-Effects	Random-Effects
N	206	339	339	339	339

Notes: This table shows the coefficients of variables, with P. values in parentheses. χ^2 Statistic is obtained from Hausman test and is used to choose the model the preferred method. ***, * indicate significance at the 1% and 10%, respectively. N is the number of firm/year observations. Variables are defined in Table (1).

Table 6: The Results of Cross-Section OLS Regression Models for Firms Included in the S&P/EGX ESG Index during the 2010-2023 Period Based on ESG Frequency.

Independent and Control Variables	Dependent Variable				
	EVA	ROE	TOBINQ	ROA	ROCE
FREQ	0.140	-0.396	0.038	0.076	-0.167
	(0.162)	(0.460)	(0.327)	(0.775)	(0.767)
LEV	0.007	0.017	-0.013	-0.200	0.010
	(0.678)	(0.628)	(0.049)**	(0.000)***	(0.788)

LNTA	0.162	0.489	0.038	0.618	1.295
	(0.238)	(0.506)	(0.474)	(0.093) *	(0.107)
R-Squared	0.179	0.012	0.062	0.690	0037
F-Statistic	1.449	0.290	1.683	55.760	0.929
(P. Value)	(0.258)	(0.833)	(0.178)	(0.000) ***	(0.431)
N	80	61	61	61	61

Notes: This table shows the coefficients of variables, with P. values in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10%, respectively. N is the number firms. Variables are defined in Table (1).

Table 7: The Results of Cross-Section OLS Regression Models for Firms Included in the S&P/EGX ESG Index during the 2010-2023 Period Using ESG Dummy Variable.

Independent and Control Variables	Dependent Variable				
	EVA	ROE	TOBINQ	ROA	ROCE
ESGD	0.697	0.807	1.042	7.910	12.831
	(0.478)	(0.066) *	(0.002) ***	(0.001) ***	(0.009) ***
LEV	0.009	0.129	-0.003	-0.160	-0.043
	(0.688)	(0.071) *	(0.586)	(0.000) ***	(0.612)
LNTA	0.144	0.962	-0.007	1.397	1.836
	(0.577)	(0.284)	(0.924)	(0.002) ***	(0.118)
R-Squared	0.047	0.152	0.160	0.500	0.284
F-Statistic	0.294	3.357	3.690	14.017	4.953
(P. Value)	(0.829)	(0.025) **	(0.017) **	(0.000) ***	(0.002) ***
N	80	61	61	61	61

Notes: This table shows the coefficients of variables, with P. values in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10%, respectively. N is the number firms. Variables are defined in Table (1).

In order to test the second hypothesis (H2), ESG firms' group should be compared with non-ESG firms' group, which contains companies not included in the ESG index, but included in its parent index EGX100. ESG practices could be measured in this case using a dummy variable (ESGD) equals 1 if the company is included in the ESG index, and 0 otherwise. Based on the findings of Table (7), a significant positive relationship is documented between ESG practices and Tobin's Q as well as all conventional financial performance metrics employed. Whereas this relationship is significant at the 1% significance level when using   Tobin's Q, ROA and ROCE, it is significant at the 10% significance level based on ROE metric. Therefore, the second main hypothesis (H2) is accepted, and all its sub-hypotheses but H2a (i.e., H2b, H2c, H2d, and H2e). These findings support and could be justified by stakeholder theory, agency theory, stewardship theory, resource dependency theory, and/ or legitimacy theory.

8. Robustness Checks

In order to confirm the results of this study, the robustness of results are checks by two methods as follows:

8.1 Using independent samples t test, and Mann-Whitney U test univariate analyses:

To confirm the results of the second hypothesis, the parametric independent samples t test, and the nonparametric Mann-Whitney U test are employed as illustrated in Table (8). The results of these two tests confirm the same findings obtained from the main analysis. More specifically, there is a significant difference between firms belong to ESG group, and those belong to non-ESG group, where ESG group has better performance at least at the 5% significance level based on all financial performance metrics but EVA. Consequently, H2 is accepted based on Tobin's Q and all conventional financial performance measures.

Table 8: The Results of Independent Samples T-Test and Mann-Whitney U Test for ESG Versus Non-ESG Firms in 2023.

