EVALUATING THE IMPACT OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE FACTORS ON FIRM PERFORMANCE AND VALUE: AN EMPIRICAL ANALYSIS OF SELECTED AUSTRALIAN CORPORATIONS

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Abstract

In the contemporary business landscape, the environmental, social, and governance (ESG) has gained prominence, considering their role in enhancing the corporate reputation through their ethical and sustainable operations. The primary purpose of the study was to investigate the impact of ESG on the financial performance (FP) and value of the companies through an empirical research methodology (Ahmad et al., 2021). The sample size consisted of 44 Australian enterprises selected through a purposive sampling technique for five fiscal years, i.e., 2018 to 2022. The performance and value were measured by return on assets (*ROA*) and Tobin's Q, whereas the size of the companies (*SIZE*) was considered as a moderator and leverage (*LEVERAGE*) was the control variable. The fixed-effects modelling indicated that ESG did not influence the ROA but had an adverse effect on Tobin's Q. However, while the moderation of the ESG metric by SIZE provided the same results, the individual ESG metrics had a positive impact on the value (Whelan et al., 2021). Practically, the ESG plays a crucial role in influencing the market value of the companies but overdoing might not create a positive mindset in the market, and the share prices might decline.

Keywords: ESG, Firm Performance, Firm Value, Purposive Sampling Technique, Fixed-Effects Modelling

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1. INTRODUCTION

The current developments around the ethics and sustainability of organisations have made the assimilation of the environmental, social, and governance (ESG) elements into the business more critical. The investors, in addition to other stakeholder groups, in recent times have been attracted to enterprises that are sustainable and indicate an ethical approach in their overall corporate conduct. Furthermore, due to the increasing relevance of global issues such as climate change, corporate scandals and societal disparities, there is an amplifying need for business entities to show a considerable amount of

accountability, which extends beyond the underlying profit generation.

Initially, the business entities tend to have a significant focus on increasing the value of the shareholders and providing returns. However, due to globalisation and the economies becoming intertwined, there has been a significant transformation in the societal role of businesses. As per Li et al. (2021), business entities are not only the economic pillars but also tend to have a major contribution to society with roles that are beyond the direct stakeholders. In case of the developed nations such as Australia, the transition tends to be comparatively more pronounced, whereby there has been a heightened focus on social responsibility and accountability. The findings in the current literature have provided significant evidence in case of the developed nations such as the UK (Ahmad et al., 2021); the USA (Al-Issa et al., 2022); and Italy (Clementino & Perkins, 2021).

There are several factors which provide a key rationale behind selecting Australia as the subject for the current study. Firstly, the developed economy, in addition to the complex financial market tends to offer a solid foundation for the assessment of the outcomes of ESG compliance. Secondly, as stated by Wynn-Pope et al. (2023), there has been a surge in the ESG-centric regulations in addition to the market shifts which tend to reshape the ESG-related risks and the focal points for the entities that tend to function within the country. Thirdly, the evolving landscape also underscores the importance as well as scrutiny of ESG considerations in the business environment. Furthermore, the report by PricewaterhouseCoopers (PWC, 2022) highlighted that the major areas for the entities in Australia to monitor include the global shift towards coordinating capital markets, which are aligned with the sustainability objectives through a standardised set of rules, increased emphasis on natural capital and biodiversity, thereby acknowledging the prospects and risks. Additionally, there is an increased concentration on scope three emissions, which is under the purview of climate-centric reporting, net-zero objectives backed by science, and regulators in Australia focused rigorously on the assessment of ESG vulnerabilities and qualifications, thereby addressing the dynamics of ESG. The regulatory landscape of the nation whereby the focus is disclosure and clarity tends to guarantee that the businesses should furnish comprehensive and ESG-centric data, thereby facilitating effective data scrutiny and gathering. Lastly, the escalation in the awareness of ethical corporate conduct and sustainability in the country has pushed Australian entities towards prioritising ESG, thereby making it an appropriate setting for the current inquiry.

However, despite the varied industries, the esteemed focus of the regulators on the ESG aspect, and the increased business performance over the years, there is a missing context regarding the role of ESG on corporate performance and valuations. This prompts the inquiry: is there a genuine association between ESG standards and enhanced financial results or company valuation in Australia? And if this connection exists, how profound is it? Addressing this gap is crucial, not only for academic discourse but also for investors, stakeholders, and policymakers who rely on empirical data to make informed decisions.

The significance of this study is manifold. For investors, understanding the relationship between ESG factors and firm performance can guide investment decisions, potentially leading to better returns and reduced risks. ESG provides returns in terms of profitability and value (Aydoğmuş et al., 2022) and found a positive impact on individual ESG scores. For corporations, insights from this study can inform strategic decisions, helping them align their ESG initiatives with financial objectives. Policymakers can benefit by understanding the broader economic implications of ESG adherence, thereby shaping regulations that promote sustainable and responsible business practices. Furthermore, the findings can contribute to the global discourse on sustainable corporate governance, providing empirical evidence from the Australian perspective.

The primary aim of this research is to empirically analyse the influence of ESG criteria on key performance indicators, such as return on assets (ROA), and market valuation metrics, like Tobin's Q ratios, within the context of Australian corporations.

Objectives of this study are as follows:

- to provide empirical evidence ascertaining if adherence to ESG criteria leads to superior financial performance (FP) in Australian corporations;
- to discern whether ESG compliance has a demonstrable impact on firm valuation in the Australian corporate landscape.

