

**Louvain School of Management
and Aix-Marseille University**

Corporate Financial Performance and Corporate Environmental Performance

The relationship between CFP and CEP

Ahmed Hassanin

Master's thesis with the view of getting the degrees:
Aix-Marseille University
[Master 120 credits in Management, professional focus]

Supervised by:
Jeanna AMAR

Academic Year [2020-2021]

Remerciements

The realization of this study has been made possible due to the help of many people I would like to thank.

I would like to express my gratitude to this thesis' responsible Madam Jeanne Amar, and I would like to thank her for her patience, help, advice and support during this past year.

I would also like to thank the responsible of my master's degree Madam Christelle Lecourt for her patience and inducement for all the students and not just me.

A special thanks to my close friends and important group, who have been there for me while putting together this study and for their moral support.

Another special thanks to the staff of Hotel de Caumont who have supported, cheered and believed in me, especially during this past period.

I'm also grateful for my family who have been supporting me unconditionally since the beginning of my studies and have been there for me regardless of the circumstances.

Contents

Introduction	2
FIRST PART: CONCEPTUAL FRAMEWORK OF THE RESEARCH	4
CHAPTER 1: Motives for environmental initiatives.....	4
Why a company needs to go green.....	4
How can a company become more sustainable.....	6
Chapter 2: the link between the Corporate financial performance and the ESGP.....	7
Part 2: Empirical approach	12
Chapter 1: Data, sources and sample	12
Chapter 2: dependent variables.....	13
Chapter 3: independent variables.....	14
Chapter 4: control variables.....	14
Chapter 5: summary variables	14
Chapter 6: Results	15
Descriptive statistics	15
Correlation matrix.....	18
Linear regression.....	20
Conclusion.....	22
Limits.....	22
Appendixes:.....	22
Bibliography	26

Abstract

This study investigates the nature of the relationship between financial and environmental performance worldwide with some focus on the biggest 600 companies in Europe using the Euro STOXX 600 index. The environmental performance data was collated from Thomson Reuters DataStream software and analyzed using MS Excel and Gretl.

Keywords: Environmental Performance, Financial Performance, Financial Crisis, ESGP, CSR, Tobin's Q

Introduction

During the last few decades, the world has witnessed a huge and rapid development of industrialization and urbanization, which has been described as an excessive exploitation and utilization of the planet's mineral and non-renewable resources. These facts have caused an increase in the greenhouse gases emission in the atmosphere, which by its turn has led to an increase of severity of climate events all over the world such as the amazon and Australia's massive fires.

The United Nations Framework Convention on Climate Change (Declaration of the UN Conference on the Human Environment, 1992) defines global warming as "a climate change which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."

According to the global risk report (Global risk report 2020, 2020), the environmental risk concerns dominate the long-term risk by likelihood among members of the World Economic Forum's multistakeholder community; in addition to that, three of the top five risks by impact are also environmental.

Unless the whole world agrees to take more ambitious action on temperature control and aids poor countries to cope with climate change, the developing countries will lose US\$1.7 trillion a year by 2050.

People are experiencing the significant impacts of climate change, including but not limited to changing weather patterns, rising sea level, and more extreme weather events. Society has also become more and more aware of such issues and as a result started taking actions in order to limit their consumption to help fight climate change. This increasing awareness of society has resulted in an increasing demand for firms to take responsibility for the environment wherein the firms conduct their operations.

However, firms are still being submitted to a pressure from their stakeholders who think that focusing on the environmental issues and trying to solve them by being greener and more sustainable would only cause them to increase costs without significant increase in their profits. In result to these pressures, firms are trying to find the right middle actions to take to respect governmental rules

regulations concerning the impact of their business activities on climate and on society, whilst also thinking about their profits and their stakeholders.

Some easements have been put in place in order to help firms ease this pressure, like for instance encouraging them by putting in place benefits such as offering them a lower cost of capital in case these firms are respecting the CSR regulations; by increasing the investors' base and reduces perceived risk. Moreover, investors tend nowadays tend somehow to lean towards corporates that voluntarily disclose their green investment initiatives (Moser, 2016). The CSR programs can help businesses benefit society while boosting their brands, whilst also helping the core of the organization, by building better bonds between both employees and employers, keeping track of their waste (which can help them reduce or reuse it by recycling it), how much of their energy can be substituted by renewable or green options, etc.

