ESG RISK, NET INTEREST INCOME AND FINANCIAL PERFORMANCE OF EUROPEAN BANKS

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ABSTRACT

This study examines the relationship of ESG risk and net interest income with the performance of 187 European. Cross-sectional regression analysis is applied. Financial performance is computed as ROA and ROE. The explanatory variables used are Morningstar's ESG risk, net interest income, efficiency ratio, size and leverage ratio. The results reveal that financial performance is negatively related to ESG risk and positively related to net interest income and efficiency ratio. Size seems to exert some negative impact on financial performance. Interestingly enough, the impact of leverage on ROA and ROE is negative and positive, respectively. At the country level, banks from Western and Northern Europe present lower ESG risk than banks from Southern and Eastern Europe.

Keywords: Financial Performance, ESG Risk, Net Interest Income, European Banks
JEL Classification Codes: G21.

1. INTRODUCTION

The United Nations (UN) have been working with the banking community to facilitate a fast positive global transition for people and the entire planet.[2] The UN Principles for Responsible Banking have been developed towards this goal. Over 300 banks, representing almost half of the global banking industry, have adopted these principles. By abiding by these principles, banks seek to align their core strategies, decision-making processes, and lending and investment policies with the goals of the United Nations for sustainable development, as well as other international agreements for the environment, such as the Paris Climate Agreement. In addition, by signing these principles, banks try to strengthen their social contribution and enhance their positive environmental footprint.

Along with enhancing their social and environmental footprint, banks perceive the incorporation of environmental, social and governance (ESG) principles in their business operations as an opportunity of new revenue sources and efficient cost management. Moreover, the adoption of good corporate governance practices can help banks ensure easier and, possibly, cheaper financing from lenders and investors. A great ESG performance of banks may contribute to boosting their financial performance too.

Unlike with profitability, where, more or less, there is consensus about what being a profitable corporation means, measuring and comparing ESG performance among companies, or through time, is more challenging, as there are varying interpretations about what ESG performance means. This endeavor can be even more challenging

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[2] Ref: https://www.unepfi.org/banking/bankingprinciples.

because, based on their own values, corporations may set different priorities in regard to environmental, social and governance issues. Finally, ESG initiatives that are taken by the companies, such as campaigns towards reducing pollution, can occasionally be hard to measure and reflect to their overall ESG performance.

From another angle, ESG factors are being used intensively to assess the sustainability and risk profile of a company. ESG-related risks can be numerous and can vary across sectors. In any case, lenders and investors need to identify financially material ESG risks among companies, understand the potential magnitude of these risks and, also, understand how they can affect the long-term financial performance of the companies.

In this paper, we examine the relationship of the ESG risk score and net interest income with the financial performance of the European banks. Financial performance is measured as the Return on Assets (ROA) and the Return on Equity (ROE), respectively. The ESG risk scores used in our analysis are those computed by Morningstar Sustainalytics. Net interest income is simply the difference between the interest income accrued on loans and the interest expense paid on deposits.

Our study employs a sample of 187 European banks within and outside the Eurozone area. Cross sectional regression analysis is applied with data for the year 2022. Along with ESG risk scores and net interest income, other explanatory variables used in our study are the efficiency ratio, that is, net interest income to total assets, size, and the leverage ratio, that is, total liabilities to total assets.

Our empirical results indicate that there is a negative relationship between financial performance and ESG risk score. An opposite relationship is accentuated for performance with the net interest income and efficiency ratio. Furthermore, size is negatively related to financial performance. Finally, the relationship of financial performance with leverage is not of one sign. In particular, the impact of leverage on ROA is negative and the impact on ROE is positive. At the country level, the results show that banks from Western and Northern Europe present lower ESG risk than banks from Southern and Eastern Europe.

The main contribution of our study is that it provides new insights on the relationship of ESG risk score and net interest income with the financial performance for a large sample of European banks with the most recent data that are publicly available. The comparison of ESG risk scores of banks throughout the European continent can help ESG risk sensitive investors to focus on countries whose banking institutions are exposed to the lowest ESG risks. In addition, the results of our regression analysis can form an effective selection tool for investors trying to detect banks with the highest financial performance, which may reward them with higher dividends and, possibly, higher stock returns.

The rest of the paper is structured as follows: Next section discusses the main studies on the relationship between ESG performance, net interest income and financial performance found in international literature. Section three concerns the methodological approach and the sample of our study. Section 4 provides an analysis of ESG risks for the examined banks. Section 5 presents the empirical findings of our study. Finally, section 6 summarizes the conclusions of our study and offers some suggestions for future research on the subject.

2. LITERATURE REVIEW

Many studies in the literature deal with the relationship between ESG performance and firm performance of non-financial corporations. Albertini (2013) conducts an analytical review of 52 studies over a 35-year period and confirms a positive relationship between environmental performance and financial performance. Eccles *et al*. (2014) investigate the effect of corporate sustainability on firm performance using a sample of 180 US companies. The authors provide evidence that companies of high sustainability significantly outperform their counterparts in the long run, both in terms of stock market returns and accounting performance. Harjoto and Laksmana (2018) use US data to examine the mechanism through which corporate social responsibility (CSR) has an impact on firm value. They find that CSR performance is positively related to firm value because CSR reduces excessive risk taking and risk avoidance. Atan *et al*. (2018) also confirm a positive relationship between ESG and financial performance for a sample of 54 Malaysian public-limited companies.

In the banking sector, Simpson and Kohers (2002), using data from the banking sector in the United States, find that there is a positive linkage between social and financial performance. By focusing on the governance factor of the ESG performance, Peni and Vähämaa (2012) examine the impact of corporate governance on the financial performance of large publicly traded US banks during the crisis of 2008. The empirical results are mixed. In particular, banks with stronger corporate governance mechanisms showed higher profitability in 2008. However, these banks experienced negative effects on their stock market values during the crisis.