RQ1: Is there an impact between ESG criteria adherence and FP, as measured by ROA, among Australian corporations?

RQ2: Does ESG compliance influence firm valuation, as indicated by Tobin's Q ratios, in the Australian context?

Therefore, as the global corporate sector grapples with the challenges and opportunities presented by ESG factors, this study seeks to shed light on their tangible impact on firm performance and value, specifically within the Australian milieu. The outcomes of this research are anticipated to offer valuable insights for a wide range of stakeholders, from investors to policymakers, and contribute significantly to the broader academic discourse on sustainable corporate governance.

The structure of the paper is as follows. Section 2 reviews the literature and provides the research gap. Section 3 provides the research methodology and the empirical model. Section 4 presents the results of the statistical analysis. Section 5 discusses the results and connects them to the literature. Finally, Section 6 concludes the research and provides direction for future research.

2. LITERATURE REVIEW

2.1. Empirical evidence from past studies

Despite significant studies being undertaken in the concerned area and the majority of them found a positive ESG-CFP (corporate financial performance) relation, there is a certain amount of ambiguity in the findings. As per Friede et al. (2015), such mixed results or ambiguity are due to the difference in the durability and measurement of the metrics, and

thus, the debate tends to be unending. The past findings have been segregated into two aspects, thereby finding the causal relationship of ESG with the firm performance and firm value metrics.

2.2. ESG and firm performance

Velte (2017), through a study on German companies, found a significant and positive influence of ESG performance on the ROA, in addition to the fact that governance tends to be the most important variable. This implies that effective governance tends to have a positive and significant influence on the performance of the companies, as compared to their environmental and societal contributions. Ahmad et al. (2021), in a study on FTSE350 companies, found that the impact of the ESG variable as well as the individual metrics have a significant and positive impact on the earnings per share of the company. Companies with sustainability measures often see superior financial results, attributed to enhanced risk oversight and innovation, as per Alsayegh et al. (2020). This indicates that beyond ethical considerations, there are tangible financial benefits to sustainability, driven by better risk strategies and innovative approaches. Bruna et al. (2022), through an examination of 350 publicly traded European firms considering five years (2014–2019) validate the non-linear nature of the association, underscoring its responsiveness to ESG metrics and organizational scale considerations. Additionally, the analysis indicates a notable and positive influence of ESG achievements on fiscal outcomes, particularly in the presence of a compulsory non-financial reporting framework, similar to that of Aybars et al. (2019) and Aydoğmuş et al. (2022) who also found a positive impact of individual ESG scores on performance. The impact is similar to the developing countries, as found by Tarmuji et al. (2016), in the case of Singapore and Malaysia, whereby the influence of ESG on performance is positive. However, prioritizing a low-carbon trajectory enhances financial outcomes, spotlighting the environmental component's dominance in the ESG framework, according to Whelan et al. (2021). This suggests that while all ESG components are vital, the environmental aspect, especially carbon management, can be a significant driver of financial success. Peng and Isa (2020), through a study on 461 Shariah-compliant firms, found that ESG and its individual dimensions tend to have a positive impact on the performance of the companies. Furthermore, the findings implied that ESG screenings tend to increase the performance of the companies and subsequently, there is an enhanced transparency. However, argued that merely revealing ESG practices doesn't inherently boost financial results, as pointed out by Whelan et al. (2021). Transparency in ESG practices is essential, but it's the genuine implementation and integration of these practices that likely lead to tangible financial benefits. There are also scenarios where the ESG value of the firm can have a negative impact on the firm performance. According to Wu et al. (2023), the presence of inefficient corporate governance within the firm can lead to controversies. These create a negative image of the firms and cannot be moderated by the ESG markers. As a result, there is a negative impact on the firm performance despite having a high ESG. Furthermore, the holding pattern of an enterprise also plays an integral role in determining the impact that ESG scores have on the firm performance. A study by Yu and Xiao (2022) has found that the presence of state-owned enterprises has shown a positive impact of ESG on firm performance rather than non-state-owned enterprises in China. This is because state-owned regulations have a greater regulatory hold that controls the operations of the firm rather than non-state-owned enterprises. This leads to situations where the ESG ratings have led to a negative impact on firm performance.

On the basis of the findings from the past studies, the following is the first testable hypothesis of the study:

H1: There is a significant impact of ESG on the FP of the companies, moderated by the size of the companies.

2.3. ESG and firm value

A large number of scholars found a positive and significant influence of ESG on the value of the companies, measured using a natural log of market capitalisation (Chouaibi et al., 2023). This implies that several individual and institutional investors tend to prefer investments in those companies that have a commitment towards different stakeholders through community impact. Therefore, based on their ESG-driven investment attitude, the share prices increase, thereby leading to an increase in market capitalisation. However, there are studies by Velte (2017) have found that there is no influence of the ESG performance of the companies on the value of the firms, measured by Tobin's Q. This could be because the shareholders do not consider the importance of a firm focusing on ESG and are more focused on higher returns, which may not be driven by ESG performance. Investment strategies incorporating ESG outperform those that simply exclude negative factors, according to Whelan et al. (2021). This implies that investors might achieve better returns by proactively integrating ESG criteria rather than merely avoiding certain negative sectors or companies, highlighting the proactive value of ESG (Chang & Lee, 2022; Yu et al., 2018). Landi and Sciarelli (2019) investigated the influence of ESG practices on abnormal returns and found that despite an increasing interest in managers towards corporate social responsibility (CSR) in the past decade, in addition to conducting an assessment of ESG, the impact was adverse and significant. The findings of the study implied that ethics is not a key tool that could be used by companies to raise funds, irrespective of the fact that there has been an increase in socially responsible investment. Additionally, to some extent, it could be ascertained that despite showing stakeholder-centric behaviour through their CSR approach, the companies are unlikely to gain a premium price. Mardini (2022) and Agarwal et al. (2022) found a positive impact of individual ESG scores on the value of the companies. Whelan et al. (2021) found that the financial benefits of ESG practices intensify over extended periods. This suggests that the true financial advantages of adopting ESG principles may not be immediately evident but become clearer and more significant as

