INFLUENCE OF ESG FACTORS ON COMPANIES MARKET CAPITALIZATION

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Abstract
This study examines how environmental, social, and governance (ESG) performance correlates with market capitalization among companies listed on NASDAQ stock market. Drawing on a dataset of 200 companies, split evenly between the highest and lowest ESG performers from a Newsweek ranking, the research investigates whether robust ESG practices translate into superior market valuations. The method used was an econometric technique applied in SPSS, incorporating descriptive statistics, correlation tests, and a log-log (power) regression model to capture the potential non-linear relationship between ESG scores and market value. The ESG data, sourced and processed from publicly available rankings, is integrated with market capitalization figures retrieved from recognized financial platforms. The results provide evidence of a statistically significant relationship, suggesting that higher ESG scores may have a positive impact on a company's market capitalization. Furthermore, industries such as technology and financial services, which often emphasize sustainability and governance, emerged as leading examples where strong ESG policies align with a higher market value.

Keywords: *ESG performance; market capitalization; corporate sustainability; corporate governance; non-linear regression;*

JEL Classification: *M10, G30, M41*

INTRODUCTION

Over the past decade, environmental, social and governance (ESG) criteria have become a common language of financial markets, transforming the way investors assess opportunities and risks. ESG scores and market capitalization seem, at first glance, to be two concepts pertaining to different dimensions of business success, but their juxtaposition provides important insights into how non-financial values can influence a company's valuation in the stock market (Janicka & Sajnóg, 2022). To better understand this relationship, it is useful to start by defining market capitalization (*market cap*) as the market value resulting from multiplying the price of a share by the total number of shares outstanding and to view it as an expression of investors' confidence in the potential of the firm (Bonga & Sithole, 2019). In parallel, ESG scores reflect how companies manage environmental challenges, community engagement and governance practices and are constructed to capture accountability, transparency and ethical practices (Wong et al., 2021; Bores & Hlaciuc, 2016).

Given the importance of a capital market, as dynamic as the American one, where liquidity is high and the range of investors very diverse, it becomes interesting to test whether there is a correlation between the way a company relates to environmental, social and governance issues and the way the market assesses its total value (Zumente & Lāce, 2021). Therefore, the aim of this paper is to explore the correlation between ESG scores and the market capitalization of companies listed on the US market, which represents the emblem of global capitalism due to its volume, liquidity and diversity.

In order to fulfill our purpose, 100 companies with the highest ESG scores and 100 companies with the lowest ESG scores on the NASDAQ stock market were selected, with the intention of capturing the extremes and getting a balanced picture of the phenomenon. Thus, we first perform a descriptive analysis on the selected sample, and then use SPSS software to test the statistical significance of any correlation between ESG indicators and market capitalization. A positive result would suggest that corporate responsibility strategies are a potential source of real value, rewarded in the stock market, while a negative result could signal that investors currently do not give enough credit to sustainability indicators to directly integrate them into company valuation and that ESG impacts are only long term and not reflected in short-term market capitalization.

With this approach, therefore, we aim to answer a question for business and the investment community: is it worth investing in environmental, social and governance policies, beyond ethical or compliance considerations,

in the hope that they will bring measurable benefits? The answer may influence the strategic decisions of many financial actors and at the same time strengthen or undermine the argument that corporate responsibility efforts lead to economic success (Dragomir, 2017). In addition, the results may pave the way for further research to deepen the sectoral analysis, examining differences in perceptions among institutional versus retail investors.

I. LITERATURE REVIEW

The literature investigating the relationship between companies' non-financial and financial performance has grown considerably in recent decades (Crous et al., 2022; Bores, 2022). One starting point is studies that examine how corporate responsibility practices influence long-term outcomes (Lee & Lee, 2019). In an extensive meta-analysis, Taliento et al. (2019) conclude that the majority of empirical research identifies a positive effect of ESG factors on financial performance, suggesting that environmental, social and governance initiatives are a true competitive advantage.

According to the literature, under the ESG umbrella, the environmental (E) component encompasses commitments related to ecosystem protection, optimizing resource consumption and reducing carbon emissions, which can lead to a decrease in operational and reputational risks (Djoutsa et al., 2020). Likewise, attention to social issues (S) improves relations with employees, communities and customers, often fostering increased productivity and loyalty as well as positive public perception (Srivastava, 2024). As for the governance dimension (G), this refers to the management structure, board independence and fairness of decision-making, factors that some studies have found can help reduce exposure to scandals or malpractice (Emma et al., 2024). Taken together, these three dimensions together form an ESG score that assesses corporate responsibility at a time when investors and consumers are paying increasing attention to sustainability in business.

