

MEASURABILITY AND RELIABILITY – HOW CREDIBLE ARE ESG RATINGS?

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ABSTRACT

The study is seeking to answer the question whether there is a connection between companies' ESG performance and their financial performance.

Our previous research examined how consistent, transparent and comparable ESG ratings are. All this was done based on the examination of the companies' sustainability and social responsibility reports and the comparison of their content. The study came to the conclusion that regardless of industry, companies publish sustainability reports of various depth and content. The ESG rating companies largely base their work on this, create and calculate an ESG score for each company, mostly with the aim of influencing market participants, investors, and creditors in their decisions. (Lukács et al., 2023) [7]

Continuing this research, our hypotheses have been formulated. If the company performs well in the environmental, social and sustainability areas and this is "priced" by the rating, then we expect the company to perform well – or at least better than its competitors – financially as well. We examined the return on capital investment in companies, the generated revenue, and we also presumed that a company that performs well based on ESG criteria can attract more investors, i.e. it is less dependent on external creditors.

Keywords: *Financial statement, ESG score, indicators, P/E ratio*

INTRODUCTION

According to Milton Friedman, the main task of companies is to maximize the investors' return. In the past century, environmental, social and sustainability performance was not important when examining these values. After the ratification of the Kyoto Protocol and its entry into force, the consideration of sustainability aspects became increasingly important when examining the operation of a company. The Kyoto Protocol was only supposed to reduce the emission of greenhouse gases, and its requirements were accepted by the ratifying countries. Environmental and social processes have called into question the future of our planet in other areas as well, as a result of which not only air pollution, but also water, green areas, social inequalities, the situation of job takers, and the management practices of companies (among other things) have become the focus of attention. ESG performance considers all these together and converts them into metrics.

When examining the consistency of ESG indicators, it is worth examining three areas: dimensionality, reliability and validity. ESG is a multidimensional system. In order to obtain reliable values from the ESG indicators, it is necessary to break down the individual dimensions (environmental, social and governance). As a result, ESG raters have to use methods that allow each indicator to be approached from several directions. In addition, knowing how to convert the indicators into a scoring process is essential in order to be able to interpret these indicators properly. It is also a challenge to transform these indicators into a unified system in order to make them comprehensible to everyone. (Widyawati, 2020) [10] Some studies also draw attention to the fact that ESG indicators should not be converted into one composite score, because positive and negative indicators are separate constructs, and when aggregated, the information content of the data dissipates. (Semenova - Hassel, 2015; Capelle-Blancard - Petit, 2017) [8] [4]

To test our hypotheses, the regression calculation method was used. Regression is a common tool for analyzing the relationship between variables, which basically examines how a distinguished variable that is the subject of the study, called the outcome variable (or dependent variable), depends on one or more so-called explanatory (or independent) variable. This method is suitable for examining the relationship between variables, their closeness, and for analyzing the impact of influencing factors.

There are numerous ways to measure the performance of companies. In economics, there is business analysis and reporting analysis. A business analysis entails a broader interpretation, its purpose is to provide stakeholders with information about business operations. The conclusions of the business analysis can be harnessed by stakeholders in a wide range of business decisions. It helps the owner, the potential investor, the credit provider, the management, the business partners and the control bodies in the assessment and evaluation of the enterprise.

The report analysis is a narrower concept, a subfield of business analysis. During the report analysis, one or more companies perform analyses in relation to one or more business years in order to learn about the property, financial and income situation of the company, thus supporting the correct decision-making processes of managers, investors and creditors. The quality of the report analysis depends to a large extent on the reliability of the financial statements.

RESULTS OF PREVIOUS INTERNATIONAL RESEARCH

Serafeim - Yoon (2022) [9] in their study investigated the extent to which a company's ESG rating can predict future ESG-related news. The study revealed that the ESG rating predicts ESG news, however, the discrepancy between the raters weakens this correlation. Furthermore, it was also observed that positive ESG news elicited a positive market reaction and negative ESG news elicited a

negative market reaction. However, it is interesting that companies with a high ESG rating react positively to positive news appearing on the market to a lesser extent. This can be explained by the fact that these positive news tend to be previously reflected in the stock prices. (Serafeim - Yoon, 2022) [9]

Avramov et al. (2022) [2] examined the effects of the uncertainty of the ESG rating in relation to portfolio selection and asset pricing. The study concluded that the uncertainty of the ESG rating reduces investor demand for shares. (Avramov – Cheng – Lioui – Tarelli, 2022) [2]