ESG Group (1) Vs. Non-ESG Group (0)	Financial Performance Metric				
	EVA	ROE	TOBINQ	ROA	ROCE
Panel A: Independent Samples T-Test Results					
Mean Difference	-4833	10.090	1.006	2.545	12.947
T Statistic	-0.839	2.418	2.879	3.112	3.031
(P. Value)	(0.406)	(0.019)**	(0.008)***	(0.003)***	(0.004)***
Panel B: Mann-Whitney U Test					
ESG Mean Rank	25.95	36.72	38.88	39.73	36.08
Non-ESG Mean Rank	21.62	26.06	26.17	25.56	22.81
Z Statistic	-1.086)	-2.332	-2.739	-3.053	-3.013
(P. Value)	(0.278)	(0.020)**	(0.006)***	(0.002)***	(0.003)***
N for ESG Group	20	26	26	26	26
N for Non-ESG Group	26	36	36	36	36

Notes: This table shows the coefficients of variables, with P. values in parentheses. *** and ** indicate significance at the 5%, and 10%, respectively. N is the number of firms. Variables are defined in Table (1).

9.2 Excluding companies belong to financial sector:

Several authors (e.g., Ahlklo & Lind, 2019; El-Hindawy et al., 2021; Dinca et al., 2022; Abdullah, 2022) exclude companies belong to financial sector from the sample, due to its unique feature, such a high leverage ratio. Therefore, the study is repeated completely after excluding banks, non-bank financial services' companies, and real estate companies. The findings related to the models after excluding financial sector are presented in the appendices section (Appendices 2, 3, 4, and 5).

The first hypothesis (H1) is retested based on the outputs of Appendices 1 and 2 after excluding the financial sector. The results of the main analyses are confirmed after excluding financial sector based on all financial performance measures, with only one exception. To clarify, the outputs of Appendix (3) document a significant positive relationship between ESG frequency and EVA as a modern metric for financial performance. In other words, H1 is rejected based on all financial performance measures when relying on panel data regression analysis. It is also rejected in the cross-sectional regressions using Tobin's Q and all conventional performance measures. However,

Hypothesis H1a related to EVA as a modern performance measure is accepted according to cross-sectional regression analysis.

Based on the outputs of Appendices 3 and 4, the second hypothesis (H2) is retested. It is found that the financial performance of ESG firms dominates that of non-ESG firms based on Tobin's Q and all conventional performance measures. Thus, H2 and the sub-hypotheses H2b, H2c, H2d, and H2e are accepted. The only exception to this conclusion is the insignificant difference based on ROCE variable when using ESG dummy variable as the independent variable.

To sum up, the results of the main analyses are confirmed after excluding financial sector's companies, by rejecting the first hypothesis (H1) and accepting the second hypothesis (H2). H1 is rejected using all conventional and modern financial performance measures, with the exception of finding a positive relationship between ESG frequency and EVA after excluding the financial sector. H2 is accepted using Tobin's Q and all conventional financial performance measures. However, this hypothesis is rejected when employing ROCE after excluding the financial sector and using ESG dummy variable as the independent variable. Testing hypotheses results are presented in Table (9).

Table 9: Testing Hypotheses Results

Hypothesis No.	Hypothesis	Decision	Notes
H1	*"The impact of ESG rating on financial performance is significantly positive".*	*Rejected*	This hypothesis and all its sub-hypotheses (H1a, H1b, H1c, H1d, and H1e) are rejected, with the exception of supporting hypothesis H1a related to using EVA metric based on cross-sectional data for non-financial firms.
H2	*"There is a significant difference between financial performance of firms included in the S&P/EGX ESG index and those not included in this index, but included in its parent EXG100 index".*	*Accepted*	This hypothesis and all its sub-hypotheses based on conventional measures are supported (H1b, H1c, H1d, and H1e). However, it is not supported based on EVA as a modern financial performance measure.

9. Summary and Conclusions

The increasing attention to environmental, social, and governance (ESG) issues has prompted extensive academic debates regarding their impact on financial performance. This research aims to shed light on this discussion within the Egyptian context, by providing insights into the financial implications of the ESG practices. In addition to comparing the financial performance of ESG firms and non-ESG ones.

The Egyptian Stock Exchange has notably taken a significant step in this direction by adopting the S&P/EXG ESG sustainability index, making it the first index of its kind in the MENA region and the second worldwide. This index evaluates companies based on three key dimensions: environmental, social, and governance factors (Muzanya, 2022).

