



Lisbon School
of Economics
& Management
Universidade de Lisboa

MASTER
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MASTER'S FINAL WORK
DISSERTATION

**THE RELATIONSHIP BETWEEN ESG SCORES AND
LENDING DECISIONS OF BANKS IN EUROPE**

JOANA MARIA SILVESTRE BILRO

OCTOBER - 2022



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ABSTRACT

This paper analyses the relationship between Environmental, Social and Government (ESG) scores and lending decisions of 139 listed banks in Europe, from 2005 to 2020. In this context, bank-level controls and ESG metrics were used. We extract ESG measures from Thompson Reuters Eikon and banks variables from Orbis Bank Focus.

We tested whether banks with higher ESG scores are more or less likely to lend money to individuals or firms, and which types of loans. Results suggest that banks, when making loan decisions, are concerned about Environmental, Social and Governmental issues. The effect is largely covered by the Environmental and Governance components. Additionally, it was found a negative relationship between ESG and mortgage loans. Regarding corporate and consumer loans, it was found a positive relationship with ESG.

KEYWORDS: ESG; Mortgage Loans; Consumer loans; Corporate Loans; Other Loans; Europe.

JEL CODES: F64; G21; G34; Q56

RESUMO

Este estudo analisa a relação entre os scores ambientais, sociais e governamentais (ESG) e as decisões de empréstimo de 139 bancos pertencentes à Europa, de 2005 a 2020. Neste contexto, foram utilizadas variáveis de controlos ao nível dos bancos e métricas do ESG. As medidas de ESG foram extraídas do Thompson Reuters Eikon e as variáveis dos bancos do Orbis Bank Focus.

Testamos se os bancos com pontuações ESG mais elevadas têm mais ou menos probabilidade de emprestar dinheiro a particulares ou empresas, e que tipos de empréstimos. Os resultados sugerem que os bancos, ao tomarem decisões de empréstimo, estão preocupados com questões ambientais, sociais e governamentais. O efeito é amplamente coberto pelas componentes Ambientais e Governamentais. Além disso, foi encontrada uma relação negativa entre o ESG e os empréstimos hipotecários. Relativamente aos empréstimos a empresas e a consumidores, verificou-se uma relação positiva com os ESG.

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GLOSSARY

CONL – Consumer Loans

CORL – Corporate loans

DFI – Derivative Financial Instruments (Assets)

ESG - Environmental, Social and Governance

E – Environmental

G – Governance

LLR – Loan Loss Reserves

ML – Mortgage Loans

OL – Other Loans

OLS – Ordinary Least Squares

S – Social

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1.INTRODUCTION

Environment, Social and Government (ESG) is becoming a key topic across the business world and individual's needs. Climate change and the pandemic effects of COVID-19 have made ESG a much more long-term initiative. Regulators and banks are no longer the only parties concerned about responsible lending. Investors are now aware of ESG issues and the association of these aspects for their companies.

As it relates to the financial sector sustainability, banks are anticipated to play a dual role. The internal function relates to business as common operations and the external role involves the consideration of various ESG risks in their lending, financing, and investment decisions.

The unforeseeable risks of a pandemic and the climate issue, which both have a significant influence on the world economy, are frequently compared. Many investors and governments have now realised the need of accelerating investments and development of enterprises that prioritize ESG. Because of this, our society is no longer solely dependent on the government to supply its demands. These needs range from the development of jobs, preservation of natural resources and the protection of consumer interests.

The expansion of an economy based on total money supply and the fostering of competition are both made possible by loans to new enterprises. Since financing gives customers greater purchasing power and flexibility and helps businesses increase sales and improve cash flow, both consumers and businesses profit from financing programs.

It is expected that consumers and corporates react positively to ESG practices. There has been an increase in firms defining sustainability targets and publicizing their green practices in order to attract the interest of prospective employees, clients, and investors who are increasingly on board with sustainable practices.

The impact of ESG metrics on financial performance has been covered in prior literature. There is a consensus on the association between these two measures. Most empirical studies suggest a positive relationship between ESG and financial performance (Ahmed et al. 2018; Buallay, 2018; Danisman, 2022). Although the relationship between performance and ESG is well studied, the relationship between ESG and the lending structure of banks has not yet been studied. The purpose of this study is to examine whether banks with higher ESG scores are more or less likely to lend money to individuals

or firms, and which types of loans. This question is relevant as we want to understand if banks adopt favorable environmental, social, and governmental practices and if this actually has an impact on the amount of credit extended to both businesses and consumers.

Our empirical analysis uses data from 2005 to 2020, retrieved from Thompson Reuters Eikon and Orbis Bank Focus and comprises 139 listed banks belonging to Europe. Many other studies use U.S as sample and for that reason we decided to use Europe since there are different rules for banks in Europe when compared to U.S and we wanted to collect the maximum number of banks in different countries. In order to provide a reliable estimation, control variables were used to track any potential unobserved effects. We used four types of loans (Mortgage loans, Corporate loans, Consumer loans and Other loans) to measure the impact on ESG.

Our variables of interest, ESG, ENV, SOC and GOV are statistically significant when we use ML, CONL and CORL as dependent variables. It was found a negative relationship between ESG and mortgage loans whether corporate and consumer loans present a positive relationship with ESG measures. On the other hand, no relationship was found between OL and ESG.

Results from this study suggest that banks, when making credit decisions, are concerned about Environmental, Social, and Governmental factors. Environment and Government were the measures that had the higher effect and significance in our study.

Our findings offer contribution to the literature since results obtained are based on 139 banks in 28 European countries. We also introduced ESG factors and showed the impact that those factors have on the lending decisions of banks. In addition, this study contributes to practice since it shows evidence that banks are responsive to ESG performance scores when grant loans to corporates or individuals.

The remaining part of the study proceeds as follows: Section 2 provides a literature review and research hypothesis. Section 3 details the samples, the variables, and the methodology used. Section 4 provides the main results. Conclusions and limitations are presented in the last section.

2. LITERATURE REVIEW AND HYPOTHESIS

Financial institutions have demonstrated an increasing interest in Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG) in recent years. In today's ethical business practices, ESG is deemed crucial. Therefore, many firms are beginning to place an emphasis on ESG rather than CSR. ESG's purpose is to capture all non-financial risks and opportunities that a firm faces on a daily basis.

Different theories have been used to understand whether ESG practices have positive or negative impact on economy. On the one hand, (Friedman, 1970) expressed his concerns about sustainable practices and pointed out that “There is one and only one social responsibility of business-to use it resources and engage in activities designed to increase its profits...”. On the other hand, recent studies support the idea that firm profitability and ESG practices are related (Danisman et al, 2022), indicating that credit risk, asset risk and profitability have less influence in banks that engage in ESG operations. Some (Hart and Zingales, 2017) argue that “Companies should care about the environmental and social impact on their investments”. Several empirical studies have found a link between ESG and financial performance. Financial success plays a key effect in managing long-term decisions, as profitable banks are less concerned about their near-term survival and can support ESG efforts. According to Ahmed et al. (2018), banks that are early adopters of ESG criteria in lending decisions benefit from improved financial performance.

Although banking activities may not directly harm the environment, banks are closely linked to commercial activity that damages the natural environment through their lending policies. Those institutions from all over the world recognize the importance of environment and signed the 'Statement by Banks on the Environment and Sustainable Development' to help contribute significantly to the growing importance of a clean environment (UNEP, 1992). It highlights the question of how much bank signatories consider a company's environmental friendliness while making a loan decision. Nandy et al. (2012) concluded that a more environmentally friendly company receives a better loan contract than a company with a lower environmental score and support the stakeholder theory by demonstrating that eco-conscious disclosures are an essential indicator of better corporate governance. It appears that more signatories than non-signatories of the UNEP had incorporated environmental considerations into their formal lending policy (Cowton

et al. 2000). To intensify the concerns that banks have been showing for the environment, Herbohn et al. (2019) showed that carbon risk is taken into account when making lending decisions.

Putting ESG score and lending decisions together, most of the studies agree in a positive relationship. He et al. (2021) stated that banks offer less favorable loan contract terms to client firms with ESG incidents, manifested as a higher interest rate and a lower loan size. Higher credit ratings are linked to better ESG performance and enhancing ESG commitments is a risk mitigation strategy that reduces a company's overall risk (Devalle et al. 2015).