The businesses are nowadays torn between being greener and satisfying their stakeholders and ensure their profits are kept untouched, this dilemma can be resolved by finding the relation between the corporate financial performance (CFP) and the corporate environmental performance (CEP). The search for such relation has begun back in the seventies of last century (Bragdon, 1972), at the time, the results scholars have arrived to is that sustainability has costs increases but no such effect on profits; nevertheless, 2 decades later, a research published suggested that the firms as well as the environment they have influence on can both benefit from tighter regulations and rules and that these will result in finding innovative solutions to the problems encountered and thus will result in a better, more efficient productivity.

The first part of our study consists of explaining the conceptual framework of the research, in order to understand the concept of ESGP, how to increase it, and what can a company gain from increasing it. We will explain in this part moral and financial motives for companies to put in place CSR strategies, increase their ESG scores and become greener. Besides that, we will explain the link between the CFP and ESGP in general and CEP in particular while discussing the point of view of previous literature.

The second part of the study will be discussing the empirical approach of the research. The aim of this part is to probe the link of causality and the type of relationship in particular between the 2 factors using the Euro Stoxx 600 index as a tool for this investigation, over a period of 6 fiscal years. We used the correlation matrix as well as the OLS regression model to investigate this relationship.

FIRST PART: CONCEPTUAL FRAMEWORK OF THE RESEARCH

CHAPTER 1: Motives for environmental initiatives

This chapter tries to explain the main motives and motivations of firms and businesses that push them to modify and rethink their environmental impact on the planet. These thoughts and theories are an essential reminder for us to understand why some companies take different measures and impose and enforce different laws in their workspace.

Why a company needs to go green

Going green, is not, like many things these days, just a passing wave where everyone is just acting to be going along with it until it just goes away, it has been there for a long time and the need for enforcing certain environmental laws is absolutely crucial nowadays.

The term corporate sustainability comes from the concept of sustainable development, a concept defined by The World Commission on Environment and Development, a United Nations initiative, back in 1987. The concept relies on 3 important pillars: treating employees and communities well, using natural resources responsibly, and investing in the long term.

As simple as this might seem, we find ourselves nowadays struggling to enforce certain laws that companies should be respecting in order to comply with rules and regulations that would qualify many businesses and companies to be named sustainable.

According to a recent survey (Accenture, 2019) conducted by Accenture on 6000 consumers in 11 countries across North America, Europe and Asia, they almost unanimously were concerned primarily on price and quality of the products they are buying while 83% of them see that it is of a great importance for companies they buy from to be selling recycled or recyclable products, while nearly 72% of them responded that they're currently buying more environmentally friendly products than they were five years ago, and 81% said they expect to buy more over the next five years

So, as we can see, consumers have a lot of influence on the sustainability of the company through their purchase power, and this shift in consumer behavior and their willingness to pay more in order to get a greener product reinforces the need for companies to increase their commitments to responsible business practice.

And as Jessica Long mentioned in the Accenture's press release in 2019 "Companies across industries have started to lead with purpose, including embracing the circular economy as a greater opportunity to drive growth and competitive agility." (Accenture, 2019)

The consumer's shopping behavior will then result in firms taking actions such as Adidas in 2018 when they decided to release 7000 pairs of shoes made entirely out of recycled plastic bottles cleaned from the ocean. This huge initiative generated

over 1 billion dollars of profit to the company which made them decide to release another limited-edition sneakers made 100% out of ocean's plastic.

The benefits of going green is not just an influence a company can have, as Environment Journal found out in the study they were conducting (Shrivastava, 2020), actions can also be financial: a company can carry out "green" projects which will generate federal tax credit (in the case of an American company), more options would be to take certain measures to reduce waste or electricity, installing solar panels, switching to low-flow water fixtures in men's and women's rooms and converting to LED lighting. All these simple solutions would make companies reduce their bills and thus possibly make some financial gains in the meanwhile (Yifat, 2017).