Gregory (2022) [6], in their research published in the *Economic and Finance Journal*, examined whether there is a correlation between company size and ESG rating. The author examined the effect of company size on ESG rating by analyzing rating agencies and the industrial sector. Relying on the predictions of the organizational legitimacy hypothesis by Drempevic, Klein, Zwergel (2020) [5], they found that the hypothesis formulated by the authors was not supported during the examination of the industrial sector and outlier values. While in overall analyses there is a positive correlation between company size and ESG rating, this effect disappears or may even be negative when examining industry sectors, outliers or rating agencies separately. This is a significant finding because it can influence the relationship between corporate social responsibility (CSR) and corporate financial performance (CFP). (Gregory, 2022) [6]

Apergis-Poufinas-Antonopoulos (2022) [1] investigated the relationship between debt service cost and ESG scores based on the view that high ESG scores are positively related to a company's solvency. To explore this relationship, the relationship between the ESG performance of bond-issuing companies and bond spreads issued on primary markets was analysed. ESG, financial and bond data of S&P 500 companies between 2010 and 2019 were used for the study. According to the results of the research, all ESG factors (E, S, G, and combined) have a negative and significant effect on bond yields. The remaining time to maturity has a positive and significant effect, while the issue rate and company size have a negative and significant effect on bond yields. (Apergis – Poufinas – Antonopoulos, 2022) [1]

Overall, it can be stated that these studies point out that the ESG system is not yet a mature system. This does not mean that ratings are not to be observed, rather, it suggests that the process of rating and the reaction and influence of investors is lengthier.

Berg – Kolbel – Rigobon (2022) [3] drew up the most important conclusions regarding the current system: companies must carefully review which data is used with which method when preparing reports. For investors, it is a challenge to reconcile different ratings. Last, for regulators it is an important task to develop a coordinated ESG framework. The harmonization of the system would also

contribute to the publication of reliable data, in addition to making the data comparable. (Berg – Kolbel – Rigobon, 2022) [3]

ESTABLISHING HYPOTHESES

During our research, we examined the companies' past performance and compared this with their ESG scores, thus formulating the following three hypotheses.

Hypothesis 1: There is a negative correlation between the company's ESG score and the debt-equity ratio achieved by them. According to our assumption, good ESG performance attracts investors, so the company has less need for foreign capital.

The next aspect of the investigation was the stock market evaluation of the companies. For this purpose, we compared two indicators with the past ESG score - we scrutinized the value of the EPS and P/E indicators. The examined period is the financial years 2019-2021 in terms of performance, and we compared the ESG scores obtained in the financial years 2018-2020, taking into account that the feedback of the market generally follows the signals given by the raters. We formulated the following hypotheses:

Hypothesis 2: There is a positive correlation between the past ESG score of companies and the EPS indicator achieved in the following year.

Hypothesis 3: There is a negative correlation between companies' past ESG score and their P/E ratio in the following year.

PRESENTATION OF THE RESEARCH FINDINGS

To create the database, we used data offered by the financial market data provider Refinitiv Eikon. The examined period is the financial period up to 2019-2021, to which we linked the ESG scores of the years up to 2018-2021. During the investigation, we compared the profitability and profit-related data for the same years, and the data examined from the investor's point of view with the ESG scores of the previous years.

In the two-variable linear regression model presented earlier, the x values represent the ESG score, the y values represent the various performance indicators on the basis of which the performance of the companies were analyzed. The ESG score was compared to the D/E ratio, EPS, P/E and total return rate in the period under review.

Testing the first hypothesis

One of the most important indicators within the analysis of the wealth situation is the debt-equity ratio, which denotes the structure of the wealth. The

debt-equity ratio is the ratio of foreign capital to equity capital, which shows the extent to which the company is financed from external sources compared to the available equity capital. There is no clear value below or above which the value of the indicator is inappropriate, however, it can generally be said that the higher this ratio, the riskier a company is, as it depends to a greater extent on external creditors, thus the burden of foreign capital is also high.

In the first hypothesis, it was stated that there is a negative correlation between the ESG score and the debt-capital ratio, so the higher the ESG score a company has, the lower the D/E ratio. This means that fewer external resources are required for its operation, which makes its operation less risky and less uncertain.

As a result of comparing the ESG score and the D/E ratio for the 2019 financial year, the following regression equation was obtained:

$y = 0.0035x + 0.8342$. It can be observed that β_1 is very low, so the relationship between the two values cannot be clearly stated. In this case, the β_0 value only has a mathematical meaning, but this value is not relevant from the point of view of the analysis, so it was ignored during the study.