Although credit risk is likely the most visible way that rising environmental concerns can put institutions at risk, reputational risk has become an important topic when it comes to lending decisions. According to Hauptmann (2017), the link between borrower sustainability and loan pricing has been stronger driven by the increase in scrutiny and reputation risk for banks in recent years. The likelihood of receiving a loan rises as a borrower's ESG reputation rises and low ESG banks have a desire for financing partnerships with high ESG-rated companies in order to improve their reputation (Hauptmann, 2017; Shin, 2021; Becchetti et al. 2022). In the same line of thought, Houston et al. (2021) bring to conclusion that banks with low ESG performance may be more concerned about restoring their social capital, and hence may favour borrowers with high ESG scores in order to improve their image. The author also added that banks have an incentive to avoid unfavourable exposures in catastrophic social and environmental scandals to preserve future commercial prospects. As stated by Forcadell et al. (2017), DJSI (Dow Jones Sustainability Index World) membership sends a strong signal to banks about their commitment to sustainability and provides RCSR (Reputation for Corporate Social Responsibility) that boosts company reputation. As a result, reputation can have a favourable impact on retail banking clients' opinion and improve financial success.

Looking at the three ESG components separately, there is disagreement among the authors regarding the most relevant variable in lending decisions. Danisman et al. (2022) supports the idea that environmental component has a substantial impact on the ability of banks to reduce lending during times of crisis. He et al. (2021) and Hoepner et al. (2022) came to the same conclusion that environmental issues are the most powerful factor impacting a bank's loan decision. In Shin (2021) opinion, ESG ratings social component

has the greatest impact on loan pricing, followed by the environmental factor. On the contrary, according to Hauptmann (2017), governance appears to be the most essential element for banks.

According to the agency theory, the alignment of managers' and shareholders' interests is a strong corporate governance mechanism that increases the value of the company. This measure is crucial because it establishes a set of rules and policies that regulate how a company runs and how all its stakeholders' interests are aligned. Corporate governance promotes ethical company practices, which in turn promotes financial viability. Corporate Financial Performance was higher in banks with greater employee interactions and corporate governance (Esteban-Sanchez, 2017), the company's dedication in achieving a consistent competitive advantage in ESG dimensions is an intangible value that leads to improve corporate performance (Ferrero-Ferrero, 2016) and corporate governance score are expected to improve as a company's credit rating rises (Kim, 2014). Corporate governance is a key CSR feature (Miralles-Quirós et al. 2019) that ensures responsibility, compliance and transparency for financial stakeholders while also lowering agency costs. Erragragui (2018) found a "governance paradox" in which creditors do not place equal weight on governance strengths and governance issues. Creditors' negative perceptions of governance difficulties may be mitigated by the positive perception of good CSR reports, which is commonly used by problematic corporations to "greenwash" their concerns. Basically, the author wanted to imply that there are no major consequences of corporate governance scandals on cost of debt.

It is then necessary to explain why the environment matters for banks. After analysing some theoretical papers, it was possible to conclude that banks have an incentive and a need to understand how their loan decisions affect the environment. Banking institutions are interested in environmental data on corporations, as well as a desire to increase the information available to them in many ways beyond present practice (Thompson and Cowton, 2004). In 2000, the same authors found out that environmental considerations were typically not considered to obtain a competitive advantage, but rather as something that banks believed they had to do, either because it was required by a third party or to protect their financial situation. Bansal et al. (2017) studied why companies go green and found four main reasons: improve stakeholder relationship, to comply with regulations, gain economic prosperity and competitive advantage, and maintain

ecological equilibrium. The author defends the idea of banks acting in a sense of obligation, responsibility or altruism rather than acting in their own best interests. Following the implementation of the green policy, the cost of debt of enterprises with high ESG ratings has decreased dramatically as mentioned by Li et al. (2022).

Environmental disclosure was found to have a favourable impact on return on equity (Buallay, 2018) and the environmental and corporate governance performance of banks has a significant association with the production of shareholder value (Miralles-Quirós et al. 2019). On the other hand, the authors found a negative and strong association between the social performance of banks and the production of shareholders value. Anginer et al. (2020) also added that loans made after a company's first unfavourable climate-related incident have notably greater spreads, shorter maturities, more covenant limitations, and are more likely to be collateralized. With a different opinion, Humphrey (2012) found no differences in returns between companies with high or poor ESG ratings.

Both Batae et al. (2020) and Eliwa et al. (2021) discuss the importance of environmental management in European customers, concluding that it is a critical factor. The study of Batae et al. (2020) found no major differences between Developed and Emerging Europe in terms of ESG composite score and banks in Southern European nations with low GDP have a much higher ESG score. This fact can be related to the social pillar score which is much higher in Eurozone countries than those in non-Eurozone countries. Firms can profit from improving their ESG performance and disclosure, which results in a lower loan costs and cost of capital imposed by lending institutions (Eliwa et al. 2021).

The borrower-lender connection has long been recognized as a necessary aspect in the loan approval process and lenders perception of CSR (Corporate Social Responsibility) are influenced by the quality of the borrower. Spreads are greater when low-quality borrowers make discretionary CSR investments, supporting the agency-theoretic overinvestment theory (Goss et al. 2011). Francis et al. (2018) examines whether CSR confers value on a firm and its stakeholders. Results showed that higher levels of CSR directed at secondary stakeholders are linked to lower interest rates and loan spreads. When borrowers have prior strong CSR reputation, Becchetti et al. (2022) demonstrated that negative media coverage has a greater impact on bank loan costs. With this, the authors wanted to prove that previous lending relationships mitigate the effect of

reputational risk arising from media coverage of Corporate Social Irresponsibility conducts.

When we talk about the implementation of sustainable measures, there is bound to be risk associated. CSR and ESG issues are seen as a risk for banks and these institutions will respond with less appealing loan contract terms. The effects of these concerns are large agency risks (Goss, 2011) and higher cost of financing for businesses (Erragragui, 2018). Humphrey et al. (2012) answered the question whether it costs to be sustainable. The authors found that idiosyncratic risk is unaffected by a high or low ESG rating and managers can execute an ESG strategy at no major financial cost in terms of risk or return.

Banks use their monitoring power to determine and mitigate the risk connected with price and non-price loan arrangements. With access to confidential information, banks strive to be effective monitors. When there are fundamental inefficiencies, problems, or disruptions, including conflicts of interest between shareholders and management, agency costs usually follow. By minimizing the information asymmetry between internal and external stakeholders, CSR initiatives have the impact of lowering agency costs (Kim, 2014).

Considering the literature review, namely the relationship between ESG and performance, it is expected that banks with a higher ESG score will have a more sustainable lending policy.

For a better understanding, the following is our research question: Does the ESG score actually corresponds to socially responsible and sustainable credit decisions? To answer this, we will analyze the banks' loan structure and its relationship with the ESG score.

Duan and Li (2022), found that unusually high local temperatures have a significant negative impact on mortgage lending. Mortgage approval and loan amount decrease as anomalous temperature rises. During times of increased media attention and in counties most exposed to the risk of sea level rise, this effect is significantly stronger. The authors believe that climate hazards should be a priority for financial institutions when making loan decisions.

Different reasons for a negative relation between ESG and ML were explained by Basu et al. (2021). After adjusting for borrower characteristics including income, debt-to-income ratio, race, and ethnicity, the banks' mortgage lending has decreased as their

ESG scores increases. Due to media attention and news surrounding powerful hurricanes, high-ESG banks are more likely to stop lending on mortgages in low-income regions affected by major hurricanes. Banks may refrain from making loans in these areas since many of the properties do not have flood insurance, which recovery is not allowed, lowers local home prices, and raises the possibility of mortgage default. Considering this information, our first research hypothesis is:

Hypothesis 1: ESG, Environmental, Social and Governance scores are negatively related to ML

ESG has been linked to improved financial performance in banks, according to many studies. For that, it is expected that banks with higher ESG will also have more ability and stability to finance their costumers and meet their needs.

Banks enhance communities' overall economic health by providing them with the individual credit they require. Consumers payment methods has changed over the years and a cashless society will eventually take over. Swartz et al. (2004) found that, when transaction volumes are larger, electronic payments are much more cost-effective for society than cash methods. Payment cards offer significant advantages to costumers and the move away from cash-based transactions improve economic health.

Consumers in Europe are in high demand for automobile loans. If banks can satisfy this need, individuals can be able to purchase EV (electric vehicles). In Buekers et al. (2014) opinion, enhancements to EV energy efficiency and the decarbonization of electricity generation will provide a cleaner environment.

European countries have promoted the adoption of low-emission vehicles using tax incentives. The fiscal advantages come in the form of exemptions from taxes or subsidies for electric vehicles as well as higher vehicle registration charges or yearly circulation taxes for internal combustion engine vehicles (ICEVs). According to Yan (2018), environmental awareness influences on the adoption of EV and increased tax incentives result in a higher market share for EV. The second hypothesis to test is:

Hypothesis 2: ESG, Environmental, Social and Governance scores are positively related to CONL

Without corporate loans many businesses would not exist. In order to increase a company's profitability as well as its ability to operate effectively, working capital is required. As a result, the higher ability companies have to build their businesses, the greater ability the bank has to make this type of loan.