time progresses, emphasizing the importance of long-term commitment to ESG practices. The findings by Peng and Isa (2020), furthermore implied that in situations where the companies undertake an enhancement of ethical, responsible, and transparent practices, there is a scope for potential entrants. Subsequently, the findings by Whelan et al. (2021) underpinned that in case of times of crises or turbulence, the companies which have invested in ESG-based measures tend to have a safeguard against potential losses. Therefore, such implications provide significant evidence regarding the stability and resilience of ESG investments, thereby suggesting that it could be a strategic choice for investors, especially during economic uncertainties. On the other hand, it could be observed that despite ESG being an important moderator, corporate controversies can lead to a negative firm value. A study by Nirino et al. (2021) has revealed that ESG principles fail to mitigate the negative effect of exogenous components. The study which used 356 European-listed companies found that despite being an integral component, there are other factors which also impact the firm value. As a result, the presence of such exogenous forces can often override the impact that ESG has on the firm value as a moderating factor.

Therefore, based on the findings, the following is another hypothesis which would be tested through the empirical research method:

H2: There is a significant impact of ESG on the value of the companies, moderated by the size of the companies.

2.4. Theoretical underpinnings

2.4.1. Stakeholder theory

The major underlying argument provided by the stakeholder theory is that companies must focus on the interests of the different stakeholder groups, rather than only the business owners or the shareholders. In the ESG context, it is imperative that different stakeholders have different interests, making it a concern for the companies. The findings by Li et al. (2021) emphasized that those companies which tend to address the ESG-driven expectations of the shareholders are more likely to outperform their counterparts who are not accountable as such. The environmental and social aspects directly influence the well-being of the different groups. For instance, if the companies tend to undertake sustainable practices, there is a reduction in their ecological footprint and the labour-centric practices could provide a positive view of them in the business landscape. On the contrary, Signori et al. (2021) indicated that there are times when the ESG ratings might miss the perspective of the allocation and generation of values. Therefore, being firmly rooted in the stakeholder theory, the companies are viewed as an entity which tends to create value with the stakeholders. Lastly, the unified backing and the involvement of different stakeholder groups tend to address the concerns of effective management and value generation. Thus, through addressing the ESG-related concerns, the firms tend to foster additional trust, loyalty, and cooperation among the different stakeholder groups. Subsequently, the performance and long-term value would be sustained.

2.4.2. Legitimacy theory

The legitimacy theory is of the opinion that companies focus on operating within the boundaries and norms which are deemed to be acceptable by society. The findings by Lokuwaduge and Heenetigala (2017) indicated that being a part of the broader society, it is necessary for them to take accountability for their operations and actions. Therefore, the entities strive to achieve and maintain legitimacy, thereby ensuring that the actions are aligned with the values and societal expectations. As a result, the societal framework tends to grant the companies a right to utilise the resources and employ individuals who are also a part of the society. On the contrary, if the society feels that an entity has violated any social agreement, there could be a jeopardization of its existence. Thus, legitimacy theory tends to be a strategic asset which is critical for the sustainability of the organisation. The findings by Eliwa et al. (2021) indicated that companies being functional within standards and norms have a surety that they are in line with societal expectations. Thus, the adoption of environmental and social practices, in actions and disclosures tends to align them with the legitimacy idea. Additionally, the impression management aspect of the legitimacy theory tends to provide them with the scope to craft the disclosures in alignment with the stakeholders' perceptions. ESG, in this area, serves as the benchmark of societal expectations. Therefore, by adhering to the ESG standards, the companies tend to signal their commitment towards sustainable and responsible business practices, thereby enhancing their societal legitimacy. As a result, there are several tangible benefits, such as an increase in customer loyalty, reduced scrutiny, and improved access to capital. In conclusion, the ESG compliance by the companies might be viewed as a strategic move so that the business practices are aligned with the societal values ensuring continued social support and reducing the conflicts with different stakeholder groups.