Jo *et al*. (2015) examine whether corporate environmental responsibility (CER) can enhance financial performance in the financial services sector of 29 countries. The authors suggest that by effectively investing in CER, executives can decrease the environmental costs of their organizations, thereby enhancing operating performance. However, the reduction in environmental costs takes at least one or two years before enhancing return on assets. In addition, the reduction in environmental costs has a more immediate and substantial effect on performance in developed financial markets than in less-developed markets.

Brogi and Lagasio (2019) assess the relationship between the ESG performance and financial performance of the American companies by comparing industrial to banking and insurance companies. The results indicate that the ESG policies are positively related to profitability for both financial and non-financial companies. However, for industrial companies, the positive effect on profitability gradually slows during the years. On the contrary, the positive effect on the profitability of banks is robust and, therefore, banks should keep focusing on risks and opportunities from implementing ESG practices to move to a more sustainable business structure.

Shakil *et al*. (2019) explore the effects of ESG performance on banks' financial performance for a sample of 93 banks from emerging markets during the period 2015-2018. The findings indicate a positive association of emerging market banks' environmental and social performance with their financial performance. On the other hand, the governance factor does not affect financial performance.

Koapaha (2023) studies the link between net interest income, ESG performance and bank performance using a multiple regression analysis on a panel dataset of publicly traded

banks in the United States. ESG performance is found to be a significant predictor of bank performance, while net interest income has a mixed relationship with bank performance.

In regard to the impact of net interest income on financial performance, several other studies offer mixed results. Studies such as those by Athanasoglou *et al*. (2008) and Dietrich and Wanzenried (2011) reveal a positive relationship between net interest income and financial performance. However, other studies such as those by Albertazzi and (2009) and Bolt *et al*. (2012) report a negative or non-significant relationship between net interest income and financial performance in the banking sector.

Soana (2011) investigates the connection between social and financial performance in the banking sector with a sample of 21 international banks and 16 Italian banks applying correlation analysis. The empirical findings show that there is no statistically significant linkage, neither positive nor negative, between social and financial performance.

Wu and Shen (2013) assess the link between CSR and financial performance and discuss the motivation of banks to engage in CSR. They use data from a sample of 162 banks in 22 countries and cover the period 2003-2009. The empirical results show that CSR positively associates with financial performance, when financial performance is measured as ROA, ROE, net interest income and non-interest income.
\In a similar international set, Esteban-Sanchez *et al*. (2017) employ data for a sample of 154 financial institutions in 22 countries during the period 2005-2010 to examine the relationship between corporate performance and corporate responsibility. The results show that banks with better employee relationships and corporate governance have better financial performance. In addition, it is found that during the crisis, better relations with the community could be valued positively by investors, which, in turn, could increase corporate financial performance.

Simsek and Cankaya (2021) examine the relationship between the ESG scores and financial performances of banking institutions operating in the G-8 countries, namely, Italy, France, Japan, Canada, Russia, the UK and the US. The financial performance of banks is measured as ROA and ROE. The results show that the environmental score has a negative and significant relationship with both performance measures, while the social score has a positive and significant relationship with the two performance measures.

Dragomir *et al*. (2022) examine the influence of ESG performance on the financial performance of 333 banks located in 53 countries in Europe, America, and Asia, before and during the Covid-19 pandemic of 2019-2021. The findings indicate that the banks' environmental performance in 2019 had a negative influence on the return on equity during 2020, while no other ESG factors were significant.

Finally, about Africa, Siueia *et al*. (2019) examine the impact of voluntary CSR disclosure on financial performance, i.e., ROA and ROE, in the Sub-Saharan banking sector by comparing the top-ranked banks in Mozambique and the Republic of South Africa. Based on a panel data covering the period 2012-2016, the authors regress financial performance on CSR disclosures and found a significant and positive relationship between these factors suggesting that CSR behavior is helpful to improve the performance of banks.

3. RESEARCH METHODOLOGY

In this section, we describe the research methodology we apply to assess the relationship of ESG risk scores and net interest income with the financial performance of the European banks.

3.1 Correlation Analysis

In the first step, we apply simple correlation analysis, based on the Pearson's correlation coefficient, of the key variables that are used in our study. These variables are financial performance, i.e., Return on Assets, which is calculated as the fraction of profit before tax to total assets, and Return on Equity, which is calculated as the fraction of profit before tax to total equity, the ESG risk score computed by Morningstar Sustainalytics, the size of banks, which is calculated as the natural logarithm of their total asset as at 31/12/2022, the efficiency ratio, which is computed as the fraction of net interest income for the year 2022 to total assets as at 31/12/2022, the leverage ratio, which is calculated as the fraction of total liabilities to total assets as at 31/12/2022, and the net interest income for 2022.

The main benefit of correlation analysis is that it helps determine which variables one wants to investigate further, and it allows for rapid hypothesis testing. Such an analysis is primarily concerned with finding out whether a relationship exists between variables and then determining the magnitude and sign of that relationship.

Correlation does not entail causation. That means that correlation analysis identities and evaluates a relationship between two variables, but a positive correlation does not automatically mean that one variable affects the other. This type of correlation only reflects a linear correlation of variables and ignores non-linear types of relationships or correlations.

3.2 Regression Analysis of Financial Performance

In the first step, we run the following two-factor cross-sectional regression model on the relationship between financial performance and ESG risk score and net interest income:

$$Pnce = \beta_0 + \beta_1 ESGrsk + \beta_2 NII + u \quad (1)$$

where Pnce stands for ROA or ROE, ESGrsk is the most recent Morningstar's ESG risk score, and NII is the net interest income, that is, total interest revenue minus total interest expense.

Several studies have accentuated that there is a positive relationship between the ESG performance and financial performance for banks. In our case, ESG performance is approached in a negative way, that is, the highest the ESG risk score of a bank, the lower its ESG performance. Therefore, if the findings of the literature apply to our sample of banks, the ESGrsk coefficient should be negative and statistically significant. A positive and significant coefficient is expected for net interest income.