However, the mechanisms through which ESG influences market capitalization remain controversial. Some research proposes that the impact is mediated through the reduction in the cost of capital. Eliwa et al. (2021) observed that firms with high ESG scores benefit from lower costs of debt because investors perceive the associated risks as lower. Also, Lavin & Montecinos-Pearce (2022) show that responsible ESG investments can create value through reduced cost of capital, better protection against market volatility and improved transparency, and Xie et al. (2019) highlight that firms with a strong sustainability orientation tend to outperform in financial profitability. However, there are also studies that question the robustness of this correlation. Some authors, such as Sroka and Szántó (2018), have emphasized that avoiding controversial sectors (e.g., tobacco, weapons) may limit growth opportunities, reducing the potential for market value appreciation. Furthermore, the risk of '*greenwashing*' - a situation where companies exaggerate positive ESG environmental/societal impacts - which leads to distortions in investor perceptions (Agbakwuru et al., 2024). We also find arguments in the literature that the benefits of ESG investments materialize in the long term, while market capitalization predominantly reacts to short-term factors such as quarterly performance, dividend policy or other macroeconomic signals (Derrien et al., 2022).

Based on these observations, the hypothesis that emerges from the literature is that there is a positive and significant relationship between ESG scores and firms' market capitalization, which is the hypothesis underlying our research approach in this paper.

II. METHODOLOGY

The foundation of our study is the ESG performance data, which was taken from the rankings published on the Newsweek platform. This platform includes companies considered relevant to the US market from a corporate responsibility perspective. The information was then downloaded and centralized into an Excel file, a process that eliminated double-registration of some companies, as well as those that were delisted from the NASDAQ stock exchange and any under-reporting.

In order to ensure adequate representativeness of the population, we selected a sample of 200 companies: 100 companies at the top of the ESG scores and 100 at the bottom. This targeted approach will help us to capture contrasts as clearly as possible and allow us to explore a wide range of ESG scores representative of our objective.

At the same time, in parallel with the analysis of corporate responsibility scores, data on companies' market capitalization were collected, taking into account the values reported and updated on public financial platforms (Yahoo Finance and Google Finance). The market capitalization values were entered into the same Excel file in order to associate each company's ESG score with the corresponding market capitalization value. The data were then checked for accuracy by analyzing outliers and excluding those companies for which reliable information was not available (2 companies in total).

Statistical processing was performed in SPSS, the choice of this software being motivated by its accessibility in testing our research hypothesis. The normality of the distributions was assessed by *skewness* and *kurtosis* values. Given that our hypothesis aims at the existence of a relationship between ESG scores and market capitalization, correlation coefficients were calculated. The significance threshold chosen was $\alpha = 0.05$,

representing the standard in statistical research, i.e. the 95% probability that the relationship is considered significant if $p < 0.05$. Towards the end of the paper, we also conducted a descriptive examination of the data. Thus, mean and median values, standard deviations and extremes for both ESG and market cap scores were investigated.

The results will be discussed in relation to the literature in the next section.

III. DISCUSSIONS AND RESULTS

To begin with, we analyze the differences between companies with high ESG scores and those with lower ESG scores, in terms of market capitalization and industry. The results can be seen in Tables 1 and 2.

Table 1 . Market capitalization for companies in the top 100 by ESG score

Industry	Sum of Market Value
Technology	$ 7,888,898,103,217
Software	$ 3,758,082,696,228
Financial	$ 2,028,371,144,845
Health Care, Life Sciences & Pharmaceuticals	$ 1,457,101,655,964
Retail & Consumer Goods	$ 523,224,169,726
Media & Telecommunications	$ 464,564,733,399
Capital Goods	$ 270,042,254,289
Real Estate & Housing	$ 178,438,984,403
Materials & Chemicals	$ 117,002,830,731
Energy & Utilities	$ 83,097,268,079
Automotive & Components	$ 66,900,450,831
Professional Services	$ 51,590,326,715
Hotels, Dining & Leisure	$ 31,422,635,508
Grand Total	**$ 16,918,737,253,935**