Several theories have been employed to understand the relationship between ESG ratings and financial performance, including shareholder theory, stakeholder theory, agency theory, stewardship theory, resource dependency theory, and legitimacy theory. In this context, shareholder and stakeholder theories are frequently utilized to analyze this relationship. The shareholder theory argues that management's primary responsibility is to serve the interests of the owners exclusively. In contrast, stakeholder theory suggest that entities beyond owners, such as employees and customers, are crucial for a company's overall welfare (Ahlklo & Lind, 2019).

While some research findings are in line with the shareholder theory, others support the stakeholder theory. Empirical evidence on the financial performance of ESG companies remains inconclusive. As a result of the contradictory predictions of the theories and empirical studies regarding the effect of ESG on financial performance, it is important to examine the direction of this effect.

There are several contributions from conducting our study. First, Tobin's Q and economic value added (EVA) are employed as modern financial performance metrics, as well as some well-known conventional metrics. Second, ESG rating is measured by three methods; one of these methods relying on ESG frequency developed by the authors. Third, applying this study on the Egyptian market in important because of its initiative in adopting the S&P/EXG ESG sustainability index. Forth, this study covers the whole period from the inception of the S&P/EGX ESG index in 2010 to the most recent available data in 2023. Fifth, both multivariate panel and cross-sectional regression techniques are employed. Last, the results are validated by employing univariate analysis, and excluding financial sector.

Our results document insignificant relationship between ESG rating and financial performance. This insignificant relationship is consistent with some findings of the studies of EL-Hindawy et al. (2021) and Abdelmalak (2024) in the Egyptian context, and Iqbal et al. (2012), Ahlklo & Lind (2019) and Chininga (2022), among others, in countries other than Egypt. Therefore, the first hypothesis which predicts a significant positive relationship between ESG rating and financial performance is rejected. The only exception to this conclusion is finding significant relationship between ESG frequency and EVA after excluding financial sector.

On the other hand, the results confirm the superiority of ESG firms' performance over the performance of non-ESG firms (Based on Tobin's Q and all conventional metrics), as predicted by the second hypothesis. Consequently, stakeholder theory, agency theory, stewardship theory, resource dependency theory, and/ or legitimacy theory found support in this study. Thus, the second hypothesis is accepted when relying on Tobin's Q and conventional financial performance metrics.

The findings of this research is beneficial to prospected investors, portfolio managers, and policy makers, not only in the Egyptian context, but also in other similar countries in the region. Based on the study findings, it is evident that investing in sustainable finance firms is generally better that investing in other firms. However, the weights of firms included in the Egyptian sustainability index has insignificant association with Tobin's Q and conventional financial performance employed. It may have significant relationship with EVA as a modern performance

metric. Therefore, the most important is whether the company is included in the index or not, and not the ranking of the company inside the index.

The ideas related to continue researching the financial performance of sustainable performance companies are numerous. More specifically, this study could be repeated by focusing on one or some industries, and the study of Dinca et al. (2022) could be useful to apply this idea. In addition, instead of using unbalanced panel data, employing balanced panel data could give better estimates, given the availability of data. Using more control variables also could enhance the explaining power of the model. Example of these control variables used in prior studies are industry and year effects, sales growth, return on sales, firm age, fixed assets to total assets, current ratio, capital expenditure ratio, and cash flow to total assets ratio. Moreover, the median of several years could give better estimates than using the data of only one year, when using cross-sectional data. Furthermore, analyzing the performance of ESG companies from risk perspective is important, such as the study of Otaify (2021). Finally, Tobin's Q ratio could also be measured based on different formulas, and the average balance sheet accounts could be used when calculating ROE and ROA ratios.

10. References

Abd ElBar, A. H., Gohr, K. M., & Mohamed, W. M. (2017). The Impact of The Disclosure of Social Responsibility in the Corporate's Reports on the Stock Prices of Companies Listed in the Egyptian Security Market: An Applied Study. *Journal of Environmental Science,* Ain Shams University, *39*(3), 369-389. **In Arabic**.

Abdelmalak, D. (2024). The Effect of ESG on Indices' and Firms' Performance. A Global and an Egyptian Context. *Master Thesis in Finance*. American University in Cairo (AUC), Egypt, 1-67.

Abdullah, A. A. (2022). The Impact of Sustainability Committee Characteristics on Corporate Sustainability Performance: Evidence from the FTSE 150 Non-Financial Companies. *PhD Thesis*, University of Wolverhampton, UK, 1–416.

Aboud, A., & Diab, A. (2018). The Impact of Social, Environmental and Corporate Governance Disclosures on Firm Value: Evidence from Egypt. *Journal of Accounting in Emerging Economies*, *8*(4), 442–458. https://doi.org/10.1108/JAEE-08-2017-0079.