In an alternative version of model (1), we replace net interest income with the efficiency ratio. Efficiency is positively related to corporate financial performance (Khan *et al.*, 2021). Therefore, we expect a positive and significant estimate for this variable.

In the second step, along with ESG risk score and net interest income or efficiency ratio, we consider two additional control variables. The first one is the size of banks and the second is the leverage ratio. The multivariate cross-sectional model we run is shown in the following equation:

$$Pnce = \beta_0 + \beta_1 ESGrsk + \beta_2 NII + \beta_3 Size + \beta_4 Leverage + u \quad (2)$$

where all variables are defined as above.
Size is frequently considered to be positively related to firm performance. If this is true in our case, the coefficient of size will be positive and significant. With respect to leverage, there are studies that report a negative impact of this factor on firm performance (e.g., Yameen *et al*., 2019). If this is the case for our sample too, the coefficient of leverage must be negative.

As in model (1), we run an alternative version of model (2) in which the net interest income variable is replaced with the efficiency ratio.

As an extension to model (2), we add dummy variables that represent the geographical parts of the European continent. We do so in order to identify whether there is a performance advantage of specific groups of countries over the other. The extended model is the following:

$$Pnce = \beta_0 + \beta_1 ESGrsk + \beta_2 NII + \beta_3 Size + \beta_4 Leverage + \beta_5 West + \beta_6 South + \beta_7 North + + u \quad (3)$$

where, Pnce, ESGrsk, NII, size and leverage are defined as above. West is a dummy variable which takes value one for banks from Western Europe and zero otherwise, South is a dummy variable which takes value one for banks from Southern Europe and zero otherwise and North is a dummy variable which takes value one for banks from Northern Europe and zero otherwise. The constant of this model concerns banks from Eastern Europe.

3.3 Sample

Morningstar Sustainalytics monitors 229 listed and non-listed European banks. Several non-commercial banks are included in this group, such as the European Bank for Reconstruction and Development or the European Investment Bank. Such banks have been excluded from our sample. Some banks with no publicly available financial statements for 2022 have been excluded too. After this screening, 187 banks located throughout the European continent remained in our sample.

Table 1 provides basic accounting figures of the examined banks for 2022. The reported figures are assets, equity and total liabilities as at 31/12/2022, as well as net interest income and profit before tax for 2022. An equity to assets ratio is reported too. These data are presented at the group level and have been collected manually from the consolidated financial statements for the year 2022. The presentation of data is made per each of the five ESG risk cluster considered by Morningstar Sustainalytics, i.e.,

negligible ESG risk, low ESG risk, medium ESG risk, high ESG risk and severe ESG risk,[3] and for the entire sample too. All data are expressed in euros.[4]

At the balance sheet level, average assets amount to 187 billion euros, with the largest bank in the sample presenting assets of 2.7 trillion euros. This is the French banking giant BNP Paribas SA, which is classified as a bank of medium risk from an ESG perspective. On the other hand, the smallest bank in the sample is the TF Bank AB from Sweden, a bank of high ESG risk.

Going further, the average equity in the sample approximates 10.7 billion euros. The minimum and maximum equity figures amount to 64 million and 127 billion euros, respectively. Compared to total assets, equity figures are rather low. In fact, the average equity to assets ratio in the sample is just 7.63%. This percentage shows that the average European bank relies heavily on external resources for financing its operations. Going further, average total liabilities amount to 176 billion euros with the maximum liabilities figure exceeding 2.5 trillion euros.

At the profit and loss statement level, average net interest income amounts to 2.3 billion euros. The maximum net interest income amount is 38.6 billion euros and has been achieved by the Spanish Banco Santander SA, which is of medium ESG risk. Interestingly enough, there is one bank with a negative net interest income figure.[5]

When it comes to profitability, the average profit before tax in the sample amounts to 1.1 billion euros. The worst profitability measure of the sample is a loss of 3.3 billion euros and is found in the high ESG risk cluster. This figure has been achieved by the Credit Suisse Group AG.[6] On the other hand, the maximum profit before tax of the sample for 2022 was 15.3 billion euros. Banco Santander SA reached this maximum profitability level.

Table 2 presents key financial ratios of the samples' banks, namely, the efficiency ratio, the leverage ratio, the return on assets and the return on equity. The average efficiency ratio of the sample is 1.59%. The minimum efficiency is negative at -1.55% (achieved by the Polish bank with the negative net interest income) and the maximum efficiency ratio is equal to 20.67% (presented by the Virgin Money UK). The average leverage ratio is equal to 92.37%. Extreme leverage scores, i.e., minimum and maximum scores are 47.25% and 99.77%, respectively.

As far as the financial performance of the examined banks is concerned, the average ROA in the sample is 0.81%. The minimum ROA is negative at -2.31% and the maximum ROA is equal to 7.80% (achieved by the Virgin Money UK). The average ROE is 11.04%, with extreme ROE scores amounting to -33.95% and 112.19%. These minimum and maximum ROE ratios are presented by the PKO Bank Hipoteczny SA and the UniCredit SpA (from Italy), respectively.

[3] Obviously, ESG concerned investors should avoid investing in banks with high ESG risk scores.

[4] For banks whose financial statements are presented in currencies other than euro, the translation into euro has been made with the relevant exchange rates as at 31/12/2022.

[5] This is the PKO Bank Hipoteczny SA from Poland.

[6] In March 2023 Credit Suisse Group was agreed to be acquired by the UBS Group, which is leading universal bank in Switzerland, in a deal that reached 3 billion euros.

4. ESG Risk Analysis

Table 3 provides information on the ESG performance of the European banks. The average ESG risk score in the sample is 19.9. This term shows that, on average, the examined banks are of low ESG risk. In fact, 90 (or 48.13%) of the banks under study are included in the negligible and low ESG risk clusters. 85 banks are of medium ESG risk, 11 banks are of high ESG risk and just one bank (the VTB Bank from Russia) presents severe ESG risk.