Source: Author's own processing

Perhaps most striking is the stark contrast between the total amount of market capitalization for the top 100 companies by ESG score, which exceeds $16.9 trillion, and the sum of the last 100 companies, around $1.86 trillion. Thus, at a first glance, it seems obvious that companies ranked higher on corporate responsibility tend to be even bigger in financial terms, or that large companies also have the resources to develop and implement ESG policies that would facilitate a higher ranking. We believe that the cause-and-effect relationship can work both ways and is the focus of our research questions: is high market capitalization a reason to adopt environmental and social policies or, on the contrary, do sound sustainability and governance strategies succeed in attracting more investors and raising market value?

Coming back, another relevant aspect is that among the top 100 companies (Table 1), the technology and software industries dominate, together accounting for more than 11 trillion dollars out of the total of about 16.9 trillion. This presence can be explained by the ability of these firms to innovate and adopt environmental policies, as well as the way corporate governance is managed at the level of global technology leaders. Firms in this sector also tend to have agile leadership structures and a corporate culture towards transparency, which may be reflected in an improved ESG score. At the other end of the spectrum, the bottom 100 companies by ESG score (Table 2), we find the following industries - from media and telecoms to traditional energy and transportation - reflecting that there are large players that have not yet invested sufficiently in corporate responsibility and are also having difficulties in meeting sustainability standards similar to those in the high-tech sector (Grosu et al., 2024). Last but not least, the cumulative capitalization of the financial sector in the low ESG-scoring companies' area (around $228 billion) is smaller than that of the top banks and insurers (over $2 trillion), indicating a discrepancy in risk management and attention to investors who demand transparent governance and strict ethical principles. As the market is increasingly sensitive to scandals and unethical practices, financial players that prioritize ESG are likely to be rewarded with higher capitalization.

Table 2 . Market capitalization for the bottom 100 companies by ESG score

Industry	Sum of Market cap
Media & Telecommunications	$ 451,531,726,177
Retail & Consumer Goods	$ 258,746,251,304
Financial	$ 228,903,616,998
Energy & Utilities	$ 210,133,374,374
Technology	$ 175,833,292,361
Capital Goods	$ 173,864,356,814
Transport & Logistics	$ 136,135,417,432
Health Care, Life Sciences & Pharmaceuticals	$ 69,005,470,676
Software	$ 67,514,406,022
Materials & Chemicals	$ 39,764,899,435
Hotels, Dining & Leisure	$ 20,758,466,690
Real Estate & Housing	$ 19,693,759,950
Professional Services	$ 6,866,091,438
Automotive & Components	$ 4,396,203,583
Grand Total	**$ 1,863,147,333,254**

Source: Author's own elaboration

One of the findings of this analysis is that the technology and financial sectors dominate the top companies by ESG score, supporting the idea that those companies oriented towards innovation and strong governance are able to attract resources and maintain high market value. At the same time, the presence of industries considered traditional (such as energy or chemical manufacturing) in both categories shows that the differentiating factor is not the field itself, but the way each company chooses to adapt its strategy and implement its sustainability practices.

The descriptive results for the top 100 companies by ESG score can be seen in Table 3.

Table 3 . Descriptive statistics for top 100 companies by ESG score

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Overall score	100	83.65	97.83	86.7772	2.73846	1.374	.241	2.852	.478
Market Value	99	2729370.00000000 000	3602255591872.000000 0000	171160065057.12115000 0000	565965502834.49 95000000000	5.330	.243	28.125	.481
Score Environmental Concerns	100	80.12	100.00	90.6969	4.53674	-.062	.241	-.596	.478
Score Social Concerns	100	64.18	100.00	83.7705	7.94167	-.281	.241	-.361	.478
Score Corporate Governance Concerns	100	68.15	100.00	85.9554	6.79932	-.043	.241	-.367	.478