When issuing loans, investors are increasingly looking for socially conscious firms. At the same time, banks worry about whether investors are environmentally friendly when granting loans. This is consistent with Houston (2021) research, which indicates that lenders favor borrowers with similar ESG profiles. Nandy (2012) found that better financing terms are offered to environmentally friendly businesses compared to those with lower scores.

Benefits of early engagement on ESG concerns were found by several authors. Danisman et al. (2022) shows that credit risk, asset risk and profitability are less influenced in banks that conduct ESG operations.

By focusing on these factors, banks can take a step towards becoming the kind of institutions that their stakeholders value in terms of social responsibility and environmental sustainability.

If a bank's profitability increases and risk decreases, they have the ability to provide more credit to corporates. The following is our last hypothesis:

Hypothesis 3: ESG, Environmental, Social and Governance scores are positively related to CORL and OL.

3. SAMPLE AND METHODOLOGY

3.1. Sample

The data sample was obtained from Thompson Reuters Eikon and Orbis Bank Focus and comprises 139 listed banks belonging to Europe. It was gathered data between 2005 and 2020 for this study. Italy, France and Poland are the most represented countries in the sample as we can see in Table I. A panel database for the selected variables and countries was generated through the obtained data.

Table I - Samples composition and number of banks by country

Country	Frequency	Number of banks
Austria	55	4
Belgium	26	2
Croatia	26	2
Cyprus	15	2
Czech Republic	29	2
Denmark	101	7
Estonia	16	1
Faroe Islands	13	1
Finland	56	4
France	245	16
Germany	128	9
Greece	96	6
Hungary	15	1
Ireland	79	3
Italy	285	23
Lithuania	16	1
Luxembourg	40	3
Malta	32	2
Lithuania	16	1
Netherlands	25	2
Poland	171	12
Portugal	16	1
Romania	32	2
Slovenia	15	1
Spain	88	6
Sweden	89	7
Switzerland	56	4
United Kingdom	150	14
Total	1931	139

3.2. Variables Description

In order to get a more detailed insight into lending, we decided to use four dependent variables: Mortgage Loans, Consumer Loans, Corporate Loans and Other Loans. For each dependent variable we performed the ratio of the total amount of the specific loans divided by Total Assets.

According to Orbis Bank Focus, ML are loans granted to individuals/retail customers. CONL includes loans to individuals, overdraft, credit cards, term loans and

stocks, interest rates, currencies and stock market indices, is referred to as a derivative. DFA variable was used to increase the efficiency of financial markets and hedge risks.

We included those bank-level control variables to enhance the validity of the study. LLR is estimated by the total amount of Loan Losses Reserves divided by Total Assets. DFI is estimated by the total amount of Derivative Financial Assets divided by Total Assets. SIZE is calculated as the logarithm of Total Assets.

ESG related variables were extracted from the Thomson Reuters Eikon database. We used the combined ESG score which ranges from 1 to 100 and the three pillars (ENV, GOV, SOC). The reported environmental performance and commitment in terms of resource usage, emissions, and innovation are captured by the environmental pillar score (ENV). In terms of resource consumption, emissions, and innovation, the environmental pillar score (ENV) measures reported environmental commitment and performance. The social pillar score (SOC) considers activities linked to the workplace, human rights, the community, and product responsibility. The Governance Pillar Score (GOV) displays information on governance, including the effectiveness of equal treatment of shareholders and adherence to best practices in corporate governance.

Two dummy variables were also included: EUR and CRISIS. EUR is equal to 1 when the currency is Euro and 0 otherwise. CRISIS is equal to 1 when we considered the years of 2007, 2008, 2011 and 2012 and 0 for the remaining years.

3.3. Methodology

To test the relationship between ESG and lending decisions of banks and to evaluate the proposed hypotheses, we estimate the following OLS regressions with robust standard errors:

$$(1) \quad ML_{i,t} = \beta_0 + \alpha_i + \beta_{i,t} X_{i,t} + \varepsilon_{i,t}$$

$$(2) \quad CONL_{i,t} = \beta_0 + \alpha_i + \beta_{i,t} X_{i,t} + \varepsilon_{i,t}$$

$$(3) \quad CORL_{i,t} = \beta_0 + \alpha_i + \beta_{i,t} X_{i,t} + \varepsilon_{i,t}$$

$$(4) \quad OL_{i,t} = \beta_0 + \alpha_i + \beta_{i,t} X_{i,t} + \varepsilon_{i,t}$$

where i represents the county and t denotes the year.

The dependent variable used in equation (1) is the the ratio of the total amount of ML divided by Total Assets, in each year, expressed in DKK. The ratio of the total amount of CONL divided by Total Assets, in DKK, during each year serves as the dependent variable in model (2). In model (3) the dependent variable is the ratio of the total amount of CORL divided by Total Assets, in DKK, during each year. In our last model (4), the the ratio of the total amount of OL divided by Total Assets, is assumed as dependent variable, in DKK, during each year.

X_i is a set of independent variables: ESG, ENV, SOC, LLR, DFI, SIZE and two dummy variables: EUR and CRISIS.

The error term, which takes into account all the effects that are not described in the model, is represented by ε_{it} , at the end.

We included county fixed effects, denoted by α .

4. RESULTS

4.1. Descriptive Statistics

The mean, median, and standard deviation were used to present the descriptive statistics in Table II for all the variables used in our study. Between the four dependent variables, OL shows a higher mean (27.78%) and standard deviation (29.36%) when compared to ML, CONL and CORL. Regarding ESG metrics, the highest scores were attributed to the ENV where the mean and standard deviation are 57.34117 and 29.19738, respectively. With a ESG score of 54.25518, banks are, on average, only halfway to realize their full sustainable potential.

Table II - Summary Descriptive Statistics

Variable	Observations	Mean	Std. Deviation	Min	Max
id	2222	69.97705	40.13483	1	139
year	2222	2012.505	4.609538	2005	2020
ESG	1078	54.25518	21.75166	1.5738	94.46785
ENV	1078	57.34117	29.19738	0	97.47463
SOC	1078	55.26605	23.41534	0.121347	97.57573

GOV	1078	55.74258	24.04704	1.884058	97.37336
ML	878	0.2456629	0.1953401	0	0.8942808
CONL	1308	0.1384526	0.1469941	0	0.8462363
CORL	1159	0.1832153	0.1737809	0	0.9161915
OL	1681	0.2777915	0.2936167	0.1386151	2.665593
LLR	1714	0.0307987	0.834778	0.111088	2.644444
DFI	1657	0.328666	0.540161	0.0001834	0.5559754
SIZE	1800	17.08937	2.387533	8.606485	22.1365
EUR	2222	0.5618534	0.496271	0	1
CRISIS	2222	0.2304504	0.4212303	0	1

4.2. Correlation Matrix

The Pearson correlation matrix is shown in Appendix I. From -1 to 1, the correlation metric reveals how closely two variables are related. The more connected the variables are, the closer the value is to the extremes. More strongly correlated are the variables when a value is close to the extremes. A statistically negative correlation was found between the dependent variables and ESG variables. The environmental, social, and governance pillar scores, including ESG combined score, are highly correlated with each other.

4.3. Estimation and Results

In order to proceed with panel data analysis, we must first verify the fundamental premises of the OLS (Ordinary Least Squares) regression, which entails examining the dataset multicollinearity and heteroscedasticity. Even before adopting complex methods like fixed or random effects models, this first stage is fundamental.

Variance Inflation Factor (VIF), which measures how much the variance of our estimators is inflated by the existence of correlation, is a frequently used indicator to test for multicollinearity. When $VIF=1$, there is no multicollinearity, however when it is greater than 10, there is substantial multicollinearity that needs to be corrected. Tables III, IV, V and VI does not show multicollinearity problems with our dataset.

The Breusch-Pagan test was selected as the heteroskedasticity test. We can reject the null hypothesis of homoskedasticity and assume heteroskedasticity if the test statistic p-value is less than 0.05. In our model, the p-value is 0 and for that reason we must assume heteroskedasticity. Using White robust standard errors, which are more "robust" to the issue of heteroskedasticity and tend to give a more accurate measure of the true standard

error of a regression coefficient, is one technique to account for this problem. By making this correction we were able to conclude that coefficient estimates remained the same, but each coefficient estimates standard errors grew in most cases.

The estimation of fixed effects regression was used in our model to check for endogenous regressors. Although we did not use the fixed effects model, results can be seen in Appendixes II, III, IV and V. In contrast to a random effect model, the fixed effects regression was used in panel data settings to account for time-invariant unobserved individual traits that are linked with the observed independent variables.

Since employing fixed and random effects did not produce reliable findings, the model selected to test our hypothesis was OLS with robust standard errors.

4.4. Model Results

One table for each dependent variable was done to present the findings of the econometric models tested with the OLS estimator with robust standard errors.