Aboud, A., & Diab, A. (2019). The Financial and Market Consequences of Environmental, Social and Governance Ratings: The Implications of Recent Political Volatility in Egypt. *Sustainability Accounting, Management and Policy Journal*, *10*(3), 498–520. https://doi.org/10.1108/SAMPJ-06-2018-0167

Ahlklo, YRR., & Lind, C. (2019). E, S or G? A study of ESG score and financial performance. *Master Thesis in Industrial Management*. Stockholm, Sweden, 1–64.

Algebaly, Esam Aldin Mohamed Aly. (2019). The Role of Economic Value Added (EVA) and Cash Flow Ratios in Predicting Financial Health in Companies Listed on the Egyptian Exchange (EGX), *Commerce and Finance,* 3, 145-193. **In Arabic**.

Algebaly, Esam-Aldin M. (2022). Testing the Validity of the Unconditional and Conditional CAPM on the Egyptian Stock Market Using Panel Data Analysis. *Industrial Engineering & Management Systems, 21*(3), 419-431. DOI: https://doi.org/10.7232/iems.2022.21.3.419.

Asteriou, D. and Hall, S.G. (2007), *Applied Econometrics: A Modern Approach*, 2nd ed, Palgrave Macmillan, New York.

Aydoğmuş, M., Gülay, G., & Ergun, K. (2022). Impact of ESG Performance on Firm Value and Profitability. *Borsa Istanbul Review*, *22*, S119–S127. https://doi.org/10.1016/j.bir.2022.11.006.

Bakheet, M., Amer, M., & Al-Kayal, E. The Impact of the Components of the Egyptian Sustainable Development Index on the Financial Performance of Companies. Alexandria *Journal of Accounting Research*, *5*(1, 1367–1400. **In Arabic.** https://doi.org/10.21608/aljalexu.2021.163083.

Barbosa, A. D. S., Cristina, M., Crispim, B., Bueno, L., Morioka, S. N., & Souza, V. F. De. (2023). *corporate sustainability performance*. 1–18. https://doi.org/10.1057/s41599-023-01919-0.

Brooks, C. and Wichmann, R. (2019), *EViews Guide to Accompany Introductory econometrics for finance*, 4thed., The ICMA Centre, Henley Business School, University of Reading, Reading, UK.

Chininga, E. (2022). ESG Ratings and Financial Performance: A Case of JSE Listed Firms. *Master Thesis*. University of Cape Town, South Africa, 1-57.

Davidson, I., & Lededakis. (1998). The Relationship between Stock Returns and Tobin's q: Tobin's q Effect. *Financial Options Research Centre*, University of Warwich, UK, 1-29.

De Castro Sobrosa Neto, R., De Lima, C. R. M., Bazil, D. G., De Oliveira Veras, M., & De Andrade Guerra, J. B. S. O. (2020). Sustainable Development and Corporate Financial Performance: A Study based on the Brazilian Corporate Sustainability Index (ISE). *Sustainable Development*, *28*(4), 960–977. https://doi.org/10.1002/sd.2049.

Dincă, M. S., Vezeteu, C. D., & Dincă, D. (2022). The Relationship between ESG and Firm Value. Case Study of the Automotive Industry. *Frontiers in Environmental Science*, *10*(December), 1–10. https://doi.org/10.3389/fenvs.2022.1059906.

EL-Hindawy, M., Shousha, A., & Rady, A. (2021). Corporate Governance, Environmental and Social Responsibility and Firm Performance: Evidence from Egypt. *Scientific Journal for Financial and Commercial Studies and Researches (SJFCSR),* Faculty of Commerce, Damietta University, *2*(1), 455–526. https://doi.org/10.21608/cfdj.2020.129341.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and Financial Performance: Aggregated Evidence from More Than 2000 Empirical Studies. *Journal of Sustainable Finance and Investment*, *5*(4), 210–233. https://doi.org/10.1080/20430795.2015.1118917

Fu, T., & Li, J. (2023). An Empirical Analysis of the Impact of ESG on Financial Performance: The Moderating Role of Digital Transformation. *Frontiers in Environmental Science*, *11*(August), 1–11. https://doi.org/10.3389/fenvs.2023.1256052.

Fu, L., Singhal., R., & Parkash, M. (2016). Tobin's q Ratio and Firm Performance. *International Research Journal of Applied Finance, VII*(4), 1-10.