With revenues of certain big companies such as Apple or Amazon exceeding GDPs of certain countries, we see how big of an impact these big companies can have on the environment and how important it is for them to show their support towards our planet and its resources. Nowadays, many governments, citizens, and other stakeholders want to see companies showing concern for their communities. Failing to do so can mean losing the social license to operate (Morris, 2014) which is society's trust in a company.

As we mentioned, not only do companies get more visibility vis-à-vis of their clients and consumers, which makes their products seem more suitable to buy, but also investors in the recent decade have been increasingly looking for companies that have higher ESG ratings, in order to avoid conflicts with the public as well as a way to managing risks (Stevens, 2020).

The benefits of being more sustainable or eco-friendly can make companies expand to new niche markets. And by catering to new niche markets using green products and services, these businesses have the ability to emerge as future leaders in their sectors.

As mentioned before, a pillar of the sustainable development concept is the treatment of the employees, whom we discovered that nowadays prefer to choose employers or organizations that adapt and ensure an establishment of sustainability initiatives.

Studies have discovered (David A. Jones, 2013) that organizations that seems more environmentally friendly are considered more attractive, not only to consumers but also to job seekers, which gives such companies a huge competitive advantage as the number of applicants for jobs at these companies increase and thus their chances of getting more or better talents.

The main reasons (Kang Yang Trevor Yu, 2014) candidates are encouraged to apply for jobs at sustainable companies can be explained by their feelings: their pride of working under such a management that cares about the environment and the social wellbeing of the society, and thus if they do, this entails that the corporation will be

treating their employees well and provide them with a feeling of belonging, and will also be leaving the job seekers feeling that his values are aligned with the companies he is applying at, which will make them care about his workplace and performance (Richard A. Clarke, 1994).

How can a company become more sustainable

In this part of the chapter, we will discuss the factors and determinants of a green or a sustainable company and explain how they can be put in place and what are the limitations to certain sustainable actions.

There are multiple reasons and motives that makes a company become greener and thus modify their financial performance and impact on the planet and on society, these reasons have already been discussed in the previous part, but what interests us is the way they can change their disciplines and habits, from daily tasks that can be made to reduce energy or waste, to months or yearly missions that call for investments and projects to be put in place.

A wide range of measure can be taken, but as small as they might seem, these small measures can have huge impacts on companies' saving and expenses and can thus make them more profitable. Studies have found out that hospitals that reduce energy consumption and waste produced could save \$15 billion over a decade (Moyle & Lynn, 2018) and another found that employees at eco-friendly companies are 16% more productive than average (University of California - Los Angeles, 2012) (Pekovic, 2012).

According to Energy star (2016), a program run by the U.S. Environmental Protection Agency and U.S. Department of Energy that promotes energy efficiency, Light emitting diode (LED) bulbs can use 25 to 30 percent less energy than incandescent light and last 25 times longer (U.S department of energy, 2020).

These bulbs can last up to 20 years, which means even though they can be more expensive at purchase, they are more efficient as they save more energy, and generate profit saving the replacement costs.

Plus the simple gesture of turning off the lights for 8 hours a day could save more than 1000\$ per year or more according to the company's size, and if the company would be willing to take an extra step towards saving the planet and install solar panels to avoid the rising cost of electricity and save the planet, depending on the country the company is operating from, they will be getting certain advantages such as federal tax credits in the USA, and will help cut the cost of the electric bill in half (Schwahn, 2021).

Another simple solution companies noticed had a great impact on the environment was remote work, which was a huge part of the covid-19 pandemic this past year.

Not only did employees feel safe and were able to have better efficiency managing tasks (Aysa Stamenova, 2020), but also companies have seen a huge cost saving opportunities on daily or monthly payments such as rent, utilities, maintenance, cleaning and equipment.

On a larger scale, governments and societies have seen major changes in the environment, as Global Workplace analytics deducted from 4000 studies, as people are working remotely, there is thus less traffic jams, and companies have reduced their carbon footprint.