We investigated our sample's lending decisions for the various ESG aspects, including the ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score, for columns (1), (2), (3), and (4), respectively. Given that these variables had a strong correlation with each other, we decided to analyze them independently.

Specifically, we were interested in checking whether banks with higher ESG scores are more or less likely to lend money to individuals or firms, and which types of loans.

Results from the estimation of the regression using ML as dependent variable are shown in Table III. The coefficients of all ESG variables are negative and significant at 1% level which means that banks with high ESG, ENV, SOC and GOV scores issue fewer mortgage loans. Banks still react poorly to mortgage loans when making lending decisions, even after taking the ESG, ENV, SOC and GOV scores into account. Considering the control variable coefficients, we found that DFI and SIZE are also negative and significant at 1% level. As expected, LLR coefficient is positive and significant meaning that credit enhancements increase as ML increases.

This way, ESG metrics are negatively related with ML, which support our first hypothesis.

From Table IV we can observe whether ESG factors influences CONL. The coefficients of ESG factors are positive and significant at 1% level. These results support the idea that banks with high ESG ratings lend more to consumers than banks with low ESG scores. Only DFI is statistically significant as control variable, however both SIZE and DFI have a negative impact on the dependent variable.

The association between ESG factors and CONS is statistically positive, which confirms our second hypothesis.

In Table V, we used CORL as dependent variable. Results were quite similar when compared to CONL. The coefficients of ESG are positive and significant at 5% level. ENV and SOC coefficients are also positive and significant but only at 10% level. However, there was no evidence of the impact of banks social scores on corporate loans. Regarding control variables, only DFI coefficient is negative and statistically significant, meaning that DFI increases when CORL decreases. This can happen in order to mitigate risk. Lending capacity will decrease, increasing the value of a financial instrument whose value is based on changes in the value of an underlying asset.

The results support our third hypothesis since the relation between ESG metrics and CORL is statistically positive.

Moving on to our last dependent variable, OL, results are exhibited in Table VI. Unlike the other three types of loan, our variables of interest, ESG, ENV, SOC and GOV, do not present any effect on OL. This may mean that banks are still not concerned with ESG-friendly lending decisions regarding OL. While DFI coefficients are not significant, LLR and SIZE coefficients are.

When we use ML and CORL as dependent variables, our models R-Squared values are roughly 50%, which suggests that half of the observed variation can be explained by the models' regressors. Although not all variables of interest are statistically significant, it is clear from Table V analysis that our model presents a relatively high R-Squared. Corporate loans are explained in approximately 67% by the inputs of the model. Since our key interest variables are not statistically significant and the R-Squared is relatively low, the results for OL are less robust than those for other types of loans.

From all the above explanations we can conclude that banks, when making loan decisions, are concerned about ESG scores as a whole. Looking at these variables individually, we found out that European banks place more relevance on the

Environmental and Governance side since are the variables with more significance. These results of our model are in accordance with the findings of some authors. He et al. (2021) and Hoepner et al. (2022) reached the same conclusion, namely that environmental issues have the greatest influence on a bank's loan choice. Governance seems to be the component that banks need the most, according to Hauptmann, (2017).

We performed additional tests that can be seen in Appendixes II, III, IV and V, examining the regression results using fixed and random effects for each dependent variable of our study.

Table III - ML Regression Models Results

Variables	(1)	(2)	(3)	(4)
ESG	-0.002*** (0.000)			
ENV		-0.002*** (0.000)		
SOC			-0.002*** (0.000)	
GOV				-0.001*** (0.004)
LLR	1.019*** (0.155)	1.089*** (0.168)	1.056*** (0.158)	0.965*** (0.160)
DFI	-0.499*** (0.136)	-0.499*** (0.133)	-0.491*** (0.137)	-0.441*** (0.140)
SIZE	-0.034*** (0.106)	-0.034*** (0.012)	-0.042*** (0.010)	-0.045*** (0.009)
EUR	-0.128*** (0.300)	-0.137*** (0.039)	-0.135*** (0.029)	-0.109*** (0.028)
CRISIS	-0.005 (0.157)	-0.013 (0.015)	-0.008 (0.016)	-0.011 (0.015)
Country Effects	Yes	Yes	Yes	Yes
Intercept	0.847*** (0.162)	0.783*** (0.189)	0.961*** (0.155)	0.973*** (0.145)
Obs	536	536	536	536
R-Squared	0.466	0.461	0.456	0.458
Mean VIF	6.20	6.30	6.15	6.07

Note: This table reports the OLS regression with robust standard errors results, using ML as dependent variable. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon, SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Table IV - CONL Regression Models Results

Variables	(1)	(2)	(3)	(4)
ESG	0.001*** (0.000)			
ENV		0.001*** (0.000)		
SOC			0.001*** (0.001)	
GOV				0.001*** (0.001)
LLR	0.756*** (0.109)	0.779*** (0.119)	0.765*** (0.113)	0.791*** (0.111)
DFI	-0.077 (0.830)	-0.039 (0.852)	-0.069 (0.084)	-0.105 (0.079)
SIZE	-0.035*** (0.008)	-0.038*** (0.008)	-0.031*** (0.007)	-0.028*** (0.007)
EUR	-0.302*** (0.184)	-0.295*** (0.018)	-0.302*** (0.019)	-0.297*** (0.019)
CRISIS	-0.003 (0.008)	0.002 (0.008)	-0.001 (0.008)	0.002 (0.008)
Country Effects	Yes	Yes	Yes	Yes
Intercept	0.811*** (0.117)	0.881*** (0.123)	0.764*** (0.116)	0.719*** (0.107)
Obs	688	688	688	688
R-Squared	0.501	0.501	0.492	0.492
Mean VIF	7.54	7.70	7.52	7.47

Note: This table reports the OLS regression with robust standard errors results, using CONL as dependent variable. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon, SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Table V - CORL Regression Models Results

Variables	(1)	(2)	(3)	(4)
ESG	0.001** (0.001)			
ENV		0.001* (0.001)		
SOC			0.001 (0.001)	
GOV				0.001* (0.001)
LLR	-0.204 (0.135)	-0.211 (0.134)	-0.208 (0.136)	-0.189 (0.137)
DFI	-0.526*** (0.108)	-0.514*** (0.108)	-0.522*** (0.108)	-0.529*** (0.109)
SIZE	0.001 (0.006)	-0.002 (0.006)	0.002 (0.006)	0.003 (0.005)
EUR	-0.108*** (0.041)	-0.094** (0.041)	-0.113*** (0.041)	-0.124*** (0.035)
CRISIS	-0.015* (0.008)	-0.012 (0.008)	-0.014 (0.008)	-0.013 (0.008)
Country Effects	Yes	Yes	Yes	Yes
Intercept	0.228*** (0.057)	0.244*** (0.057)	0.222*** (0.056)	0.217*** (0.053)
Obs	630	630	630	630
R-Squared	0.671	0.673	0.671	0.671
Mean VIF	7.16	7.29	7.13	7.05

Note: This table reports the OLS regression with robust standard errors results, using CORP as dependent variable. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon; SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Table VI - OL Regression Models Results

Variables	(1)	(2)	(3)	(4)
ESG	0.001 (0.001)			
ENV		0.001 (0.000)		
SOC			0.001 (0.000)	
GOV				0.001 (0.000)
LLR	0.882*** (0.250)	0.897*** (0.246)	0.877*** (0.246)	0.904*** (0.250)
DFI	0.127 (0.129)	0.125 (0.130)	0.131 (0.130)	0.115 (0.129)
SIZE	-0.047*** (0.010)	-0.044*** (0.010)	-0.045*** (0.009)	-0.043*** (0.008)
EUR	0.341*** (0.125)	0.335*** (0.125)	0.343*** (0.125)	0.341*** (0.123)
CRISIS	0.001 (0.139)	0.003 (0.138)	0.000 (0.014)	0.003 (0.014)
Country Effects	Yes	Yes	Yes	Yes
Intercept	0.768*** (0.136)	0.759*** (0.153)	0.755 (0.134)	0.723*** (0.122)
Obs	840	840	840	840
R-Squared	0.439	0.437	0.438	0.438
Mean VIF	4.66	4.70	2.58	4.57

Note: This table reports the OLS regression with robust standard errors results, using OL as dependent variable. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon, SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

5. CONCLUSION AND LIMITATIONS

The main goal of this study was to understand the correlation between lending decisions and ESG metrics, for banks belonging to Europe.

To test empirically the hypothesis, the study uses a sample of 139 listed financial institutions from Europe during the period 2005-2020 using OLS with robust standard errors model.

There has been earlier research on how ESG measures affect financial success. There is a general agreement about the relationship between these two measurements. Most empirical studies indicate a favorable association between ESG and financial performance.