Gujarati, D. (2003). *Basic econometrics*, (4th ed.). Singapore: McGraw-Hill/Irwin.

Hagéus, T., & Nyhrén, M. (2021). *Determining the impact of ESG metrics on the financial performance of public Nordic companies*. *Master Thesis*. Stockholm, Sweden, 1–47.

Hörnmark, P. (2015). Responsible Investments: Should Investors Incorporate ESG Principles When Investing in Emerging Markets? With Descriptions from Sub-Saharan Africa. *Master Thesis in Economics,* Jönköping University, Sweden1-45.

Iqbal, N., Ahmad, N., Basheer, N. A., & Nadeem, M. (2012). Impact of Corporate Social Responsibility on Financial Performance of Corporations: Evidence from Pakistan. *International Journal of Learning and Development*, *2*(6), 107. https://doi.org/10.5296/ijld.v2i6.2717.

Karlsson, T., & Sparring,C. (2023). Modelling a Relationship between ESG Metrics and Financial Performance for Nordic Publicly- listed Companies. *Master Thesis*. Stockholm, Sweden, 1–25.

Kulakova, I. (2018). The impact of Environmental, Social and Corporate Governance (ESG) practices on the financial performance of companies in emerging and frontier markets. *Master Thesis*. Stockholm, Sweden, 1–50.

Muzanya, S. (2022). ESG and Corporate Financial Performance: Evidence from JSE Listed Firms. *Master Thesis*, University of Cape Town, South Africa, 1-59. *http://hdl.handle.net/11427/37587*.

Otaify, M. (2021). Environmental, Social, and Governance (ESG) Investing Risk and Return Analysis of Egyptian Sustainable Equity Index. *Journal of Financial and Commercial Studies,* Beni Suef University, Faculty of Commerce, *31*(1), 1–23. https://doi.org/10.21608/mosj.2021.173333.

Shaban, M. (2019). The Effect of Sustainability Disclosure on the Firm Value: An applied Study on S&P-EGX-ESG Listed Companies. *Journal of Accounting Research*, Tanta University, Faculty of Commerce, 1, 37-80. **In Arabic**. https://doi.org/10.21608/abj.2019.147380.

Whelan, Tensie; Atz, Ulrich; Clark, Casey. (2021). ESG and Financial Performance: Uncovering the Relationship by Aggregating Evidence from 1.000 Plus Studies Published between 2015-2020. *NYU Stern Center for Sustainable Business.*

Zakariaee, M. (2023). The Effect of Environmental, Social, Governance (ESG) on Cost of Equity Capital (COEC): Evidence from Finnish Listed Companies. *Master Thesis,* University of Oulu, Finland, 1-93.

Zaz, H. (2021). The Effects of Corporate Governance on Firm Performance: Evidence from Finnish Listed Companies. *Master Thesis*, University of Oulu, Finland, 1-66.

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11.Appendices1: Appendix 1 Sample Companies employed in the Study

No.	Company Name	RIC	Included in the ESG Index in 2023?	Used in EVA metric?
Panel (A): Sample Companies Included in the ESG Index at Least Once			
1	Abou Kir Fertilizers	ABUK.CA	**Yes**	No
2	Abu Dhabi Islamic Bank - Egypt	ADIB.CA	No	**Yes**
3	Alexandria Containers & Good	ALCN.CA	No	No
4	Amer Group Holding	AMER.CA	No	**Yes**
5	Arab Moltaka Investments	AMIA.CA	No	No
6	Alexandria Mineral Oils Company	AMOC.CA	No	No
7	Arab Polvara Spinning & Weaving Co.	APSW.CA	No	No
8	Arabian Cement Company	ARCC.CA	No	**Yes**
9	Asek Company for Mining - Ascom	ASCM.CA	**Yes**	**Yes**
10	GB Auto	GBCO.CA (AUTO.CA)	**Yes**	**Yes**
11	Citadel Capital Corp (QALA For Financial Investments)	CCAP.CA	No	**Yes**
12	CI Capital Holding	CICH.CA	No	No
13	Credit Agricole Egypt	CIEB.CA	**Yes**	**Yes**
14	Cairo For Investment and Real Estate Development	CIRA.CA	**Yes**	No
15	Cleopatra Hospital Company	CLHO.CA	**Yes**	No
16	Commercial International Bank (Egypt)	COMI.CA	**Yes**	**Yes**
17	Canal Shipping Agencies	CSAG.CA	No	No
18	Development and Engineering Consultancies	DAPH.CA	No	No
19	Delta Construction & Rebuilding	DCRC.CA	No	**Yes**
20	Arabian Food Industries	DOMT.CA	No	**Yes**
21	Dice Sport & Casual Wear	DSCW.CA	**Yes**	No
22	Eastern Company	EAST.CA	No	No
23	El Ezz Ceramics & Porcelain	ECAP.CA	No	**Yes**
24	Egyptian Financial & Industrial	EFIC.CA	No	**Yes**