Table 3 provides a per European geographical part analysis of the banks included in the five ESG risk clusters of Morningstar Sustainalytics. The Southern Europe part concerns banks from Italy, Spain, Greece, Portugal and Slovenia. The Northern Europe part considers banks from the United Kingdom, Sweden, Denmark, Finland, Norway, Ireland, Estonia and Iceland. Germany, France, Netherlands, Belgium, Austria, Switzerland and Liechtenstein are included in the Western Europe part. Finally, the Eastern Europe part refers to banks from Russia, Poland, Romania, Czech Republic, Hungary and Slovakia.

In the negligible ESG risk cluster, 4 out of 20 banks (20%) are from the southern part, 6 banks (30%) are from the northern part and 10 banks (50%) are from the western part. In the low risk cluster, 10 out of 70 banks (14%) are from the southern part, 27 banks (39%) are from the northern part, 23 banks (33%) are from the western part and 10 banks (14%) are from the Eastern Europe part. In the medium ESG risk cluster, 72% of banks are located in the northern and western parts of Europe. In the case of high ESG risk scores, more than half of banks come from Southern and Eastern Europe. Finally, the one bank with severe ESG risk comes from Russia.

At the sample level, 132 banks are located in Northern and Western Europe, and 31 and 24 banks come from Southern and Eastern Europe, respectively. An interesting element is that, at the sample level, the average ESG risk scores of banks from Northern and Western Europe are lower than those from the banks in Southern and Eastern Europe. The less ESG risky area is Western Europe, with an average ESG risk score of 19.1. The second less risky area is Northern Europe with an average ESG risk score of 19.3. The most risky part of Europe is the Eastern one, where banks presents an average ESG risk score of 22.7. Finally, the average ESG risk score in the South is 20.8.[7]

The latter evidence suggests that the banks from Western and Northern Europe have been more keen on adopting good ESG practices. On the other hand, banks from the South and the East need to do more, compared to their peers from the West and the North, towards enhancing their ESG performance. The differences in ESG performance between West and North and South and East might be explained by the different levels of economic development among European countries, with the Western and Northern counties being considered more developed than those in the South and the East. Social,

[7] To gauge whether the differences in ESG risk scores among the four parts of Europe are statistically significant, we have run a regression model where the dependent variable is ESG risk score and the independent variables are a dummy variable which takes value one for banks from Western Europe and zero otherwise, a dummy which takes value one for banks from Southern Europe and zero otherwise and a dummy which takes value one for banks from Northern Europe and zero otherwise. The constant of the model concerns banks from Eastern Europe. The results have showed that the differences in ESG risk scores between Eastern Europe and Western and Northern Europe are statistically significant, but the difference in ESG risk scores between Eastern and Southern Europe are insignificant. These results are not shown in the paper but are available upon request.

political, cultural or other factors might also explain the differences in banks' ESG performance among the European countries.

5. Empirical Results

The results of our empirical analysis are reported in this section. We first discuss the correlation coefficients among the key variables considered in our study and then we present the results of the regression analysis on the financial performance of the European banks.

5.1 Correlation Analysis

Table 4 presents the correlation coefficients among ROA, ROE, the ESG risk score, the size of banks, the efficiency and leverage ratios, and the net interest income for 2022. According to the correlation figures, ROA is negatively (but weakly) related to ESG risk score. This is also the case for ROE. Net interest income is positively related to both financial performance measures. This is also the case for the efficiency ratio. Finally, the leverage ratio is negatively related to ROA and positively related to ROE.

The correlation coefficients entail that the variables we have chosen to use in our analysis have some sort of relationship with the financial performance of the European banks. However, whether these linear relationships can be interpreted as if the selected variables can explain or affect financial performance will be answered via the results of the regression analysis that follow in the next section.

5.2 Regression Analysis of Financial Performance

The results of models (1), (2) and (3) on bank's financial performance are provided in Tables 5 and 6. Table 5 concerns ROA and Table 6 regards ROE. The coefficients of variables, t-statistics on their statistical significance and R-squared are presented in the tables. Each table has two panels; Panel A concerns regression results when the net interest income is included in the explanatory variables of the models. Panel B refers to results obtained by replacing net interest income with the efficiency ratio in the applied models.

In the case of ROA, the two-factor model (1) produces insignificant results when net interest income is included in the independent variables. However, when we use the efficiency ratio instead of the net interest income, we obtain a slightly negative but statistically significant estimate for the ESG risk score and a strongly positive and significant estimate for the efficiency ratio amounting to 0.39. This number shows that an increase in efficiency by one unit can result in an increase in the banks' financial performance expressed in ROA terms by 39 basis points (pbs).

When we consider the results obtained for ROA via model (2), we see that the estimate of ESG risk score is slightly negative but statistically significant at 5%. The coefficient of net interest income is clearly positive and significant at 1%. Furthermore, the coefficients of size and leverage are negative and significant. In the alternative version of model (2), the results are similar to these of the first version, with the exception of the size factor, whose estimate is statistically insignificant.

Finally, the estimates obtained through the extended model (3) are quite similar to the results of model (2). In Panel A, the estimates of ESG risk score, size and leverage are significantly negative. In Panel B, the coefficients of ESG risk score and leverage are

negative and significant, but the size estimate is not significant in statistical terms. When it comes to the geographical dummies, only the South and North coefficients are significantly positive in the second version of model (3), indicating that the financial performance of the banks in these regions are significantly higher than that in Eastern Europe.

In regard to ROE, the results in Table 6 are quite strong. Model (1) produces negative and statistically significant estimates for ESG risk score and significantly positive estimates for net interest income (or the efficiency ratio). This is also the case for the corresponding coefficients obtained from model (2). Similar to the results on ROA, the estimate of the size factor is significantly negative only in the first version of the model (that with the net interest income in the explanatory variables of the model). Finally, contrary to the results on ROA, the leverage ratio presents positive and significant estimates, ranging from 0.43 to 0.89 in the first and the second versions of the model, respectively.