For 2019, the value of the correlation coefficient showing the relationship between the two values is $r = 0.036$, which in turn assumes a very weak but positive correlation between the ESG score and the D/E ratio indicator. The value converges to zero, which means that there is essentially no linear relationship between ESG scores and the D/E ratio indicator. This statement is also supported by the value of the determination coefficient. The value of the indicator is $R^2 = 0.0013$, i.e. the ESG score explains 0.13% of the D/E ratio, which is an extremely low value. Based on the above, it can be concluded for 2019 that the model is not suitable for drawing conclusions, its explanatory power is negligible. The results can also be seen in the diagram below:

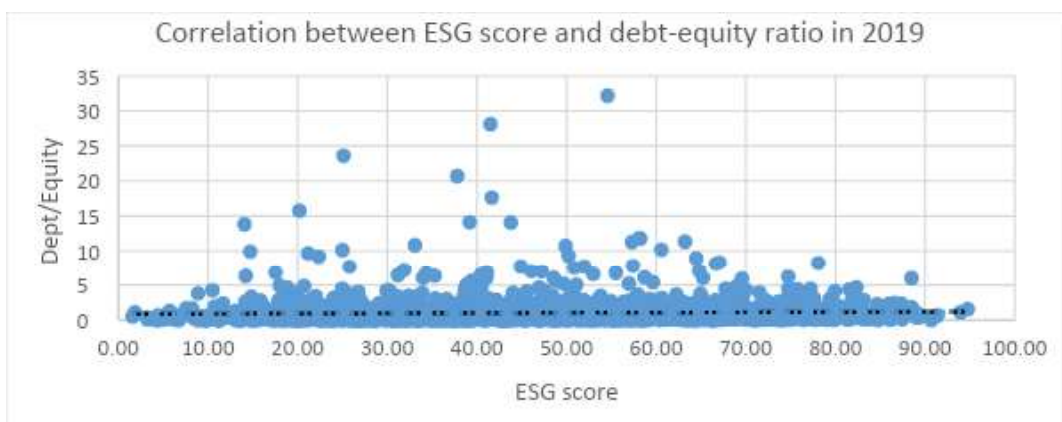


Fig. 1. Correlation between ESG score and debt-equity ratio in 2019

Source: Based on Refinitiv database (2023) [11], own calculation and editing

For the financial years 2020 and 2021, we were able to demonstrate a similarly weak, or rather positive correlation.

Testing the second hypothesis

In order to achieve the research goal, the main focus is on the analysis of the income situation, i.e. what effect the ESG classification has on the financial performance of enterprises. The best-known area of income situation analysis is the income statement. With regard to the income statement, we examined the impact of the companies' ESG classification on shareholder values. In this case, the income data were compared to the previous year's ESG score, as the impact of the classification on investor decisions is not reflected in the given year, but in the following years. Accordingly, we compared the ESG scores obtained in 2018 with the 2019 financial data, the 2019 data with the 2020 data, and the 2020 ESG scores with the 2021 financial data.

During the analysis, the data of market listed companies were examined. Among these companies, one method of performance analysis is to relate the income to the number of shares. To determine the profit per share (Earnings per Share, EPS), the value of the after-tax income must be compared to the number of all shares.

According to our second hypothesis, we expect a positive correlation between the past ESG score of companies and the indicator suitable for their evaluation on the stock market in the following year. We hypothesized that the ESG score had a positive effect on the decisions of external investors, thus a higher ESG score ended in higher earnings per share for companies in later years.

When examining the relationship between the ESG score and earnings per share, the first period examined was the year 2019, to which the 2018 ESG data were compared. After running the regression calculation, we obtained the following equation: $y = 0.0196x + 1.5264$. This means that the correlation between the ESG score and the EPS is very weak.

Both the correlation coefficient and the determination coefficient are too low to attribute a significant influence to the joint evolution of the two indicator numbers. The data is also shown in the following chart:

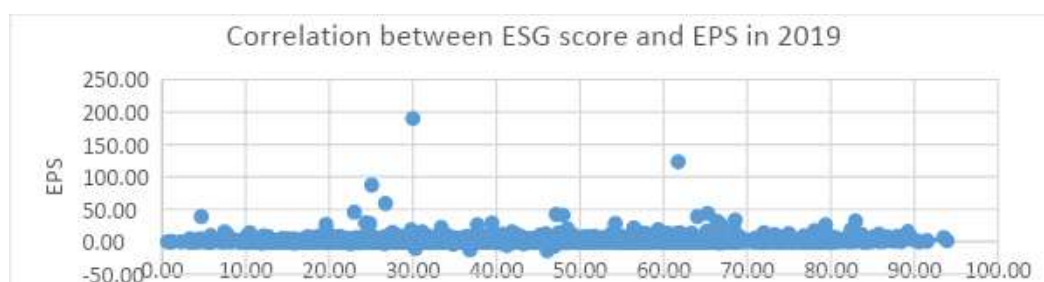


Fig. 2. Correlation between ESG score and EPS in 2019

Source: Based on Refinitiv database (2023) [11], own calculation and editing

A similar correlation can be shown for 2020 and 2021, i.e. it can be concluded that the ESG performance has no effect on the data which influence investors' decisions.