Source: own processing in SPSS

First of all, we can observe that the mean values for ESG scores are high in all categories (above 80 points), which confirms that this sample represents a peak in terms of environmental, social and governance concerns. The overall score with a minimum of 83.65 and a maximum of 97.83, shows a mean of 86.78 and a standard deviation of 2.74, a sign of homogeneity. but skewness results of 1.374 and kurtosis of 2.852 suggest however a slightly skewed distribution. Considering the ESG results, the environmental component is surprising, with a mean performance of 90.7 with a standard deviation of 4.54, suggesting that the best firms in this sample are focusing their efforts towards green policies to a significant extent (Tanasă et al., 2024). In contrast, market capitalization reveals a mixed picture. The minimum value of $2.7 trillion is insignificant compared to the maximum of over $3.6 trillion, while the average of $171.16 billion is heavily influenced by a few "giant" firms in technology, software and/or financial services. One possible interpretation is that while all the top companies excel in governance, not all have the same economic footprint and market scale. In the following table we have the

descriptive results for the last 100 companies at the bottom of the ranking by ESG score. The results can be seen in Table 4.

Table 4 . Descriptive statistics for the bottom 100 companies by ESG score

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Overall score	100	67.07	70.92	69.1881	1.14812	-.215	.244	-1.200	.483
Score Environmental Concerns	98	47.85	87.26	70.6812	9.22427	-.308	.244	-.425	.483
Score Social Concerns	100	44.88	86.00	64.7789	8.77581	.189	.244	-.122	.483
Score Coporate Governance Concerns	100	58.35	91.47	72.1734	6.65715	.445	.244	.128	.483
Market cap	97	89631839.00000	412411574880.00000	19235325375.4226720000	45503636687.39503000000	7.111	.245	59.348	.485

Source: own processing in SPSS

As for the descriptive statistics on the last 100 enterprises at the bottom, the picture is not entirely bleak. First of all, it can be seen that the "Overall score" ranges from 67.07 to 70.92, with a mean of 69.19 and a standard deviation of 1.15. This relatively narrow range signals a certain homogeneity among the low ESG top-ranked companies, even if the scores remain closer to the lower thresholds than in the first category, and the negative skewness of -0.215 and kurtosis of -1.200 reveal a distribution slightly shifted towards the higher values of the range. As for the ESG dimension scores, we again note, first and foremost, the environmental component. Even though the results fall in the "lower" range of the ranking, the values of companies in terms of "Environmental Concerns" range from 47.85 to 87.26, with a mean of 70.68 and a standard deviation of 9.22. These results suggest that there are entities that score relatively decently on the environmental chapter, but also others that score considerably lower. The Corporate Governance concerns dimension ranges between 58.35 and 91.47, with a mean of 72.17 and a standard deviation of 6.65. The highest heterogeneity also occurs among market values. Market cap ranges from about 89 million dollars to over 412 billion, with a mean of 19.24 billion and a standard deviation of about 45.50 billion. Overall, these results confirm that although these companies are at the bottom of the ESG top, the distributions of ESG dimensions differ quite widely, confirming that not all companies have exactly the same "gaps" in sustainability and governance practices (Melega, 2022). Quite on the contrary, some have high market capitalizations, which may support the hypothesis that large companies can thrive financially even without high ESG compliance. In conclusion, we can say that the analysis of the relationship between ESG and market capitalization needs to go beyond the simple comparison of scores, questioning other factors such as industry, development strategy, innovation, etc.

However, to deepen the analysis of the relationship between ESG scores and market capitalization, a purely descriptive approach is not sufficient. That is why in the following, we have also developed a nonlinear econometric power econometric model that can explain the correlation between ESG factors and stock market capitalization in a statistically satisfactory way. We opted for a power (log-log) model, given the skewness and significant dispersion of the market capitalization variable. In other words, the power model gives us a clearer view of how changes in the ESG score translate into changes in market value, an approach that is much more appropriate when the variables vary over wide ranges and have highly skewed distributions. Thus, Table 5 shows the statistical values for the regression model conducted, where LnMarketCap (natural logarithm of market capitalization) is the dependent variable and LnESG (natural logarithm of ESG score) is the independent variable:

Table 5 . Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.453[a]	.305	.201	1.63665	1.920

a. Predictors: (Constant), LnESG
b. Dependent Variable: LnMarketCap

Source: own processing in SPSS

The results in the above table reveal a moderate correlation between the two (R = 0.453). This value indicates that the two variables move in the same direction to a significant but not total extent. We also note that

the proportion of the change in market value that can be explained solely by changes in ESG score is 0.305 (R square), which means that about 30.5% of the dispersion of the logarithm of market capitalization depends on ESG score. The magnitude of the standard deviation (1.63665) indicates the average magnitude of the variation of the predicted values from the observed ones, given that we are working in logarithmic space, and the Durbin-Watson coefficient is very close to 2, which confirms that no significant autocorrelations are present, validating the use of the power model. Next, we present the results of the Anova test, as shown in Table 6.