Quite similar results are obtained from model (3) on the ESG risk score, net interest income or the efficiency ratio, size and leverage ratio. In addition, with respect to the geographical dummy variables, only that concerning the banks that originate from Southern Europe are positive and statistically significant, indicating that the ROE ratios of these banks are significantly higher than those of the banks in Eastern Europe.

In sum, the empirical findings of the applied regression analysis revealed that financial performance is negatively related to ESG risk score but positively related to net interest income or the efficiency ratio. Moreover, the size of banks seems to exert some sort of a negative impact of financial performance. Interestingly enough, the leverage of banks is quite significant in explaining their financial performance. However, the sign of the leverage's impact on financial performance is not unambiguous, as it is negative in the case of ROA but positive in the case of ROE.

6. CONCLUSION

In this study, we examine the relationship of the ESG risk score and net interest income with financial performance using data of a sample of 187 banks located throughout Europe. The study covers 2022. Two alternative versions of financial performance are considered, i.e., return on assets and return on equity. Along with ESG risk scores and net interest income, we use the efficiency and leverage ratios of banks and their size as explanatory variables of financial performance. From a methodological perspective, correlation analysis and cross-sectional regression analysis are applied. A per country analysis of ESG risk scores is applied too.

With respect to the latter, the analysis showed that banks from Northern and Western Europe are less risky from an ESG perspective compared to banks from Southern and Eastern Europe. This ESG advantage of the North and West over the South and East could be attributed to the different levels of economic growth among the specific geographical parts of Europe. Other social, political and cultural factors could also be considered to explain the differences in the ESG performance of banks from different European regions. In any case, ESG concerned investors and other stakeholders would probably need to avoid investing or transacting with banks from countries with weaker ESG principles and practices.

When it comes to the core issue under examination, the empirical results revealed a negative relationship between ESG risks score and financial performance. This finding is in line with that strand of literature which says that the higher the ESG performance of a corporation, the better its financial performance. On the other hand, net interest income has been found to be positively related to financial performance. This is also the case when net interest income is replaced with the efficiency ratio in the applied econometric models.

Going further, the size of banks seems to be negatively related to financial performance. However, the evidence of the negative impact of the size factor is less strong than the evidence concerning ESG risk score, net interest income and efficiency ratio. In regard to leverage, the results showed that this factor can affect ROA in a negative way but the impact of leverage on ROE is significantly positive.

Overall, our study provides strong evidence that supports the idea about a positive impact of ESG performance on corporate financial performance in the banking sector. Therefore, the European banks, and specially those from countries which have been less keen on embracing strong ESG principles, need to keep on working towards enhancing their social and environmental positive footprint and improving their governance practices to their own and the general good.

From a practical point of view, our results can serve as an efficient selection tool for investors and other ESG concerned stakeholders. The important role of variables such as net interest income, efficiency ratio, leverage ratio and size can serve as indicators for future performance and can help focus on banks with the highest financial performance, which may reward investors with higher dividends and, possibly, higher stock returns.

The main limitation of our study is that it uses data only for one year. This is due to the lack of sufficient publicly available data. More specifically, even though the financial statements of banks are available for more years than 2022, this is not the case for Morningstar Sustainalytics' ESG risk scores. Therefore, one could seek access to historical data on ESG risk scores and expand our work. Moreover, our study considers linear relationships between the examined variables. One could also examine the possibility of a non-linear correlation between financial performance and ESG performance, net interest income, size, leverage and efficiency. Other explanatory factors, such as the non-performing loans ratio, the age of banks or the size of the board could be considered too. Finally, comparisons between the European and American or banks from other continents could be made too.

REFERENCES

1. Albertazzi, U., and Gambacorta, L., 2009, "Bank Profitability and the Business Cycle", *Journal of Financial Stability* 5(4), pp. 393-409.
2. Albertini, E., 2013, "Does Environmental Management Improve Financial Performance? A Meta-Analytical Review", *Organization & Environment* 26(4), 431-457.
3. Atan, R., Md. Alam, M., Said, J., and Zamri, M., 2018, "The Impacts of Environmental, Social, and Governance Factors on Firm Performance: Panel Study of Malaysian Companies", *Management of Environmental Quality* 29(2), pp. 182-194.