This innovative research adds a topic that has not received enough attention and may have an impact on how banks and customers ultimately interact. It is a study that compares four different loan types (ML, CORL, CONL and OL) and the ESG relevance of such loans in a European environment. It further demonstrates the growing significance of taking ESG into account when making lending decisions for corporates and individuals.

In terms of ESG combined score, we found out that ESG influences decisions on mortgage loans, consumer loans and corporate loans. When we analyze the three pillars separately, European banks give more weight to the Environmental and Governance pillars.

It is for the ML dependent variable that OLS model contains more significant variables. This suggests that the chosen measures of the research influence this type of loan. Whether corporate and consumer loans show a significant and positive link with ESG indicators, a significant and negative relationship between ESG metrics and mortgage loans was found. However, no connection was found between other loans and ESG metrics.

The study's biggest limitation relates to the ESG data for European banks since we were unable to locate it for some banks and some years. There were 260 banks in our original sample, but we only ended up with 139. Even though this study uses widely accepted measures of loans, different estimating techniques apply competing valuation models, which may impact results.

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7.APPENDIXES

Appendix I – Pearson Correlation Matrix

	ESG	ENV	SOC	GOV	ML	CONL	CORL	OL	LLR	DFI	SIZE	EUR	CRISIS
ESG	1												
ENV	0.7924*	1											
SOC	0.9314*	0.7382*	1										
GOV	0.8083*	0.4814*	0.5681*	1									
ML	-0.3989*	-0.3805*	-0.3603*	-0.3206*	1								
CONL	-0.1578*	-0.1817*	-0.1579*	-0.0816*	-0.1960*	1							
CORL	-0.1340*	-0.1438*	-0.1904*	0.0313	-0.4152*	0.1788*	1						
OL	-0.0866*	-0.1243*	-0.0638*	-0.0701*	-0.1240*	-0.3344*	-0.5751*	1					
LLR	-0.0940*	-0.1462*	-0.0546*	-0.0988*	-0.0235	0.1111*	0.0420	0.2110*	1				
DFI	0.3640*	0.4000*	0.3200*	0.2699*	-0.1940*	-0.2173*	-0.1539*	-0.1107*	-0.1691*	1			
SIZE	0.5944*	0.6559*	0.5143*	0.4286*	0.0397	-0.2887*	-0.2257	-0.1211*	-0.1311*	-0.5612*	1		
EUR	0.1094*	0.1893*	0.1857*	-0.0746*	-0.0541	-0.2948*	-0.2400*	0.2210*	0.0093	-0.0110	0.0204	1	
CRISIS	0.0773*	0.0169	0.1063*	0.0093	-0.0161	0.0340	0.0041	-0.0259	-0.0042	-0.0418*	0.0242	-0.0099	1

Note: *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon, SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Appendix II – ML Regression Models Results

Variables	FE(1)	RE(2)	FE(1)	RE(2)	FE(1)	RE(2)	FE(1)	RE(2)
ESG	-0.001*** (0.000)	-0.001*** (0.000)						
ENV			-0.001 (0.000)	-0.001 (0.000)				
SOC					-0.001** (0.000)	-0.001** (0.000)		
GOV							-0.001*** (0.000)	-0.001*** (0.000)
LLR	0.731*** (0.963)	0.708*** (0.961)	0.689*** (0.961)	0.672*** (0.096)	0.711*** (0.096)	0.693*** (0.096)	0.704*** (0.095)	0.688*** (0.095)
DFI	-0.150 (0.103)	-0.181* (0.102)	-0.135 (0.104)	-0.168 (0.102)	-0.142 (0.104)	-0.173* (0.102)	-0.151 (0.103)	-0.181* (0.101)
SIZE	0.358*** (0.011)	0.018** (0.008)	0.236** (0.110)	0.010 (0.008)	0.028*** (0.010)	0.014* (0.008)	0.029*** (0.010)	0.152* (0.008)
EUR	0	-0.023 (0.049)	0	-0.025 (0.048)	0	-0.021 (0.049)	0	-0.028 (0.049)
CRISIS	-0.001 (0.007)	-0.001 (0.007)	-0.004 (0.007)	-0.003 (0.007)	-0.001 (0.007)	-0.001 (0.007)	-0.004 (0.007)	-0.004 (0.007)
Country Effects	No	No						
Intercept	-0.337 (0.194)	0.003 (0.147)	-0.155 (0.195)	0.114 (0.148)	-0.223 (0.186)	0.066 (0.143)	-0.229 (0.179)	0.052 (0.140)
Obs	536	536	536	536	536	536	536	536
Within R-Squared	0.119	0.113	0.103	0.099	0.111	0.107	0.122	0.118
Between R-Squared	0.011	0.001	0.020	0.000	0.014	0.001	0.013	0.001
Overall R-Squared	0.007	0.01	0.012	0.007	0.009	0.009	0.007	0.009

Note: This table reports the fixed and random effects regression results, using ML as dependent variable. FE refers to fixed effects regression and RE refers to random effects regression. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon; SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Appendix III – CONS Regression Models Results

Variables	FE(1)	RE(1)	FE(2)	RE(2)	FE(3)	RE(3)	FE(4)	RE(4)
ESG	0.001 (0.000)	0.001** (0.000)						
ENV			0.001 (0.000)	0.001* (0.000)				
SOC					0.001 (0.000)	0.001 (0.000)		
GOV							0.001 (0.000)	0.001 (0.000)
LLR	0.154** (0.071)	0.221*** (0.069)	0.159** (0.071)	0.229*** (0.069)	0.164** (0.071)	0.232*** (0.069)	0.166** (0.070)	0.237*** (0.069)
DFI	-0.075 (0.069)	-0.086 (0.068)	-0.085 (0.069)	-0.097 (0.068)	-0.080 (0.069)	-0.091 (0.068)	-0.080 (0.069)	-0.093 (0.068)
SIZE	-0.009 (0.008)	-0.018*** (0.006)	-0.008 (0.008)	-0.017*** (0.006)	-0.005 (0.007)	-0.015*** (0.006)	-0.005 (0.007)	-0.014*** (0.005)
EUR	0	-0.073** (0.030)	0	-0.075** (0.030)	0	-0.076** (0.030)	0	-0.073** (0.030)
CRISIS	0.117*** (0.004)	0.011** (0.004)	0.013*** (0.004)	0.012*** (0.004)	0.012*** (0.004)	0.012*** (0.005)	0.013*** (0.004)	0.013*** (0.004)
Country Effects	No	No	No	No	No	No	No	No
Intercept	0.264* (0.137)	0.473*** (0.097)	0.254* (0.138)	0.467*** (0.099)	0.213 (0.134)	0.439*** (0.096)	0.198 (0.127)	0.421*** (0.092)
Obs	688	688	688	688	688	688	688	688
Within R-Squared	0.033	0.031	0.032	0.030	0.030	0.028	0.032	0.029
Between R-Squared	0.320	0.322	0.302	0.313	0.327	0.318	0.348	0.322
Overall R-Squared	0.215	0.182	0.218	0.184	0.205	0.176	0.203	0.174

Note: This table reports the fixed and random effects regression results, using CONS as dependent variable. FE refers to fixed effects regression and RE refers to random effects regression. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon; SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Appendix IV – CORL Regression Models Results

Variables	FE(1)	RE(1)	FE(2)	RE(2)	FE(3)	RE(3)	FE(4)	RE(4)
ESG	0.001 (0.000)	0.001 (0.000)						
ENV			0.001 (0.000)	0.001 (0.000)				
SOC					-0.001 (0.000)	-0.001 (0.000)		
GOV							0.001 (0.000)	0.001 (0.000)
LLR	-0.089 (0.061)	-0.086 (0.060)	-0.099* (0.060)	-0.096 (0.060)	-0.082 (0.060)	-0.080 (0.060)	-0.088 (0.060)	-0.088 (0.059)
DFI	-0.159*** (0.061)	-0.164*** (0.060)	-0.159*** (0.060)	-0.164*** (0.060)	-0.163*** (0.061)	-0.168*** (0.060)	-0.158*** (0.061)	-0.163*** (0.060)
SIZE	-0.015* (0.008)	-0.011* (0.006)	-0.020** (0.008)	-0.015** (0.006)	-0.012 (0.008)	-0.009 (0.006)	-0.014** (0.007)	-0.011** (0.006)
EUR	0	-0.048 (0.037)	0	-0.047 (0.037)	0	-0.049 (0.037)	0	-0.048 (0.036)
CRISIS	-0.002 (0.004)	-0.003 (0.004)	-0.002 (0.004)	-0.003 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.003 (0.004)
Country Effects								
Intercept	0.458*** (0.144)	0.409*** (0.108)	0.545*** (0.145)	0.465*** (0.109)	0.418*** (0.139)	0.384*** (0.106)	0.451*** (0.131)	0.409*** (0.100)
Obs	630	630	630	630	630	630	630	630
Within R-Squared	0.027	0.026	0.031	0.030	0.027	0.027	0.027	0.027
Between R-Squared	0.029	0.057	0.031	0.058	0.029	0.057	0.031	0.059
Overall R-Squared	0.048	0.109	0.046	0.103	0.051	0.113	0.051	0.112