2.4.3. Agency theory

The agency theory is one of the key corporate governance theories which delve into the conflict of interest between the shareholders and managers of the companies, thereby indicating the need for mechanisms which could align divergent interests. A study by Peng and Isa (2020) suggests that there are three intersections between ESG issues and employer issues. Firstly, there may be a threat that the managers might utilise the belongings of the organisation for personal gains, whereas secondly, the managers would possibly be conscious of ESG-associated investments and ventures and can forgo those that are financially feasible. Thirdly, the aspect of managerial opportunism indicates that the executives of the organizations would possibly channel the finances to ESG-driven initiatives, thereby providing a justification or compensating

for the below-par financial consequences. Tarmuji et al. (2016), on the other hand, indicated the role of effective corporate governance in ensuring that the FP is enhanced and the shareholders benefit. Apart from the fact that the agency expenses are reduced, there is also an enhancement of the resilience and longevity of the companies. Effective governance practices, such as ethical leadership, transparent reporting, and diversity on the board tend to bridge the gap between managerial actions and the interests of the shareholders. Lastly, an ESG-driven governance approach ensures that there are long-term implications that serve as a tool to align the short-term focus of the managers and the long-term interests of the shareholders, thereby promoting value creation. According to Eklund and Stern (2021), a firm makes investments accordingly as per the ESG protocols to determine the behavioural agency. The consideration of this behavioural agency theory here allows the firm to balance out the strategies of short-term performance and long-term goals.

2.5. Research gap

There is a plethora of literature studying the interplay between ESG, performance, and value of companies in the global context. For instance, the studies by Landi and Sciarelli (2019) and Ahmad et al. (2021) studied the impact of ESG on performance in the global context while Lokuwaduge and Heenetigala (2017) contributed to the Australian context which is one of the limited studies. However, the unique intricacies of the country related to the environmental, social, and economic tend to provide a necessary scope for detailed exploration. Furthermore, another gap is that the past studies provide a very static view, thereby providing insights for only a single point of time, i.e., a cross-sectional study. However, this study tends to address this gap by considering a recent and five-year timeline, thereby focusing on the latest insights and deciphering the empirical evidence in light of corporate strategies and societal value. Furthermore, while composite ESG scores are frequently employed, a deeper dive into the individual components of ESG to discern their distinct impacts remains less common. The methodologies adopted in the literature also show a pattern of uniformity, with many studies relying on similar analytical techniques, leaving room for diverse methodological approaches. This study, for instance, controls for the leverage which is a critical aspect of the ESG-FP nexus (Eliwa et al., 2021) and subsequently uses size as the moderator. Lastly, the predominant focus on financial implications often sidelines the invaluable perspectives of various stakeholders, from employees to local communities. Addressing these gaps, this study seeks to offer a comprehensive, contextually relevant perspective on the ESG and corporate performance interplay in Australia.

3. MATERIALS AND METHOD

3.1. Research design

The causal research is found to be the ideal design for the current study, considering the fact that it intends to identify the cause-and-effect relationship between the ESG and the performance and valuation metrics. One of the major reasons for employing this research design is that rather than providing an insight into the association between the ESG metrics, performance, and valuation, it would also explain the ways in which the ESG measures, either individually, or collectively tend to influence the explained variables. There is a scope to manipulate a variable, i.e., the factors of ESG and ascertain the impact on the other variables, namely value and performance. In case of the Australian companies, where ESG considerations tend to be prominent, an understanding of the causal relationship tends to be critical. There is proper information to the stakeholders, such as the policymakers and the investors related to the tangible benefits as well as the drawbacks associated with the adherence to the ESG by the companies. Subsequently, it guides the policy formulations as well as the strategic decisions. Therefore, the casual research design provides a rigour and in-depth scope to analyse the dynamics between the ESG factors and the corporate outcomes.

3.2. Data and samples

The current research focuses on a longitudinal timeline, i.e., 2018 to 2022 and subsequently uses the disclosed financial reports and other external sources to generate ESG scores of the companies. The Australian Securities Exchange (ASX) 200 index was chosen as the sampling frame and subsequently, purposive sampling was utilised to select the final set of companies (Chouaibi et al., 2023). The ASX 200 was chosen as it is a representative of the companies with the highest market capitalisation in Australia and subsequently lists a diverse set of business entities from different sectors and industries. However, the underlying parameter for selecting the companies was an ESG score of at least 50 in the financial year 2022. This would ensure that only those companies were made a part of the sample which had a considerable ESG score in the financial year ending 2022. This limited the list to 51 companies and subsequently, the banking companies had to be excluded, considering that their leverage is higher as compared to non-banking companies. Furthermore, on cleaning the data, 44 companies were left and subsequently, they comprised the final sample size.

The majority of the companies considered are from the mining industry and real estate industries, thereby indicating a potential bias. However, considering the ESG scenario in Australia, the majority of the ESG activities are undertaken by these companies in these sectors, mainly due to their impact on society and environmental resources.

3.3. Variables and proxies

3.3.1. Independent variables

ESG (LNESG): A composite score derived from a firm's performance in ESG criteria. This would be proxied by taking the natural log of the ESG score which has been available from the rating agencies.

E'Score (LNENV): Represents the environmental component of the ESG score, reflecting a firm's environmental practices and impacts. This would be proxied by taking the natural log of the environmental score (*ESCORE*) which has been available from the rating agencies.

S'Score (LNSOC): Represents the social component, capturing a firm's relationships with employees, suppliers, customers, and communities. This would be proxied by taking the natural log of the social score (*SSCORE*) which has been available from the rating agencies.

G'Score (LNGOV): Represents the governance component, indicating the quality of a firm's leadership, ethical practices, and shareholder rights. This would be proxied by taking the natural log of the governance score (*GSCORE*) which has been available from the rating agencies.