4. Athanasoglou, P., Brissimis, S., and Delis. M., 2008, "Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability", *Journal of International Financial Markets, Institutions and Money* 18(2), pp. 121-136.
5. Bolt, W., de Haan, L., Hoeberichts, M., van Oordt, M., and Swank, J., 2012, "Bank Profitability During Recessions", *Journal of Banking and Finance* 36(9), pp. 2552-2564.
6. Brogi, M., and Lagasio, V., 2019, "Environmental, Social, and Governance and Company Profitability: Are Financial Intermediaries Different? *Corporate Social Responsibility and Environmental Management* 26(3), pp. 576-587.
7. Eccles, R.G., Ioannou, I., and Serafeim, G., 2014, "The Impact of Corporate Sustainability on Organizational Processes and Performance", *Management Science* 60(11), pp. 2835-2857.
8. Dietrich, A., and Wanzenried, G., 2011, "Determinants of Bank Profitability Before and During the Crisis: Evidence from Switzerland", *Journal of International Financial Markets, Institutions and Money* 21(3), pp. 307-327.
9. Dragomir, V., Radu, O.-M., Ionescu, B.-S., and Ionescu-Feleaga, L., 2022, "The Influence of ESG Factors on Financial Performance in the Banking Sector During the Covid-19 Pandemic", *Economic Computation and Economic Cybernetics Studies and Research* 56(4), pp. 71-88.
10. Esteban-Sanchez, P., de la Cuesta-Gonzalez, M., and Paredes-Gazquez, J.D., 2017, "Corporate Social Performance and its Relation with Corporate Financial Performance: International Evidence in the Banking Industry", *Journal of Cleaner Production* 162, pp. 1102-1110.
11. Harjoto, M., and Laksmana, I., 2018, The Impact of Corporate Social Responsibility on Risk Taking and Firm Value", *Journal of Business Ethics* 151, pp. 353-373.
12. Jo, H., Kim, H. and Park, K., 2015, "Corporate Environmental Responsibility and Firm Performance in the Financial Services Sector", *Journal of Business Ethics*, 131(2), pp. 257-284.
13. Khan, M.N., Parksh, R., Shamim, M., and Ali, S., 2021, "Does Audit Quality Matter for Firm Performance? Empirical Evidence from Pakistani Public Listed Companies", *Elementary Education Online* 20(5), pp. 3953-3960.
14. Koapaha, H.P., 2023, "The Impact of Net Interest Income and ESG on Bank Performance", *Indonesian Journal of Business Analytics* 3(2), pp. 503-512.
15. Peni, E., and Vähämaa, S., 2012, "Did Good Corporate Governance Improve Bank Performance During the Financial Crisis?", *Journal of Financial Services Research* 41, pp. 19-35.
16. Shakil, M.H., Mahmood, N., Tasnia, M., and Munim, Z.H., 2019, "Do Environmental, Social and Governance Performance Affect the Financial Performance of Banks? A Cross-Country Study of emerging market banks", *Management of Environmental Quality* 30(6), pp. 1331-1344.
17. Simpson, W.G. and Kohers, T., 2002, "The Link between Corporate Social and Financial Performance: Evidence from the Banking Industry", *Journal Business Ethics* 35, pp. 97-109.
18. Simsek, O., and Cankaya, S., 2021, "Examining the Relationship between ESG Scores and Financial Performance in Banks: Evidence from G8 Countries", *PressAcademia Procedia* 14, pp. 169-170.
19. Siueia, T.T., Wang, J.L., and Deladem, T.G., 2019, "Corporate Social Responsibility and Financial Performance: A Comparative Study in the Sub-

Saharan Africa Banking Sector", *Journal of Cleaner Production* 226(4), pp. 658-668.

20. Soana, M.-G., 2011, "The Relationship between Corporate Social Performance and Corporate Financial Performance in the Banking Sector", *Journal of Business Ethics* 104, pp. 133-148.
21. Wu, M.-W., and Shen, C.-H., 2013, "Corporate Social Responsibility in the Banking Industry: Motives and Financial Performance", *Journal of Banking and Finance* 37(9), pp. 3529-3547.
22. Yameen, M., Farhan, N.H.S., and Tabash, M., 2019, "The Impact of Liquidity on Firms' Performance: Empirical Investigation from Indian Pharmaceutical Companies", *Academic Journal of Interdisciplinary Studies* 8(3), pp. 212-220.

Table 1: Accounting Data

This table presents accounting data of the sample's European banks for 2022. Data presented include assets, equity, equity to assets ratio, total liabilities, net interest income, i.e., total interest revenue minus total interest expense, and profit before tax. The presentation of data is made per each of the five ESG risk cluster considered by Morningstar Sustainalytics and for the entire sample.[n]

		Assets	Equity	Equity to Assets (%)	Total Liabilities	Net Interest Income	Profit Before Tax
Negligible ESG Risk Cluster							
No of Banks	20						
Average		153,017,568,186	9,290,207,745	6.75	143,727,360,440	1,178,910,413	631,642,268
Median		55,025,392,500	1,912,077,211	5.77	52,327,003,000	285,400,000	189,896,900
Min		11,794,358,400	900,260,000	1.40	9,952,357,800	57,937,842	37,400,000
Max		1,047,622,000,000	60,459,999,999	18.75	987,162,000,001	9,149,000,000	4,341,000,000
Low ESG Risk Cluster							
No of Banks	70						
Average		175,374,497,508	9,663,634,404	6.80	165,710,863,104	2,064,771,739	1,182,071,056
Median		56,867,717,733	3,319,622,303	6.28	54,539,895,194	746,034,012	461,932,021
Min		4,611,135,068	411,561,898	0.76	4,199,573,171	45,500,302	-22,986,443
Max		1,531,134,000,000	82,558,000,000	16.23	1,448,576,000,000	11,286,000,000	7,289,000,000
Medium ESG Risk Cluster							
No of Banks	85						
Average		214,699,582,159	11,703,451,093	8.32	202,996,131,066	2,526,923,139	1,279,604,215
Median		53,895,809,225	3,215,000,000	6.53	49,646,000,000	710,175,525	353,534,000
Min		1,996,917,481	64,079,815	0.23	1,462,165,978	-68,282,880	-306,486,675
Max		2,666,376,000,000	126,555,000,000	52.75	2,539,821,000,000	38,619,000,000	15,250,000,000
High ESG Risk Cluster							
No of Banks	11						
Average		122,979,407,450	12,532,496,935	7.92	110,446,910,515	3,023,274,124	382,816,371
Median		18,499,678,123	1,419,073,000	7.44	17,958,737,170	558,244,000	106,857,703
Min		1,640,435,786	155,106,935	2.92	1,485,328,851	31,738,493	-3,285,267,722
Max		535,805,183,019	73,509,706,062	13.89	490,094,786,730	23,700,085,456	7,138,595,187
Severe ESG Risk Cluster							
No of Banks	1						
Average		4,485,657,478	956,521,068	21.32	3,529,136,410	137,477,203	-62,973,067
Median		4,485,657,478	956,521,068	21.32	3,529,136,410	137,477,203	-62,973,067
Min		4,485,657,478	956,521,068	21.32	3,529,136,410	137,477,203	-62,973,067
Max		4,485,657,478	956,521,068	21.32	3,529,136,410	137,477,203	-62,973,067
Total Sample							
No of Banks	187						
Average		186,862,512,365	10,673,079,644	7.63	176,189,432,720	2,226,172,136	1,113,861,950
Median		54,360,706,000	3,177,943,000	6.53	50,487,519,431	660,952,000	317,139,259
Min		1,640,435,786	64,079,815	0.23	1,462,165,978	-68,282,880	-3,285,267,722
Max		2,666,376,000,000	126,555,000,000	52.75	2,539,821,000,000	38,619,000,000	15,250,000,000

n: Morningstar Sustainalytics is a leading independent ESG and corporate governance research, ratings and analytics firm that supports investors around the world with the development and implementation of responsible investment strategies.