Note: This table reports the fixed and random effects regression results, using CORP as dependent variable. FE refers to fixed effects regression and RE refers to random effects regression. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon; SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Appendix V – OL Regression Models Results

Variables(OL)	FE(1)	RE(1)	FE(2)	RE(2)	FE(3)	RE(3)	FE(4)	RE(4)
ESG	-0.001 (0.000)	-0.001 (0.000)						
ENV			0.001*** (0.000)	0.001* (0.000)				
SOC					-0.001 (0.000)	-0.001 (0.000)		
GOV							-0.001 (0.000)	-0.001 (0.000)
LLR	0.203 (0.147)	0.185 (0.139)	0.209 (0.147)	0.178 (0.139)	0.204 (0.147)	0.187 (0.139)	0.195 (0.147)	0.177 (0.139)
DFI	-0.005 (0.150)	0.025 (0.144)	-0.001 (0.148)	0.038 (0.143)	-0.008 (0.150)	0.023 (0.144)	-0.014 (0.150)	0.023 (0.144)
SIZE	-0.041*** (0.016)	-0.031*** (0.010)	-0.062*** (0.015)	-0.042*** (0.010)	-0.040*** (0.015)	-0.031*** (0.010)	-0.040*** (0.014)	-0.032*** (0.009)
EUR	0	0.118** (0.048)	0	0.119** (0.048)	0	0.119** (0.048)	0	0.116** (0.048)
CRISIS	-0.013 (0.010)	-0.011 (0.010)	-0.014 (0.009)	-0.013 (0.009)	-0.012 (0.010)	-0.011 (0.010)	-0.014 (0.010)	-0.012 (0.009)
Country Effects								
Intercept	0.972*** (0.277)	0.737*** (0.166)	1.292*** (0.266)	0.882*** (0.164)	0.957*** (0.270)	0.735*** (0.164)	0.970*** (0.252)	0.758*** (0.158)
Obs	840	840	840	840	840	840	840	840
Within R-Squared	0.020	0.020	0.028	0.028	0.020	0.020	0.021	0.021
Between R-Squared	0.048	0.106	0.039	0.088	0.047	0.106	0.048	0.103
Overall R-Squared	0.019	0.047	0.016	0.039	0.019	0.047	0.020	0.045

Note: This table reports the fixed and random effects regression results, using OL as dependent variable. FE refers to fixed effects regression and RE refers to random effects regression. Standard errors are presented in parenthesis. ESG Combined Score, Environmental Pillar Score, Social Pillar Score, and Governance Pillar Score refers to (1), (2), (3), and (4), respectively. *, ** and *** refer to 10%, 5% and 1% significance levels, respectively.

Variables: ESG(ESG Combined Score) provided by Eikon; ENV(Environmental Pillar Score) provided by Eikon; SOC(Social Pillar Score) provided by Eikon; GOV(Governance Pillar Score) provided by Eikon; ML(Mortgage loans) defined as mortgage loans amount divided by total assets; CONL(Consumer loans) defined as consumer loans amount divided by total assets; CORL(Corporate loans) defined as corporate loans amount divided by total assets; OL(Other loans) defined as other loans amount divided by total assets; LLR(Loan loss reserves) defined as loan loss reserves amount divided by total assets; DFI(Derivative financial instruments) defined as Derivative financial instruments amount divided by total assets; SIZE defined as Natural logarithm of a bank's total assets; EUR: dummy variable; CRISIS: dummy variable.

Table VII - Literature Review Summary: Empirical Papers

Author	Country/Region	Period	Methodology	Dependent Variables	Independent Variables	Main Conclusions
Danisman, G. O. & Tazari, A. (2022)	Europe	2002-2020	GMM Regression	<ul style="list-style-type: none"> • LOANGRW 	<ul style="list-style-type: none"> • Size • NPL • Capital • GDPGRW • Inflation • Concentration 	<ul style="list-style-type: none"> • Credit risk, asset risk, and profitability are less influenced in banks that engage in ESG operations. • The environmental component has a substantial impact on banks' ability to reduce lending during times of turbulence.
Ahmed, S. U., Ahmed S, P. & Hasan, I. (2018)	Bangladesh	N/A	Questionnaire	<ul style="list-style-type: none"> • ROA 	<ul style="list-style-type: none"> • ESG(ESG score) • ENS(Environmental score) • SOS(Social score) • GNS(Governance score) • Size • Age 	<ul style="list-style-type: none"> • Banks that are early adopters of ESG criteria in lending choices benefit from improved financial performance.
He, R., Chen, X., Chen, C. & Zhai, J. (2018)	U.S.A	2007-2016	OLS Regression	<ul style="list-style-type: none"> • Loan Spread • Loan Size 	<ul style="list-style-type: none"> • Size • Avg RRI • Max rri • Loan mATURITY • Roa • Leverage • Operational risk • Tangibility 	<ul style="list-style-type: none"> • Banks offer less favorable loan contract terms to client firms with ESG incidents, manifested as a higher interest rate and a lower loan size. • Environmental issues are the most powerful factor impacting a bank's loan decision.
Herbohn, K., Gao, R. & Clarkson, P. (2019)	Australia	2009-2015	OLS Regression	<ul style="list-style-type: none"> • CAR(Cumulative Abnormal Return) 	<ul style="list-style-type: none"> • High-Carbon • Firm size • EPS(Earnings per share) • Debt-to-Assets • Big4Bank 	<ul style="list-style-type: none"> • Carbon risk is taken into account by banks when making lending decisions. • Investors believe banks consider carbon risk in their lending decisions, and thus interpret a bank loan renewal announcement, particularly one with a favorable change in terms for firms with high carbon risk, as a signal that the borrowers' carbon risk exposure is not harmful to their expected future profitability and thus their default risk, or to the bank's CSR reputation.

Batae, O, M., Dragomir, V, D. & feleaga, L. (2020)	Europe	2018	TwoStep Cluster Analysis	<ul style="list-style-type: none"> • GDPpc(GDP per capita) • Population 	<ul style="list-style-type: none"> • ESG combined score • Leverage • ROA • ROE • Environmental pillar score • Social pillar score • Governance pillar score • Audit fees • Contraversies • Total assets 	<ul style="list-style-type: none"> • Environmental management is well received by European customers, and there is a degree of consistency in this area. • There are no major differences between Developed and Emerging Europe in terms of the ESG composite score. Banks in Southern European nations with low GDP have a much higher ESG composite score, which may be related to the Social pillar score. • The social scores of banks in Eurozone countries are much higher than those of banks in non-Eurozone countries.
Buallay, A. (2018)	Europe	2007-2016	OLS regression	<ul style="list-style-type: none"> • ROA • ROE • Tobin's Q 	<ul style="list-style-type: none"> • ED(Environmental disclosure) • CGD(Corporate governance disclosure) • CSR(D(Corporate social responsibility disclosure) • ESG(ESG disclosure) 	<ul style="list-style-type: none"> • The ESG results showed a strong positive influence on performance; environmental disclosure was found to have a favourable impact on ROE and TQ. • Corporate governance transparency has been discovered to have a negative impact on ROA and ROE.
Miralles-Quirós, M, M., Miralles-Quirós, J, L. & Hernández, J, R. (2019)	Europe Asia North America South America Oceania Africa	2010-2015	GMM Regression	<ul style="list-style-type: none"> • Tobin's Q 	<ul style="list-style-type: none"> • Bank size • ROA • Leverage • Tier1 • GDP 	<ul style="list-style-type: none"> • The environmental and corporate governance performance of banks has a positive and significant association with Tobin's Q and, as a result, with the production of shareholder value. On the other hand, there is a negative and strong association between the social performance of banks and the production of shareholder value. • Corporate governance is a key CSR feature that ensures responsibility, compliance, and transparency for financial stakeholders while also lowering agency costs.
Forcadell, F, J. & Aracil, E. (2017)	Europe	2003-2013	OLS Regression	<ul style="list-style-type: none"> • ROAA(Return on Average Assets) 	<ul style="list-style-type: none"> • RCSR(Reputation for Corporate Social Responsibility) • Inflation • Dividend • GDP • Size 	<ul style="list-style-type: none"> • In comparison to poor sustainable counterparts that were not members of the DJSI throughout that time period, banks that met DJSI requirements improved their economic performance. • DJSI membership sends a strong signal to banks about their commitment to sustainability and provides RCSR that boosts company reputation. As a result, reputation can have a favorable impact on retail banking clients' opinions and improve financial success.