3.3.2. Dependent variables

ROA: ROA serves as a comprehensive metric that gauges a company's operational efficiency by assessing the profit generated relative to its assets. It encapsulates the effectiveness with which management utilizes the company's assets to produce earnings. Particularly useful for intra-industry comparisons, ROA neutralizes the effects of diverse capital structures, offering a clear lens into a firm's asset utilization and the capability of its management to leverage these assets towards profit generation.

Tobin's Q ratio (TOBIN'SQ): Tobin's Q contrasts the market value of a firm's assets with their replacement cost, providing insights into market perceptions of a company's growth potential and intangible assets. A Tobin's Q ratio exceeding one suggests that the market values the firm's assets higher than their replacement cost, indicating an inherent belief in the firm's future growth or other intangible benefits. This metric is not only pivotal in understanding a firm's growth opportunities but also aids in strategic decisions, especially in the realms of asset expansion, divestiture, and potential mergers and acquisitions.

3.3.3. Control variables

LEVERAGE: Represents the proportion of a firm's financing that comes from debt. Ahmad et al. (2021), empirically found a significant and adverse influence of leverage on both performance and value, and thus, it is necessary to control the leverage of the companies. It is proxied by the total debt to total assets ratio.

3.3.4. Moderating variables

SIZE (LNSIZE): Firm size can influence both ESG practices and FP. Ahmad et al. (2021) found a positive impact of size on FP and value. Measured using the natural logarithm of total assets, this variable will help control for size-related effects in the analysis.

3.4. Econometric model and analytical technique

The first set of benchmark models of the study would consider only the independent variables and the control variable as follows:

$$ROA_{i,t} = \beta_0 + \beta_1(LNESG_{i,t}) + \beta_2(LNENV_{i,t}) + \beta_3(LNSOC_{i,t}) + \beta_4(LNGOV_{i,t}) + \beta_5(LEVERAGE_{i,t}) + \varepsilon \quad (1)$$

$$TOBIN'SQ_{i,t} = \beta_0 + \beta_1(LNESG_{i,t}) + \beta_2(LNENV_{i,t}) + \beta_3(LNSOC_{i,t}) + \beta_4(LNGOV_{i,t}) + \beta_5(LEVERAGE_{i,t}) + \varepsilon \quad (2)$$

Subsequently, in order to test the moderating effect, the independent variables would be multiplied by the *SIZE* and subsequently, the model would be as follows:

$$ROA_{i,t} = \beta_0 + \beta_1(LNESG_{i,t} * LNSIZE_{i,t}) + \beta_2(LNENV_{i,t}) + \beta_3(LNSOC_{i,t}) + \beta_4(LNGOV_{i,t}) + \beta_5(LEVERAGE_{i,t}) + \varepsilon \quad (3)$$

$$TOBIN'SQ_{i,t} = \beta_0 + \beta_1(LNESG_{i,t} * LNSIZE_{i,t}) + \beta_2(LNENV_{i,t}) + \beta_3(LNSOC_{i,t}) + \beta_4(LNGOV_{i,t}) + \beta_5(LEVERAGE_{i,t}) + \varepsilon \quad (4)$$

As an alternative methodology, the study could consider a machine learning model using neural networks to find the impact of ESG on firm value and firm performance. According to Bhat et al. (2023), the usage of such machine learning models along with neural networks allows the study to build a predictive model. This can be extremely helpful for the firms to understand and set the trajectory for the long-term ESG goals. This particular study aims to find the causal relationship between ESG ratings and firm performance and value. As a result, the consideration of a multivariate regression is optimal here.

4. RESULTS

4.1. Descriptive statistics

The average *ESG* score stands at approximately 54.20, with a standard deviation of 9.32. The *ESCORE* has a mean of 43.02 but with a higher standard deviation of 16.07. The *SSCORE* follows a similar pattern with an average of 38.58. In contrast, the *GSCORE* showcases a notably higher average of 80.90. The *ROA*, a measure of profitability, has an average of 7.73%. *TOBIN'SQ*, a proxy for market valuation relative to book value, has an average value of 1.57. A *TOBIN'SQ* value greater than one typically suggests that the market values the firm's growth opportunities and intangible assets favourably. The *LEVERAGE* metric, with an average of 20.83%, suggests that, on average, firms in the sample have a modest debt level.

Table 1. Descriptive statistics

Variable	*Obs.*	*Mean*	*Std. dev.*	*Min*	*Max*
ESG	220	54.2039	9.3211	28.7798	71.3811
ESCORE	220	43.0186	16.0749	0.0000	77.8013
SSCORE	220	38.5857	12.8090	7.1947	67.0496
GSCORE	220	80.9044	7.9033	56.6827	97.5015
ROA	220	7.7258	12.1413	25.9071	113.2799
TOBIN'SQ	220	1.5745	0.8851	0.6891	6.6014
LEVERAGE	220	20.8330	13.2614	0.0000	56.8805

4.2. Correlation analysis

The correlation analysis shows that there is a strong positive correlation between *LNESG* and its components, *LNENV* (0.8058) and *LNSOC* (0.8374). However, the correlation between *LNESG* and *LNGOV*, at 0.3753, is notably weaker, indicating that governance practices might be more varied across firms and less tied to the overall ESG score. Additionally, the moderate positive correlations between the ESG components (*LNENV*, *LNSOC*, and *LNGOV*) and *LNSIZE* suggest that larger firms tend to be more engaged in ESG initiatives, possibly due to increased scrutiny, resources, or strategic positioning.