25	Edita Food Industries S.A.E	EFID.CA	**Yes**	**Yes**
26	Egypt Gas	EGAS.CA	No	**Yes**
27	Egyptian Chemical Industries (KIMA)	EGCH.CA	No	**Yes**
28	Egyptian For Tourism Resorts	EGTS.CA	No	**Yes**
29	Egyptian Kuwaiti Holding	EKHO.CA	**Yes**	**Yes**
30	Emaar Misr for Development	EMFD.CA	No	**Yes**
31	Ezz Steel	ESRS.CA	No	**Yes**
32	Telecom Egypt	ETEL.CA	**Yes**	**Yes**
33	Egyptian Transport (EGYTRANS)	ETRS.CA	**Yes**	**Yes**
34	Fawry For Banking Technology and Electronic Payment	FWRY.CA	No	No
35	Grand Investment Capital	GRCA.CA	No	**Yes**
36	Global Telecom Holding	GTHE.CA	No	**Yes**
37	Housing & Development Bank	HDBK.CA	**Yes**	**Yes**
38	Heliopolis Housing	HELI.CA	No	**Yes**
39	Egyptian Financial Group-Hermes Holding Company	HRHO.CA	**Yes**	**Yes**
40	EL Ezz Aldekhela Steel - Alexandria	IRAX.CA	No	**Yes**
41	Egyptian Iron & Steel	IRON.CA	No	**Yes**
42	Ismailia Misr Poultry Co.	ISMA.CA	No	**Yes**
43	Ibnsina Pharma	ISPH.CA	**Yes**	No
44	Juhayna Food Industries	JUFO.CA	**Yes**	**Yes**
45	Lecico Egypt	LCSW.CA	**Yes**	**Yes**
46	Misr Cement (Qena)	MCQE.CA	No	**Yes**
47	Misr Fertilizers Production Co. Mopco	MFPC.CA	No	**Yes**
48	Misr Chemical Industries	MICH.CA	No	**Yes**
49	Medinet Nasr Housing	MNHD.CA	No	**Yes**
50	Maridive & Oil Services	MOIL.CA	No	No
51	Naeem Holding	NAHO.CA	No	**Yes**
52	Six of October Development & Investment	OCDI.CA	No	**Yes**
53	Orascom Development Holdings EDR	ODHR.CA	No	No
54	Orascom Investment Holding SAE	OIH.CA	No	No
55	Obour Land For Food Industries	OLFI.CA	No	No
56	Orascom Hotels And Development	ORHD.CA	No	**Yes**
57	Orascom Telecom Holding (OT)	ORTE.CA	No	**Yes**
58	Oriental Weavers	ORWE.CA	**Yes**	**Yes**
59	Paint & Basic Resources Industries (PACHIN)	PACH.CA	No	**Yes**
60	Egyptian International Pharmaceuticals (EIPICO)	PHAR.CA	**Yes**	**Yes**
61	Palm Hills Development Company	PHDC.CA	No	**Yes**
62	Pioneers Holding	PIOH.CA	No	**Yes**

63	Porto Group Holding	PORT.CA	No	**Yes**
64	Cairo Poultry	POUL.CA	No	**Yes**
65	Prime Holding	PRMH.CA	No	**Yes**
66	Qatar National Bank Al Ahli (National Societe Generale Bank)	QNBA.CA (NSGB.CA)	**Yes**	**Yes**
67	Raya Contact Center S.A.E	RACC.CA	**Yes**	**Yes**
68	Raya Holding for Technology And Communications	RAYA.CA	**Yes**	**Yes**
69	Tenth of Ramadan Pharmaceutical Industries & Diagnostic-Rameda	RMDA.CA	**Yes**	No
70	Al Baraka Bank Egypt	SAUD.CA	No	**Yes**
71	Sidi Kerir Petro Basic Resources	SKPC.CA	**Yes**	**Yes**
72	Suez Cement	SUCE.CA	No	**Yes**
73	Delta Sugar	SUGR.CA	No	**Yes**
74	South Valley Cement	SVCE.CA	No	**Yes**
75	Elswedy Cables	SWDY.CA	**Yes**	**Yes**
76	T M G Holding	TMGH.CA	**Yes**	**Yes**
77	United Arab Shipping	UASG.CA	No	**Yes**
78	Upper Egypt Contracting	UEGC.CA	No	**Yes**
79	Universal Unipack	UNIP.CA	No	**Yes**
80	United Housing and Development Co.	UNIT.CA	No	**Yes**