Monomita Nandy Nandy, M. & Lodh, S. (2012)	U.SA	1991-2006	OLS Regression	<ul style="list-style-type: none"> Environmental score 	<ul style="list-style-type: none"> Log(spread) Log(Deal size) Log(Maturity) Lenders Log(Total Assets) Leverage EBIT Tobin's Q Tangibility Z-score 	<ul style="list-style-type: none"> A more environmentally friendly company receives a better loan contract than a company with a lower environment score. The findings support the existing stakeholder theory by demonstrating that eco-conscious disclosures are an essential indicator of better corporate governance, which influences the conditions of a company's loan contract.
Esteban-Sanchez, P., Cuesta-Gonzales, M. & Paredes-Gazquez, J. D. (2017)	Europe America Asia Oceania	2005-2010	Fixed-effects model	<ul style="list-style-type: none"> ROE(Return on equity) ROA(Return on Assets) 	<ul style="list-style-type: none"> CG(Corporate Governance) LAB(Relations with employees) COM(Relations with the community) PR(Product responsibility) 	<ul style="list-style-type: none"> CFP was higher in banks with greater employee interactions and corporate governance. However, the crisis dampened this effect in the latter, implying that corporate governance mechanisms have failed. A good CSP builds strong and effective relationships with the firm's stakeholders, enhancing the firm's reputation and strengthening its market position and competitiveness. It may also open up new growth opportunities, letting the company to develop and reach bigger profits and CFP.
Ferrero-Ferrero, I., Fernandez-Izquierdo, M, A. & Muñoz-Torres, M, J. (2016)	E.U	2002-2011	GMM Regression	<ul style="list-style-type: none"> ECONOMIC(economic dimension) 	<ul style="list-style-type: none"> ESG(level of ESG performance) Interdimensional ESG consistency Size Capex Growth Leverage 	<ul style="list-style-type: none"> The company's dedication and effectiveness in achieving a consistent competitive advantage in environmental, social, and governance dimensions is an intangible value that leads to improved corporate performance. Except for higher levels of ESG performance, enterprises with interdimensional consistency have a bigger global influence of ESG on EP than the rest. This finding indicates that market participants do not penalize enterprises that concentrate their efforts to be leaders in some non-financial categories, allowing them to achieve a notable good outcome in the ESG rating as a whole.
Devalle, A., Fiandrino, S. & Cantino V. (2017)	Italy Spain	2015	Ordered Logistic Regression	<ul style="list-style-type: none"> RATING(Credit rating) 	<ul style="list-style-type: none"> ESG score Resource score Emission score Environmental Innovation score Workforce score 	<ul style="list-style-type: none"> Higher credit ratings are linked to better ESG performance. Environmental metrics yielded no significant and relevant findings. Enhancing ESG commitments is a risk mitigation strategy that reduces a company's overall risk and, as a result, has practical implications for credit ratings and default probability. As a

					<ul style="list-style-type: none"> • Community score • Product responsibility score • Management score • CSR strategy score 	result, ESG commitments could be incorporated into credit lending regulations, advancing the assessment of sustainable credit lending practices.
Shin, D. (2021)	U.S.A	2009-2018	OLS Regression	<ul style="list-style-type: none"> • Match • Ln(ESG)(borrower's ESG rating) • Ln(spread) 	<ul style="list-style-type: none"> • Loan amount • Loan maturity • Loan spread • Relationship length • Lender ESG • ESF • Environmental • Social • Government • Ln(Assets) • Market-to-book(assets) • Cash • Book Leverage • Credit Rating 	<ul style="list-style-type: none"> • Borrowers increase their ESG ratings while looking for a loan and spend less time doing so once they have one. • The likelihood of receiving a loan rises as a borrower's ESG reputation rises. • Low ESG banks have a significant desire for financing partnerships with high ESG-rated companies in order to improve their ESG reputation, and are thus willing to offer favorable interest rates. • ESG ratings' social component has the greatest impact on loan pricing, followed by the environmental factor.
Hoepner, A, G, F., Oikonomou, I., Sautner, Z., Tarks, L, T, S. & Zhou, X, Y. (2022)	Worldwide	2005-2018	DiD Regression	<ul style="list-style-type: none"> • LPM(Lower partial moment) • VaR(Value at Risk) 	<ul style="list-style-type: none"> • Market-to-book ratio • Leverage • Investment • Profit margin • Dividend yield • Freefloat 	<ul style="list-style-type: none"> • Shareholders can gain from engagement on ESG concerns by lowering enterprises' downside risks. • The effects of ESG engagement themes on risk reduction vary, with environmental concerns having the most impact. Climate change is the most important concern. • After a successful interaction, the negative risk component is greatly reduced.
Goss, A. & Roberts, G, S. (2011)	U.S.A	1991-2006	GMM Regression	<ul style="list-style-type: none"> • Log-spread 	<ul style="list-style-type: none"> • Maturity • Security • Loan concentration • Loan type • Loan purpose • Syndicate • LIBOR • Industry 	<ul style="list-style-type: none"> • The company's dedication and effectiveness in achieving a consistent competitive advantage in environmental, social, and governance dimensions is an intangible value that leads to improved corporate performance. • Except for higher levels of ESG performance, enterprises with interdimensional consistency have a bigger global influence of ESG on EP than the rest. This finding indicates that market participants do not penalize enterprises that concentrate their efforts to be leaders in some non-financial categories, allowing

					<ul style="list-style-type: none"> • Z-score • Market-to-book • Debt/Equity • Size • Bond rating • EBIT/TA • CSR 	them to achieve a notable good outcome in the ESG rating as a whole.
Bacchetti, L. & Manfredonia, S. (2022)	Worldwide	2007-2016	OLS Regression	<ul style="list-style-type: none"> • All-In Spread Drawn 	<ul style="list-style-type: none"> • RRI(Reputational Risk Index) • ROE(Return on equity) • EPS(Earnings per share) • Cash/total capital • Total debt/total capital • Market-to-book value 	<ul style="list-style-type: none"> • Negative media coverage has a greater impact on bank loan costs when the misconduct involves borrowers with prior strong Corporate Social Responsibility (CSR) reputations. • A borrower's good CSR reputation increases the effects of reputational risk on bank loan costs. • Previous lending relationships mitigate the effect of reputational risk arising from media coverage of CSI conducts.
Houston, J. F. & Shan, H. (2021)	Worldwide	2007-2017	OLS Regression	<ul style="list-style-type: none"> • ESG_Chg 	<ul style="list-style-type: none"> • ESG_Borrower • Lender_Chg • ESG_Diff • Num of facilities rated • Investment grade • Log assets • Book Leverage • ROA • Tobin's Q • Size of target • ESG_Diff_MA • ESG_Shock 	<ul style="list-style-type: none"> • Banks are more inclined to grant loans to borrowers with comparable ESG profiles. • Banks have financial and reputational incentives to pay attention to a borrower's ESG performance. Banks with low ESG performance may be more concerned with restoring their social capital, and hence may favor borrowers with high ESG scores in order to improve their image. • Banks have an incentive to avoid unfavorable exposures in catastrophic social and environmental scandals. • Firms that borrow from banks with better ESG profiles are more likely to enhance their own ESG performance over time.
Hauptmann, C. (2017)	Worldwide	2002-2015	Fixed-effects model	<ul style="list-style-type: none"> • Loan spread 	<ul style="list-style-type: none"> • ESG score • ENV score • SOC score • Gov score • Firm size • EBIT • Market-to-book value 	<ul style="list-style-type: none"> • The link between borrower sustainability and loan pricing has been stronger driven by the increase in scrutiny and reputation risk for banks. • When the lending bank has a strong sustainability performance, borrowers with strong sustainability performance pay lower loan spreads than borrowers with weak sustainability performance.