The strong correlations between *LNESG* and its components, *LNENV* and *LNSOC*, raise flags for multicollinearity. However, the correlation is below 0.8 between the variables, so it allows the study to consider that multicollinearity would not impact the findings. Moreover, the Stata software would automatically eliminate any variable that has a multicollinearity.

Table 2. Correlation analysis

Variables	*LNESG*	*LNENV*	*LNSOC*	*LNGOV*	*LNSIZE*	*ROA*	*TOBIN'SQ*	*LEVERAGE*
LNESG	1							
LNENV	0.8058	1						
LNSOC	0.8374	0.5758	1					
LNGOV	0.3753	0.16	0.0577	1				
LNSIZE	0.4728	0.3251	0.3688	0.5521	1			
ROA	0.0328	0.0667	0.0497	-0.0694	-0.1062	1		
TOBIN'SQ	0.0247	0.0023	0.0473	0.0829	-0.0625	0.2524	1	
LEVERAGE	0.0938	0.0421	0.1024	0.2474	0.4782	-0.1857	0.0438	1

4.3. Fixed-effects panel regression

The R-squared values in the models presented range from 0.0808 to 0.0994. This indicates that between 8.08% to 9.94% of the variability in *ROA* is explained by the predictors in the respective models. While these values offer some insight into the proportion of variance explained, they also highlight that a significant portion of the variability in *ROA* remains unexplained by the models. Such modest R-squared values suggest that there may be other external factors or omitted variables influencing *ROA*, which are not captured in the current models.

Among the predictors, the *LEVERAGE* of the company, introduced as a control variable, emerges as a consistently significant determinant of *ROA* across all models. Its negative and statistically significant relationship at the 1% level suggests that holding other factors constant, an increase in *LEVERAGE* is associated with a decrease in *ROA*. This underscores the importance of accounting for financial structure when examining determinants of profitability.

The *ESG* variables, either individually or collectively did not exhibit a significant effect on the *ROA* in any of the empirical models. As a result, there is a very limited or negligible scope available to draw conclusions. Furthermore, the role of the *SIZE* as the moderating variable was also irrelevant, as well as the interaction between *LNESG* and *LNSIZE* was also found to be insignificant. Therefore, it is evident that the effect of the *ESG* on the *ROA* does not depend on the *SIZE*.

Table 3. Regression results of *ESG* on *ROA*

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
LNESG	-15.1020			-11.2120	-98.9549
	23.8151			23.9755	68.7635
LNSIZE		-4.4695		-4.2642	-41.6868
		3.3611		3.3974	27.7051
*LNESG * LNSIZE*			-0.9861		9.6709
			0.7897		7.1059
LNENV	2.6697	1.3890	1.9691	2.4950	5.2215
	3.1927	2.1360	2.2257	3.1903	3.7603
LNSOC	6.7358	4.4869	6.3071	7.5267	11.3492
	7.9519	4.5895	5.3008	7.9633	8.4250
LNGOV	6.0816	-1.1562	3.3624	4.8851	6.8162
	29.9867	16.4829	17.0512	20.9725	20.9672
LEVERAGE	-0.4466***	-0.4086***	-0.4056***	-0.4064***	-0.4659***
	0.1257	0.1291	0.1304	0.1295	0.1364
Constant	16.7375	39.049	5.899	40.3826	348.3101
	71.9361	74.0156	71.7410	74.2431	238.0673
R^2	0.0808	0.0882	0.0870	0.0894	0.0994

*Note: The dependent variable is ROA. Standard errors in parentheses, *** p < 0.01, ** p < 0.05.*

In the case of the second model, the R-squared value increased from 0.1388 to 0.2290. This range suggests that the models account for approximately 13.88% to 22.90% of the variability in Tobin's Q. While these figures offer a degree of explanatory power, they also highlight that a significant proportion of the variability in Tobin's Q remains unaddressed by the models. Such modest R-squared values intimate the potential existence of other influential factors or omitted variables. The coefficient for *LNESG* consistently presents a negative and statistically significant relationship with Tobin's Q at the 1% level in the models where it is featured. This implies that all else being equal, an incremental increase in the ESG score correlates with a decrement in Tobin's Q. The magnitude of this relationship, while varying, remains steadfastly negative across the models. The coefficient for *LNSIZE*, introduced as a moderating variable, is consistently negative and statistically significant at the 1% level across models. This suggests that larger companies, as measured by the natural logarithm of their size, tend to have a lower Tobin's Q. The interaction between *LNESG* and *LNSIZE* which signifies that the moderating effect of the *SIZE* on the *ESG* was found to be significant and negative on the valuation of the companies. However, since the result is not consistent in all the models, it could be implied that there is a lack of robustness across all the specified models. The other individual metrics of the ESG, however, had a mixed impact on the valuation. The positive and statistically significant effect of governance on Tobin's Q is prevalent across all the models. The control variable, i.e., the *LEVERAGE*, however, does not have a significant effect on Tobin's Q.