Table 2: Financial Ratios

This table presents key financial ratios of the sample's European banks for 2022. The ratios presented are efficiency ratio, leverage ratio, Return on Assets (ROA), and Return on Equity (ROE). The presentation of data is made per each of the five ESG risk cluster considered by Morningstar Sustainalytics and for the entire sample.

		Efficiency (%)	Leverage (%)	Return on Assets (%)	Return on Equity (%)
Negligible ESG Risk Cluster					
No of Banks	20				
Average		0.88	93.25	0.51	7.57
Median		0.60	94.23	0.39	7.62
Min		0.17	81.25	0.04	1.94
Max		2.60	98.60	1.53	13.32
Low ESG Risk Cluster					
No of Banks	70				
Average		1.50	93.20	0.86	13.63
Median		1.39	93.72	0.72	11.51
Min		0.03	83.77	-0.05	-0.95
Max		3.72	99.24	2.51	112.19
Medium ESG Risk Cluster					
No of Banks	85				
Average		1.76	91.68	0.90	10.40
Median		1.21	93.47	0.61	10.41
Min		-1.55	47.25	-2.31	-33.95
Max		20.67	99.77	7.80	37.37
High ESG Risk Cluster					
No of Banks	11				
Average		2.06	92.08	0.48	7.39
Median		1.28	92.56	0.52	6.58
Min		0.62	86.11	-0.61	-8.10
Max		4.51	97.08	1.35	33.62
Severe ESG Risk Cluster					
No of Banks	1				
Average		3.06	78.68	-1.40	-6.58
Median		3.06	78.68	-1.40	-6.58
Min		3.06	78.68	-1.40	-6.58
Max		3.06	78.68	-1.40	-6.58
Total Sample					
No of Banks	187				
Average		1.59	92.37	0.81	11.04
Median		1.23	93.47	0.63	9.82
Min		-1.55	47.25	-2.31	-33.95
Max		20.67	99.77	7.80	112.19

Efficiency Ratio: Net Interest Income/Total Assets
Leverage Ratio: Total Liabilities/Total Assets
ROA: Return on Assets=Earnings Before Interest and Tax/Total Assets
ROE: Return on Equity=Earnings Before Interest and Tax/Total Equity

Table 3: ESG Risk Scores

This table presents the ESG Risk Scores for the five clusters considered by Morningstar Sustainalytics for 2022. A per country analysis is also presented in the table. This analysis considers the four geographical parts of the European continent, i.e., Southern, Northern, Western and Eastern Europe.

	ESG Risk Scores	Southern Europe	No of Banks	Northern Europe	No of Banks	Western Europe	No of Banks	Eastern Europe	No of Banks
Negligible ESG Risk Cluster									
No of Banks	20	Italy	0	United Kingdom	1	Germany	3	Russia	0
Average	8.5	Spain	4	Sweden	1	France	2	Poland	0
Median	9.1	Greece	0	Denmark	0	Netherlands	4	Romania	0
Min	4.8	Portugal	0	Finland	1	Belgium	0	Czechia	0
Max	10.0	Slovenia	0	Norway	2	Austria	1	Hungary	0
				Ireland	0	Switzerland	0	Slovakia	0
				Estonia	0	Liechtenstein	0		
				Iceland	1				
Total			**4**		**6**		**10**		**0**
Percentage			**20%**		**30%**		**50%**		**0%**
Av. ESG Risk Score			**9.1**		**9.1**		**8.0**		**0.0**
Low ESG Risk Cluster									
No of Banks	70	Italy	4	United Kingdom	8	Germany	10	Russia	0
Average	15.8	Spain	3	Sweden	4	France	3	Poland	5
Median	16.4	Greece	2	Denmark	3	Netherlands	3	Romania	1
Min	10.2	Portugal	0	Finland	3	Belgium	3	Czechia	2
Max	19.8	Slovenia	1	Norway	4	Austria	3	Hungary	1
				Ireland	0	Switzerland	1	Slovakia	1
				Estonia	1	Liechtenstein	0		
				Iceland	4				
Total			**10**		**27**		**23**		**10**
Percentage			**14%**		**39%**		**33%**		**14%**
Av. ESG Risk Score			**16.8**		**15.2**		**16.2**		**15.6**
Medium ESG Risk Cluster									
No of Banks	85	Italy	7	United Kingdom	8	Germany	10	Russia	0
Average	24.1	Spain	3	Sweden	5	France	5	Poland	5
Median	23.8	Greece	2	Denmark	6	Netherlands	2	Romania	0
Min	20.0	Portugal	3	Finland	5	Belgium	1	Czechia	2
Max	29.7	Slovenia	0	Norway	4	Austria	5	Hungary	0
				Ireland	1	Switzerland	6	Slovakia	2
				Estonia	0	Liechtenstein	1		
				Iceland	2				
Total			**15**		**31**		**30**		**9**
Percentage			**18%**		**36%**		**35%**		**11%**
Av. ESG Risk Score			**24.9**		**23.8**		**24.2**		**23.0**
High ESG Risk Cluster									
No of Banks	11	Italy	1	United Kingdom	1	Germany	0	Russia	2
Average	32.6	Spain	1	Sweden	2	France	0	Poland	1
Median	31.9	Greece	0	Denmark	0	Netherlands	0	Romania	0
Min	30.7	Portugal	0	Finland	0	Belgium	0	Czechia	0
Max	35.4	Slovenia	0	Norway	0	Austria	1	Hungary	0
				Ireland	0	Switzerland	1	Slovakia	1
				Estonia	0	Liechtenstein	0		
				Iceland	0				
Total			**2**		**3**		**2**		**4**
Percentage			**18%**		**27%**		**18%**		**36%**
Av. ESG Risk Score			**33.2**		**31.1**		**31.1**		**34.2**
Severe ESG Risk Cluster									
No of Banks	1	Italy	0	United Kingdom	0	Germany	0	Russia	1
Average	44.8	Spain	0	Sweden	0	France	0	Poland	0
Median	44.8	Greece	0	Denmark	0	Netherlands	0	Romania	0
Min	44.8	Portugal	0	Finland	0	Belgium	0	Czechia	0
Max	44.8	Slovenia	0	Norway	0	Austria	0	Hungary	0
				Ireland	0	Switzerland	0	Slovakia	0
				Estonia	0	Liechtenstein	0		
				Iceland	0				
Total			**0**		**0**		**0**		**1**
Percentage			**0%**		**0%**		**0%**		**100%**
Av. ESG Risk Score			**0.0**		**0.0**		**0.0**		**44.8**
Total Sample									
No of Banks	187	Italy	12	United Kingdom	18	Germany	23	Russia	3
Average	19.9	Spain	11	Sweden	12	France	10	Poland	11
Median	20.2	Greece	4	Denmark	9	Netherlands	9	Romania	1
Min	4.8	Portugal	3	Finland	9	Belgium	4	Czechia	4
Max	44.8	Slovenia	1	Norway	10	Austria	10	Hungary	1
				Ireland	1	Switzerland	8	Slovakia	4
				Estonia	1	Liechtenstein	1		
				Iceland	7				
Total			**31**		**67**		**65**		**24**
Percentage			**17%**		**36%**		**35%**		**13%**
Av. ESG Risk Score			**20.8**		**19.3**		**19.1**		**22.7**