					<ul style="list-style-type: none"> • Leverage • Pricevol • Tangibility • Rating • Secured • Maturity • Loan size • Loan type • Loan purpose 	<ul style="list-style-type: none"> • From an ESG perspective, governance appears to be the most essential element for banks.
Anginer, D., Hrazdil, K., Li, J. & Zhang, R. (2020)	U.S.A	2000-2016	DiD Regression	<ul style="list-style-type: none"> • Loan spread 	<ul style="list-style-type: none"> • Post • Severity • Influence • Loan size • Maturity • Secured • Financial Covenants • General covenants • Covenants • Lenders • Upfront Fee • Annual Fee 	<ul style="list-style-type: none"> • Firm-specific climate performance is factored into bank lending contracts. • Loans made after a company's first unfavorable climate-related incident have notably greater spreads, shorter maturities, more covenant limitations, and are more likely to be collateralized. • Firms borrow from syndicates with fewer lenders after unfavorable climate-related events, and they pay higher upfront and annual fees. • The majority of the impact happens in the first year after the incident, and the influence diminishes dramatically after that. This short-term impact is consistent with the main driver of loan spread increases being banks' reputational worries.
Francis, B., Harper, P. & Kumar, S. (2018)	U.S.A	1996-2005	OLS Regression	<ul style="list-style-type: none"> • Loan spread 	<ul style="list-style-type: none"> • Institutional CSR • Technical CSR • Institutional Strenght • Institutional Weakness 	<ul style="list-style-type: none"> • Higher levels of CSR directed at secondary stakeholders are linked to lower interest rates and loan spreads on bank loans made to firms engaging in these activities. • Institutional CSR dampens the positive effects of two key characteristics that have been consistently linked to increased loan spread: company leverage and loan maturity.
Erragragui, E. (2018)	U.S.A	2000-2011	Fixed-effects model	<ul style="list-style-type: none"> • cost of debt (LOG_CoD) 	<ul style="list-style-type: none"> • Community • Diversity • Employee relations • Environment • Human rights • Product • Corporate governance 	<ul style="list-style-type: none"> • Concerns about the environment raise the cost of financing for businesses, but concerns about governance have no effect. • Environmental and governance strengths reduce firms' cost of debt. • There are no major consequences of corporate governance scandals on cost of debt. There is a "governance paradox," in which creditors do not place equal weight on governance strengths and governance issues.

Kim D. & Kim, J, Y. (2014)	Korea	2007-2009	OLS Regression	<ul style="list-style-type: none"> CFR(Corporate Financial Credit Rating) 	<ul style="list-style-type: none"> CSR(Corporate Social Responsibility) Assets Inventory change Accounts receivable change Return over asset rate change Debt ratio change 	<ul style="list-style-type: none"> The correlation between comparable CSR/CGI metrics and credit ratings has increased. By minimizing the information asymmetry between internal and external stakeholders, CSR initiatives have the impact of lowering agency costs. Corporate governance and corporate social responsibility scores are expected to improve as a company's credit rating rises and vice versa.
Eliwa, Y., Aboud, A. & Saleh, A. (2021)	E.U.	2005-2016	Pooled regressions	<ul style="list-style-type: none"> CoD(Cost of Debt) Credit Ratings 	<ul style="list-style-type: none"> ESG-perform ESG-disclosure Environmental-perform Social-perform Governance-perform Environmental-disclose Social-disclose Governance-disclose 	<ul style="list-style-type: none"> Firms with better ESG performance have lower loan costs, and ESG disclosure has the same effect as ESG performance on debt costs. Firms can profit from improving their ESG performance and disclosure, which results in a lower cost of capital imposed by lending institutions. In stakeholder-oriented countries, the impact of ESG practices on debt costs is more prominent (where community is more prevalent).
Li, W., Hu, H. & Hong, Z. (2022)	China	2015-2020	DID Model	<ul style="list-style-type: none"> COD CODA 	<ul style="list-style-type: none"> Dbassrt Cash TATR SOE QR Asset ROE EBITDATD 	<ul style="list-style-type: none"> Following the implementation of the green policy, the cost of debt of enterprises with high ESG ratings has decreased dramatically. The central bank of China's green financing policy has a greater impact on high-pollution businesses than on non-pollution businesses. Green finance regulation appears to have an impact on firms that are relatively large and held by the state.
Yan, S. (2018)	EU	2012-2014	OLS regression	<ul style="list-style-type: none"> TC(total ownership cost) NB(net benefit) INC(tax incentives) 	<ul style="list-style-type: none"> Incentives Registration tax exemption Circulation tax exemption Fuel savings 	<ul style="list-style-type: none"> When compared to their ICEV equivalents, the costs saved by moving to large BEVs are more than those saved by switching to small BEVs. The sales share of BEVs increases as the total tax incentive increases.
Basu, S., Vitanza, J., Wang, W. & Zhu, X. (2021)	Worldwide	2002-2018	2SLS(Two-stage least square)	<ul style="list-style-type: none"> MGNUMSHR MGISSUANCE NPLMG NCOMG 	<ul style="list-style-type: none"> CNTYPOVERTY DEPCNTYSHR BANKSIZE LARGETIMEDEP COMMERCIAL MARKETING 	<ul style="list-style-type: none"> Annual house purchase loan originations by high-ESG banks are lower than those by low-ESG banks in poor counties. High-ESG banks are more likely to stop lending in poor areas struck by powerful hurricanes than low-ESG banks.

					<ul style="list-style-type: none"> • ESG • NPL 	
Duan, T. & Li, F, W. (2022)	U.S	1990-2016	OLS regression	<ul style="list-style-type: none"> • Loan Approval Rate • Loan Amount • Loan Interest Rate 	<ul style="list-style-type: none"> • Default rate • FICO • Loan-to-value • Loan-to-income • Temperature anomaly 	<ul style="list-style-type: none"> • The average mortgage approval rate falls by 88% and the loan amount by 6.65 % when there is a temperature anomaly in a county.

Table VIII - Literature Review Summary: Theoretical Papers

Author	Topic Paper	Type of analyze	Main conclusions
Thompson, P. & Cowton, C, J. (2004)	Bringing the environment into bank lending: implications for environmental reporting.	<ul style="list-style-type: none"> • Investigate the relationship between bank lending and environmental information demand. 	<ul style="list-style-type: none"> • Banks have an incentive to understand the environmental implications of their lending decisions, even if they are not directly concerned about the environment. • Banks are interested in environmental data on corporations, as well as a desire to increase the information available to them in many ways beyond present practice.
Humphrey, J, E., Lee, D, D. & Shen, Y. (2012)	Does it cost to be sustainable?	<ul style="list-style-type: none"> • Provide up-to-date evidence on the influence of CSP on the performance and risk of a large sample of UK enterprises. 	<ul style="list-style-type: none"> • There are no differences in returns between companies with high or poor ESG ratings. Idiosyncratic risk is unaffected by an ESG rating of high or low. Firms with high ESG ratings are typically larger. • Managers of UK firms can execute an ESG strategy at no major financial cost in terms of risk or return.
Friedman, M. (1970)	The Social Responsibility of Business Is to Increase Its Profits	<ul style="list-style-type: none"> • Developed the doctrine as a theory of business ethics. 	<ul style="list-style-type: none"> • “There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception and fraud”.
Cowton, C, J. & Thompson, P. (2000)	Do Codes Make a Difference? The Case of Bank Lending and the Environment	<ul style="list-style-type: none"> • Examine the policies and practices of a sample of banks that have signed a United Nations Development Programme statement on banking and the environment. 	<ul style="list-style-type: none"> • More signatories than non-signatories had incorporated environmental considerations into their formal lending policy. • Environmental considerations are typically not taken into account in an attempt to obtain a competitive advantage, but rather as something that banks believe they must do, either because it is required by a third party or to protect their financial situation.

Bansal, P. & Roth, K. (2017)	Why Companies Go Green: A Model of Ecological Responsiveness	<ul style="list-style-type: none"> • Study of the motivations and contextual factors that induce corporate ecological responsiveness. 	<ul style="list-style-type: none"> • Regulatory compliance, competitive advantage, stakeholder demands, ethical concerns, significant events, and top management initiative are some of the reasons for corporate "greening." • Companies may be environmentally sensitive in order to comply with regulations, improve stakeholder relationships, gain economic prosperity and competitive advantage, and maintain ecological equilibrium. • Rather than acting in their own best interests, businesses acted out of a sense of obligation, responsibility, or altruism.
Hart, O. & Zingales, L. (2017)	Serving Shareholders Doesn't Mean Putting Profit Above All Else	<ul style="list-style-type: none"> • Analyzes Milton Friedman argument by comparing it with increasing concern for environmental and social problems. 	<ul style="list-style-type: none"> • "Companies should maximize shareholder welfare, not value." • Shareholders care about more than just money. They care, at least to some degree, about the health of society at large."
Swartz, D, D, G., Hahn, R, W. & Layne-Farrar, A. (2004)	The Economics of a Cashless Society: An Analysis of the Costs and Benefits of Payment Instruments	<ul style="list-style-type: none"> • Case studies that demonstrate the effects on wellbeing of switching from one type of payment system to another. 	<ul style="list-style-type: none"> • Paper payment methods are progressively being replaced by electronic ones, particularly credit cards, among consumers. • The transition to a cashless society seems to boost economic well-being.
Buekers, J., Holderbeke, M, V., Bierkens, J. & Panis, L, I. (2014)	Health and environmental benefits related to electric vehicle introduction in EU countries	<ul style="list-style-type: none"> • Compare the consequences of EV(electric vehicle) introduction on society (climate change and health effects) in the EU-27 under various scenarios for energy production. 	<ul style="list-style-type: none"> • Countries that rely on fuel blends that generate little, or no air pollution could save millions of euros per year in terms of external expenditures. • The biggest advantage comes from avoiding local combustion-related pollution and not driving an ICE vehicle.