Panel (B): Sample companies Included in the EGX100 Index in 2023 but Not Included in the ESG Index

No.	Company Name	RIC	Used in EVA Metric?
1	AJWA for Food Industries company Egypt	AJWA.CA	**Yes**
2	Alexandria Spinning & Weaving (SPINALEX)	SPIN.CA	**Yes**
3	Arab Cotton Ginning	ACGC.CA	**Yes**
4	Arabia Investments Holding	AIH.CA	No
5	B Investments Holding	BINV.CA	No
6	Beltone Financial Holding	BTFH.CA	**Yes**
7	Egypt Aluminum	EGAL.CA	**Yes**
8	Egyptian Media Production City	MPRC.CA	**Yes**
9	Egyptians Housing Development & Reconstruction	EHDR.CA	**Yes**
10	El Kahera Housing	ELKA.CA	**Yes**
11	El Nasr Clothes & Textiles (Kabo)	KABO.CA	**Yes**
12	El Shams Housing & Urbanization	ELSH.CA	**Yes**
13	Export Development Bank of Egypt (EDBE)	EXPA.CA	**Yes**
14	Faisal Islamic Bank of Egypt	FAIT.CA	**Yes**
15	Gen CO for Ceramics & Porcel	PRCL.CA	No

16	Giza General Contracting	GGCC.CA	**Yes**
17	Ismailia Development and Real Estate Co	IDRE.CA	**Yes**
18	MM Group For Industry And International Trade	MTIE.CA	No
19	Mena Touristic & Real Estate Investment	MENA.CA	**Yes**
20	Misr Hotels	MHOT.CA	**Yes**
21	Misr National Steel - Ataqa	ATQA.CA	**Yes**
22	Nasr Company for Civil Works	NCCW.CA	**Yes**
23	ODIN Investments	ODIN.CA	No
24	Rakta Paper Manufacturing	RAKT.CA	No
25	Sharm Dreams Co. for Tourism Investment	SDTI.CA	**Yes**
26	The Arab Ceramic CO.- Ceramica Remas	CERA.CA	No
27	The Egyptian Company for Construction Development-Lift Slab	EDBM.CA	**Yes**
28	The Egyptian Modern Education Systems	MOED.CA	No
29	Zahraa Maadi Investment & Development	ZMID.CA	**Yes**
30	Kafr El Zayat Pesticides	KZPC.CA	No
31	Reacap Financial Investments	REAC.CA	No
32	The Arab Dairy Products Co. Arab Dairy - Panda	ADPC.CA	**Yes**
33	Cairo Oils & Soap	COSG.CA	**Yes**
34	Egyptian Gulf Bank	EGBE.CA	**Yes**
35	Glaxo Smith Kline	BIOC.CA	**Yes**
36	Medical Packaging Company	MEPA.CA	**Yes**

Appendix 2 The Results of Panel Data Regression Models for Firms Included in the S&P/EGX ESG Index during the 2010-2023 Period after Excluding Financial Sector.

Independent and Control Variables	Dependent Variable				
	EVA	ROE	TOBINQ	ROA	ROCE
SCORE	-0.048	-0.436	0.002	0.069	0.110
	(0.808)	(0.290)	(0.800)	(0.341)	(0.332)
LEV	0.002	-0.436	0.026	-0.200	-0192
	(0.594)	(0.290)	(0.000)***	(0.000)***	(0.004)***
LNTA	3.794	-1.098	-0.074	0.391	0.764
	(0.441)	(0.764)	(0.259)	(0.485)	(0.388)
χ^2 Statistic (P. Value)	15.237	7.911	20.982	1.404	1.391
	(0.002)***	(0.048)**	(0.000)***	(0.705)	(0.708)
Method	Cross-Section Fixed-Effects	Cross-Section Fixed-Effects	Cross-Section Fixed-Effects	Random-Effects	Random-Effects
N	116	197	197	197	197

Notes: This table shows the coefficients of variables, with P. values in parentheses. χ^2 Statistic is obtained from Hausman test and is used to choose the model the preferred method. *** and ** indicate significance at the 1% and 5%, respectively. Variables are defined in Table (1).