Table 4: Correlations

This table presents the correlations of the key variables that are used in our analysis for the year 2022.

	ROA	ROE	ESG Risk	Size	Net Interest Income	Efficiency Ratio	Leverage Ratio
ROA	1.00	0.40	-0.03	-0.21	0.10	0.79	-0.74
ROE	0.40	1.00	-0.07	0.06	0.15	0.08	0.06
ESG Risk	-0.03	-0.07	1.00	-0.10	0.02	0.13	-0.13
Size	-0.21	0.06	-0.10	1.00	0.86	-0.22	0.32
Efficiency Ratio	0.79	0.08	0.13	-0.22	0.15	1.00	-0.84
Leverage Ratio	-0.74	0.06	-0.13	0.32	0.00	-0.84	1.00
Net Interest Income	0.10	0.15	0.02	0.86	1.00	0.15	0.00

Table 5: Regression Analysis of Return on Assets

This table presents the results of cross-sectional regression analysis of the European banks' financial performance expressed in Return on Assets (ROA) terms. In this analysis, the various explanatory variables considered are the ESG Risk Scores of the banks, the natural logarithm of their net interest income or their efficiency ratio, size, i.e., the natural logarithm of assets, leverage ratio, and dummy variables representing the geographical parts of Europe.

Panel A						
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
Constant	-0.38	-0.41	10.81[a]	6.93	10.35[a]	6.74
ESG Risk Score	0.00	-0.41	-0.02[b]	-2.04	-0.02[b]	-2.07
Net Interest Income	0.06	1.38	0.33[a]	3.60	0.33[a]	3.01
Size			-0.31[a]	-3.06	-0.30[b]	-2.52
Leverage			-0.09[a]	-4.96	-0.09[a]	-4.84
West					0.03	0.13
South					0.24	1.10
North					0.25	1.19
R-squared	0.01		0.61		0.62	
Panel B						
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
Constant	0.56[a]	3.48	3.67[c]	1.95	2.97	1.57
ESG Risk Score	-0.02[b]	-2.18	-0.02[b]	-2.20	-0.02[b]	-2.30
Efficiency	0.39[a]	20.77	0.30[a]	5.16	0.32[a]	5.11
Size			0.00	0.10	0.01	0.24
Leverage			-0.03[c]	-1.64	-0.03[c]	-1.84
West					0.11	0.55
South					0.41[c]	1.95
North					0.34[c]	1.70
R-squared	0.64		0.65		0.68	

[a] Statistically Significant at 1%; Statistically Significant at 5%; Statistically Significant at 10%.

Table 6: Regression Analysis of Return on Equity

This table presents the results of cross-sectional regression analysis of the European banks' financial performance expressed in Return on Assets (ROA) terms. In this analysis, the various explanatory variables considered are the ESG Risk Scores of the banks, the natural logarithm of their net interest income or their efficiency ratio, size, i.e., the natural logarithm of assets, leverage ratio, and dummy variables representing the geographical parts of Europe.

Panel A						
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
Constant	-9.49	-0.84	-14.50	-0.87	-17.09	-1.01
ESG Risk Score	-0.11[c]	-1.99	-0.18[c]	-1.88	-0.19[c]	-1.67
Net Interest Income	1.13[b]	2.08	4.94[a]	3.84	4.62[a]	3.32
Size			-4.47[a]	-3.25	-4.08[b]	-2.65
Leverage			0.43[b]	2.57	0.41[b]	2.41
West					-0.47	-0.17
South					5.90[b]	2.01
North					2.01	0.77
R-squared	0.13		0.18		0.13	
Panel B						
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
Constant	13.16[a]	5.17	-83.57[a]	-3.26	-90.29[a]	-3.56
ESG Risk Score	-0.16[c]	-1.76	-0.14[c]	-1.71	-0.15[c]	-1.71
Efficiency	0.71[c]	1.67	3.05[a]	4.00	3.17[a]	4.14
Size			0.38	0.66	0.43	0.71
Leverage			0.89[a]	3.47	0.94[a]	3.64
West					-0.30	-0.11
South					7.54[b]	2.55
North					2.69	1.06
R-squared	0.12		0.20		0.16	

[a] Statistically Significant at 1%; Statistically Significant at 5%; Statistically Significant at 10%.