Table 6 . Anova test

Model		Sum of Squares	df	Mean Square	F	Mr.
1	Regression	133.980	1	133.980	50.018	.000[b]
	Residual	519.653	194	2.679		
	Total	653.633	195			
a. Dependent Variable: LnMarketCap						
b. Predictors: (Constant), LnESG						

Source: own processing in SPSS

As we can observe the results of the Anova table, they indicate that the logarithm of the ESG score as a predictor variable is significant overall (F = 50.018, p < .001). The results of the table also show that there is a clear difference between the sum of squared residuals and the one associated with the regression, which suggests that the ESG variable explains a significant part of the variation found in stock market capitalization. As for the coefficient values, they can be observed in Table 7.

Table 7 . Table of coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Mr.
		B	Std. Error	Beta		
1	(Constant)	-7.528	4.387		-1.716	.088
	LnESG	7.128	1.008	.453	7.072	.000
a. Dependent Variable: LnMarketCap						

Source: own processing in SPSS

In the coefficients table we first observe that the ESG variable has a positive effect on stock market capitalization, with a coefficient of 7.128 illustrating the elasticity between the two variables in logarithmic space. In other words, each percentage increase in the ESG score is associated with an increase of about 7% in market capitalization. As for the constant, it is negative and statistically insignificant, revealing the absence of an intercept. Reflecting also on the residual, its histogram can be seen in Figure 1.
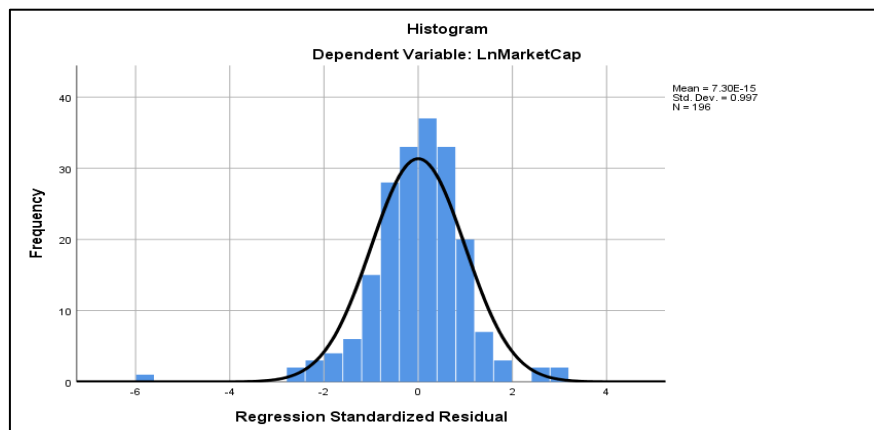

Figure 1 . Histogram of the realized model residual

Source: own processing in SPSS

As can be seen, the histogram indicates a distribution close to a normal curve, with a peak around zero and a gradual decrease towards the extremes. This confirms the assumptions of normality of the errors, on which the regression model is based, being met to a reasonable extent.

IV. CONCLUSIONS

The analysis that we conducted in this paper revealed a positive relationship between ESG scores and market capitalization, both at the descriptive level and through the power econometric model. The comparative data we used for the 200 companies (100 high and 100 low scorers) showed considerable differences in total market values. Using the non-linear econometric power econometric model revealed that as an enterprise makes progress in environmental, social and governance policies and practices, this can lead to an appreciation in its market value, but is not the sole determinant of financial success. At the same time, this paper has revealed the relevance of leading sectors, such as technology and financial services, which have the resources and interest to invest in sustainability and innovation initiatives. In contrast, however, some more traditional industries, even if they include a high number of companies with relatively lower ESG scores, manage in some cases to maintain high capitalizations, confirming that economic size is not exclusively driven by ESG performance. However, we consider the general trend, reflected in the statistics and the model results, supports the hypothesis that corporate responsibility is becoming an increasingly important benchmark in the eyes of investors. This conclusion has practical implications for strategic decisions in the sense that the implementation of ESG policies can have positive effects on market value.

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