Appendix 3 The Results of Cross-Section OLS Regression Models for Firms Included in the S&P/EGX ESG Index during the 2010-2023 Period after Excluding Financial Sector Based on ESG Frequency.

Independent and Control Variables	Dependent Variable				
	EVA	ROE	TOBINQ	ROA	ROCE
FREQ	0.247	0.022	0.011	0.415	0.548
	(0.014)**	(0.980)	(0.826)	(0.313)	(0.500)
LEV	-0.041	0.017	-0.020	-0.203	0.021
	(0.011)**	(0.697)	(0.028)	(0.000)***	(0.612)
LNTA	0.197	0.369	0.080	0.600	1.714
	(0.103)	(0.718)	(0.159)	(0.221)	(0.082)*
R-Squared	0.761	0.005	0.120	0.740	0.163
F-Statistic (P. Value)	10.599	0.072	2.191	44.552	2.186
	(0.002)***	(0.975)	(0.101)	(0.000)***	(0.086)*
N	38	52	52	52	52

Notes: This table shows the coefficients of variables, with P. values in parentheses. χ^2 Statistic is obtained from Hausman test and is used to choose the model the preferred method. $^{***, **, *}$ indicate significance at the 1%, 5%, and 10%, respectively. Variables are defined in Table (2).

Appendix 4 The Results of Cross-Section OLS Regression Models for Firms Included in the S&P/EGX ESG Index during the 2010-2023 Period after Excluding Financial Sector Using ESG Dummy Variable.

Independent & Control Variables	Dependent Variable				
	EVA	ROE	TOBINQ	ROA	ROCE
ESGD	-1.058	11.636	0.832	6.489	9.844
	(0.328)	(0.067)*	(0.044)**	(0.032)**	(0.130)
LEV	-0.047	0.103	-0.001	-0.168	-0.141
	(0.307)	(0.523)	(0.954)	(0.012)**	(0.314)
LNTA	1.100	2.344	0.016	1.562	2.931
	(0.109)	(0.138)	(0.872)	(0.042)**	(0.078)*
R-Squared	0.373	0.266	0.154	0.397	0.242
F-Statistic	1.589	3.874	2.068	7.451	3.612
(P. Value)	(0.267)	(0.018)**	(0.123)	(0.001)***	(0.023)**
N	38	52	52	52	52

Notes: This table shows the coefficients of variables, with P. values in parentheses. $\chi 2$ Statistic is obtained from Hausman test and is used to choose the model the preferred method. ***, **, * indicate significance at the 1%, 5%, and 10%, respectively. Variables are defined in Table (2).

Appendix 5 The Results of Independent Samples T-Test and Mann-Whitney U Test for ESG Versus Non-ESG Firms in 2023 after Excluding Financial Sector.

ESG Group (1) Vs. Non-ESG Group (0)	Financial Performance Metric				
	EVA	ROE	TOBINQ	ROA	ROCE
Panel A: Independent Samples T-Test Results					
Mean Difference	-7726	16.086	0.864	8.724	14.588
T Statistic	-0.802	2.888	2.232	3.016	2.508
(P. Value)	(0.430)	(0.007)***	(0.039)**	(0.005)***	(0.017)**
Panel B: Mann-Whitney U Test					
ESG Mean Rank	15.18	23.80	23.44	25.38	24.56
Non-ESG Mean Rank	14.06	14.71	16.64	15.23	15.82
Z Statistic	-0.353	-2.551	-1.863	-2.779	-2.395
(P. Value)	(0.724)	(0.011)**	(0.063)*	(0.005)***	(0.017)**
N for ESG Group	11	16	16	16	16
N for Non-ESG Group	17	22	22	22	22

Notes: This table shows the coefficients of variables, with P. values in parentheses. $\chi 2$ Statistic is obtained from Hausman test and is used to choose the model the preferred method. ***, **, * indicate significance at the 1%, 5%, and 10%, respectively. Mann-Whitney should be used in TOBINQ variable; because the variable is not normally distributed in both categories based on Shapiro-Wilk Test for normality and in the non-ESG category based on Kolmogrov-Smirnov test. Variables are defined in Table (2).