Testing the third hypothesis

Another indicator of the value of the company's securities, the Price/Earnings Ratio (P/E), can be calculated using the EPS value. The P/E ratio is calculated by dividing the share price (P) by the earnings per share (EPS). The P/E ratio compares the company's earnings to its share price, so it shows how much stockholders have to pay for a dollar of earnings.

In the third hypothesis, we stated whether there was a negative relationship between companies' past ESG score and the P/E ratio achieved in the following year. If the operation of a company - and thus its profitability - is positively affected by the ESG classification, its P/E ratio will be lower. From an investor's point of view, a lower P/E ratio promises faster ROI than companies with a higher value, i.e. the lower the value of the P/E ratio, the more attractive a company will be to investors.

Similar to the investigation of the value of the EPS indicator, the examined period was the financial years up to 2019-2021, to which we compared the ESG scores of the years up to 2018-2020. As a result of comparing the 2019 P/E ratio to the 2018 ESG score, the regression equation was: $y = -0.2551x + 37.17$. This means that if the ESG score increased by one in 2018, the value of the P/E ratio decreased by an average of 0.2551 in 2019. Based on this, it can be concluded that the correlation is negative between the two indicators, but to establish this, the correlation coefficient must also be examined.

The correlation coefficient in 2019 between the ESG score and the P/E ratio is $r = 0.1051$. The relationship between the two indicators is therefore very weak, a linear relationship cannot be assumed between the two values, but its direction is positive based on this. This means that the change in the ESG score has a very small, or rather zero effect on the change in the value of the P/E ratio. The explanatory power of the model is expressed by the determination coefficient with the value $R^2 = 0.011$. The regression equation is therefore able to explain 1.1% of the change in the value of the P/E indicator. The data is represented by the following diagram:

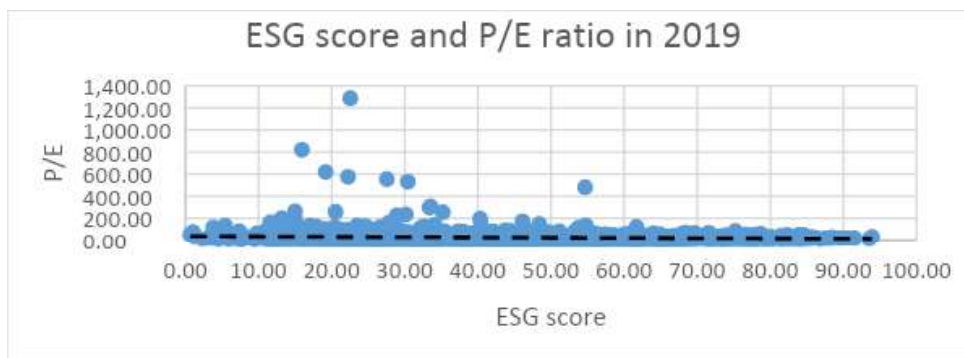


Fig. 3. correlation between ESG score and P/E ratio in 2019

Source: Based on Refinitiv database (2023) [11], own calculation and editing

The 2020 financial year performance data were compared with the ESG scores obtained in 2019, resulting in the equation $y = -0.2755x + 42.282$. In the examined period, an increase in the previous year's ESG score by one unit caused a decrease of 0.2755 in the value of the P/E ratio in the following year. In this case too, a negative relationship can be assumed in the comparison of the two indicators.

The value $r = 0.1092$ of the correlation coefficient, on the other hand, assumes a positive relationship between the two indicators, that is, the values changed in the same direction. However, the value of the indicator is again close to zero, so there is no linear relationship between the two values. This result is also confirmed by the determination coefficient $R^2 = 0.012$, which means that the change in the ESG score can explain 1.2% of the exchange rate/profit ratio. The regression line does not fit the data exactly.

Overall, it can be established in the context of the ESG scores and the P/E ratio in the examined period that the proposed hypothesis was not proven. It is not possible to establish a functional relationship between the two indicators, the linear correlation and determination coefficient did not support the assumption either, their value was close to zero in all cases.

CONCLUSION

Summarizing the results of the analysis, it can be concluded that the ESG score does not yet have an impact on the companies' operations. The hypotheses we put forward, in which we assumed that the ESG score already has an effect on the operation of companies from an economic point of view, were not well-founded in most cases.

Within the framework of this thesis past data were examined, however, a possible extension of the research could entail a predictive analysis using this data. One of the functions of report analysis is planning, where the data obtained during the analysis is used to make decisions that provide the basis for optimal future action.

There is potential in continuing the research. The analysis by industry or geographical area could refine the data, and it is also an option to examine the ESG value along dimensions as well. Even the analysis of the methodology used by qualifiers indicated that the performance in different dimensions carry different weight and significance during the rating process. A possible further direction of our research is to examine which dimension the investors and the market prioritize. This can also provide an answer to the preference between sustainability and social issues.

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