Table 4. Regression results of *ESG* on *TOBIN'SQ*

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
LNESG	-3.6736***			-3.2501***	-6.3961***
	0.8221			0.7919	2.2691
LNSIZE		-0.5238***		-0.4643***	-1.8060***
		0.1164		0.1122	0.9142
*LNESG * LNSIZE*			-0.1444***		0.3467
			0.0267		0.2344
LNENV	0.4115***	0.0718	0.1633**	0.3924***	0.4902***
	0.1102	0.0740	0.0753	0.1054	0.1241
LNSOC	0.9164***	4.4869	0.4453***	1.0025***	1.1395***
	0.2745	4.5895	0.1792	0.2630	0.2780
LNGOV	2.9985***	1.1170**	1.8067***	2.8682***	2.9375***
	0.7245	16.4829	0.5766	0.6928	0.6919
LEVERAGE	-0.0071	-0.0034	-0.0017	-0.0027	-0.0049
	0.0043	0.0045	0.0044	0.0043	0.0045
Constant	-1.6075	0.5804	-3.5225	0.9670	12.0075
	2.4833	2.5635	2.4260	2.4524	7.8559
R^2	0.1388	0.1401	0.1792	0.2188	0.2290

*Note: The dependent variable is TOBIN'SQ. Standard errors in parentheses, *** p < 0.01, ** p < 0.05.*

On comparing both the *ROA* and *TOBIN'SQ* models, there are several valuable insights available regarding the ESG factors, size and financial metrics. Despite the fact that the two models tend to be similar in some cases, have a fundamental difference in the impacts that the explanatory variables had on them, moderated by the *SIZE*. Although the R-squared values tend to be modest in both cases, *TOBIN'SQ* model could be presumed to be a better model, considering the ways in which the explanatory variables could influence them. When examining the *ESG* score (*LNESG*), both models consistently indicate a negative relationship; however, its impact on *TOBIN'SQ* is more pronounced than on *ROA*. The *LNSIZE*, introduced as a moderating variable, consistently shows a negative relationship with both dependent variables, but its interaction with *LNESG* yields inconsistent results across models. ESG-related components, particularly the governance metric (*LNGOV*), demonstrate a positive relationship with *TOBIN'SQ*, whereas, in the *ROA* model, their significance is more varied. Notably, the control variable, *LEVERAGE*, emerges as a significant determinant in the *ROA* model, underscoring the importance of financial structure in profitability. In contrast, its influence on *TOBIN'SQ* is negligible.

5. DISCUSSION

5.1. Model 1: Financial performance as the explained variable

Within the framework of this study, the observed negative relationship between leverage and ROA provides a window into the intricate interplay of financial structure and profitability. A higher leverage indicates that a company is financing a significant portion of its assets through debt. While leveraging can amplify returns in favourable economic conditions, it also introduces heightened financial risk (Ahmad et al., 2021). Interest payments on debt can erode profitability, especially if a company's investments do not yield returns at a rate higher than the cost of debt. Consequently, as leverage increases, the interest expenses might grow, reducing the net income and, in turn, the ROA. Moreover, companies with high leverage might be perceived as riskier by stakeholders, potentially affecting their operational decisions and market reputation. In phases or situations, where there is an economic downturn, the firms which have a higher dependency on external funds might face financial distress and subsequently might fail to generate a profitable ROA margin and the effects might be visible on the value.

The adverse effect of leverage on ROA, when viewed from the agency theory perspective, is

a complex interplay of management's decision-making, the correcting effect of debt, and the potential for risk-shifting behaviour. The failure of the management in being unable to generate returns might indicate that they do not consider the interests of the shareholders, thereby indicating an agency problem. As per Signori et al. (2021), for instance, leverage is generally considered a disciplining tool which tends to align the interests of the managers and the shareholders. Furthermore, as per Li et al. (2021), there is an obligation on the part of the companies to pay interest regularly and pay principal at the end of a stipulated time, thereby leading to a situation whereby the management refrains from taking the projects which are not in the shareholders' interests.

5.2. Model 2: Financial values as the explained variable

The observed adverse impact of *LNESG*, *LNSIZE*, and their interaction on Tobin's Q provides a nuanced understanding of the interplay between firm size, ESG scores, and market valuation relative to book value. Starting with *LNESG*, a negative relationship suggests that as firms score higher on ESG metrics, the market may not necessarily value them proportionally higher relative to their book value. This could be attributed to several factors: perhaps the market perceives high ESG investments as potentially reducing short-term profitability, or there might be scepticism about the genuine impact or sustainability of ESG initiatives, leading to a discount in valuation.

The negative coefficient for *LNSIZE* indicates that as firms grow larger, their market valuation relative to book value (Tobin's Q) tends to decrease. The high-cap companies which tend to benefit from the economies of scale are likely to face challenges such as slow decision-making, inefficiencies of the bureaucrats, and diseconomies of scale. As a result, these could hinder the perceived growth opportunities as well as the innovative capacities, thereby leading to a comparatively lower value of Tobin's Q.

The interaction between *LNESG* and *LNSIZE* which captures the combined effect of a *SIZE* and *ESG* on the performance was found to be a negative determinant. This suggests that the effect tends to be more adverse for the larger companies. Since companies with a high market cap have better visibility and market scrutiny, society might expect them to be more proactive and focused on ESG. On the contrary, if the market perceives these companies to have a low ESG, their value tends to be discounted.

The positive coefficients, however, of the individual components tend to influence the market value of the companies positively. For instance, a higher *ESCORE* exemplifies the fact that the companies are focused on reducing potential regulatory risks through addressing environmental challenges. These firms tend to position themselves in a very safe position in the era of environmental consciousness as well as they are perceived to be forward-looking and prepared for the shifts in the regulations and becoming resilient to the shocks. Secondly, the social aspect indicates that the companies which have a focus on aspects such as community engagement, customer satisfaction, and employee welfare are viewed in a favourable way by the investors. Subsequently, a harmonious relationship with different stakeholder groups, thereby leading to reduced operational risks and potential for sustainable growth. Thirdly, in the case of the governance aspect, transparency and ethical standards often lead to increased trust of the customers. Firms with higher *GSCORE* might be perceived as being less prone to managerial excesses, financial irregularities, and other corporate scandals. This trust can translate to a premium in market valuation, reflected in a higher Tobin's Q.

Despite the positive impacts of individual ESG components, the combined ESG score (*LNESG*) exhibits a negative relationship with Tobin's Q. This counterintuitive finding can be attributed to several factors:

- *Holistic evaluation*: While individual components of *ESG* might be viewed favourably, a combined score might not capture the nuances of a firm's ESG efforts. For instance, a firm might score high on environmental metrics but lag in governance. When investors evaluate firms holistically, they might discount firms that don't exhibit balanced ESG performance across all areas.
- *Market scepticism*: The market might be sceptical of firms that tout high combined ESG scores, viewing them as potentially engaging in "greenwashing" or overemphasizing their sustainability efforts for public relations benefits without substantive underlying changes.
- *Role of size as a moderator:* The interaction of *LNESG* with *LNSIZE* suggests that the negative impact of ESG scores on Tobin's Q is more pronounced for larger firms. Larger firms face heightened scrutiny and expectations. If their combined ESG scores are perceived as not meeting these expectations or if their initiatives seem superficial, the market might discount their valuation more heavily.

Stakeholder theory posits that businesses should be accountable not just to their shareholders, but to all stakeholders, including employees, customers, communities, and others affected by the firm's actions. The positive association between individual ESG components (ESG scores) and Tobin's Q in Model 2 suggests that firms that prioritize and effectively manage their relationships with various stakeholders are rewarded with higher market valuations relative to their book values. This could be because firms that engage in robust ESG practices are perceived as reducing potential conflicts with stakeholders, leading to smoother operations, reduced risks, and potentially better long-term profitability. The market recognises and tends to value the efforts of such companies which, rather than being focused on shareholders' interests tend to enhance the stakeholder returns.

Furthermore, in line with the legitimacy theory, Lokuwaduge and Heenetigala (2017) and Eliwa et al. (2021) indicated that the firms tend to engage in several practices which include ESG initiatives so that there is an alignment with the societal norms. The adverse effect of the ESG score and the positive effect of the individual ESG components on Tobin's Q could also be interpreted through the legitimacy theory' lens'. This implies that even

though the individual ESG metrics might enhance the legitimacy of the companies from the perspective of society and the market, an aggregate score might not capture the same nuances.

6. CONCLUSION

The primary purpose of the research was to investigate the impact of the ESG metrics, individually and collectively on the performance and valuation of the companies, measured using the ROA, and Tobin's Q. The size was considered to be the moderating variable whereas the leverage was the control variable for the study. The descriptive statistics and correlation analysis provided several insights for the regression analysis, such as the diverse nature of the samples in terms of profit and size, as well as a strong association between the ESG measures. The fixed-effects regression indicated that in the first model, which considered the performance of the companies as the dependent variable, the significant effect of the control variable, i.e., leverage indicated the findings relevant to the agency theory, specifically when it was found that the leverage tends to have an adverse impact on the performance of the companies. The ESG variables, either individually or collectively, and even moderated by size were not found to be significantly influencing the performance of the companies. However, in case of the Tobin's Q model, the results were interesting. While the individual metrics were found to be significant and positive determinants of the value, the ESG is likely to influence the values adversely. The impact tends to be more predominant when the moderation effect is considered whereby the size is also a factor for the investment and developing ESG perspective by the investors. As far as the theoretical aspect is concerned, while the ROA model tends to be in line with the agency theory, Tobin's Q model is in line with the legitimacy and stakeholder theories. There is, however, a need to deepen the exploration in the case of the combined ESG score and the primary reasons as to why they are likely to lead to a decline in the values.

As per the empirical results, one of the key findings is that the investors must have a focus on detailed assessment of the individual components of the ESG, rather than simply relying on the aggregate score as the latter might not be very feasible for assessment. The companies can decipher a very clear insight that encompassing ESG-driven measures might not influence the profits of the company but may lead to better performance in the markets, as seen by the increasing share prices. The larger companies, on the other hand, are likely to be more open to scrutiny, which is evident from the fact that the investors and regulators might have increased expectations from them. Lastly, considering the complexities, it is evident that an increased ESG education for corporate decision-makers tends to provide clarity and subsequently, the impact could be understood effectively.

Firstly, one of the major limitations is that the sample size is small and additionally, there is only a consideration of the Australian companies. Therefore, the study might have issues related to generalisability to the other developed economies. Future studies might focus on implying the same empirical strategy to a different economy in order to ascertain if the results are in line with the study or contradictory. Secondly, the study lacks a sector-specific performance and the ways in which there is an interplay among the ESG, performance and value of the companies. Therefore, future studies could use the same model for certain specific industries and conduct a comparative analysis. Lastly, there is a major scope of qualitative research, specifically, based on primary data collection to gain a perspective of the investors regarding their ESG-related investing, a perspective, which, despite being important has not been covered by this study. Overall, the current study not only contributes to the academic and business literature but also provides a subtle premise for future studies.

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