For example, in 2014, Xerox launched The Virtual Workforce Program, with more than 8,000 Xerox employees (11% of its workforce) working from home full time. Through telecommuting, Xerox reduced greenhouse gas emissions (GHG) by 40,894 metric tons, and its remote staff used 4.6 million fewer gallons of gas by not commuting. On the other hand, Dell's remote work program reduced its GHG emissions by 6,700 metric tons or the equivalent of not driving 26 million kilometers (Sutton, 2015)

Limitations to this kind of actions could turn out to be less beneficial for the environment (WSP, 2020) as working from home in the UK during winter season would cause employees to consume 80% more carbon per year than if they would have worked at the office as the heating systems at home are less energy efficient than in offices.

Chapter 2: the link between the Corporate financial performance and the ESGP

The acronym ESGP stands for the Environmental, Social, and Governance Performance considered in corporate decision making. The first official usage of the term goes back to 2006, where the term was used in United Nation's Principles for Responsible Investment (PRI). As of end of March 2020, almost 104\$ trillion of Assets under Management were managed by PRI with a 12.3% growth from the previous quarter.

For past half of a century, many theories have suspected and made an effort to prove the existence of a certain link between the corporate's financial performance and their environmental performance and more generally, their ESGP.

Nowadays, we still have contradictory result about the relation between CFP and ESG and whether the financial sector can have an impact on the environment (Weber, 2014) (Przychodzen, 2015). The figure down below demonstrates the number of empirical studies conducted since the debate started in 1970 (Figure 1), regrouping over 2100 studies until the year 2015, with this number still increasing to this day.

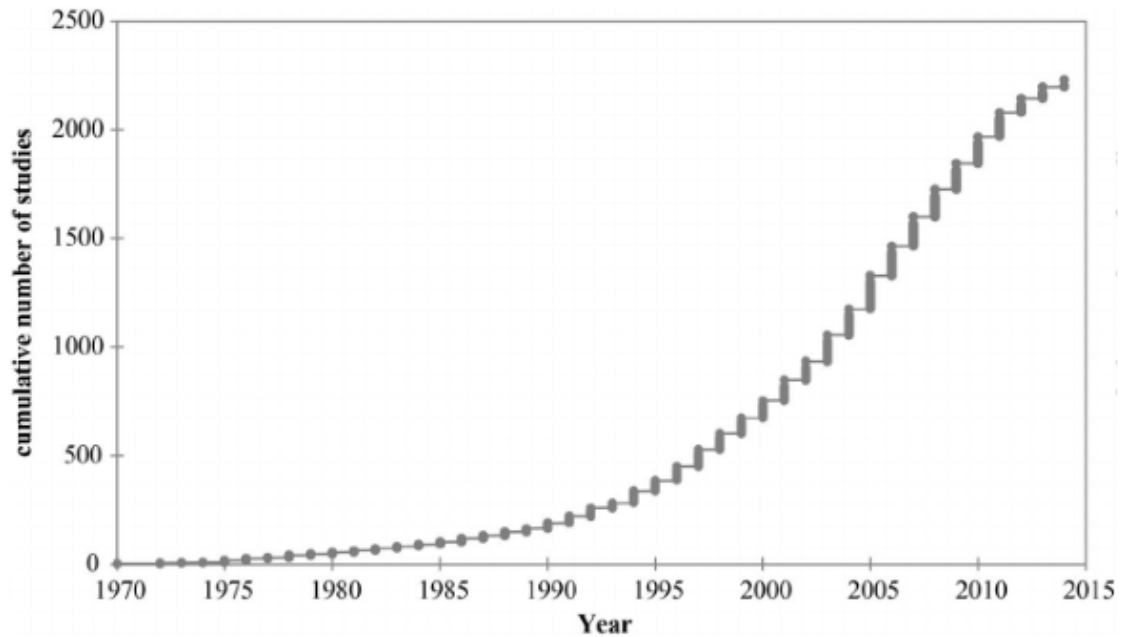


Figure 1: Estimated number of empirical studies on the ESG–CFP relation over time. (Gunnar Friede, 2015)

The results from such studies can be divided into 2 categories, the first linking the financial success of companies with the satisfaction of their stakeholders, which is called the stakeholder theory (Freeman, 1984). This theory relies on the idea that the company's values should be aligned with its stakeholders, and thus the company should operate in their best interest.

The second theory being that the company should be considered as a part of the society and it adds value to it, so consequently, they should act in the society's best interest, respecting the ESG pillars, this theory is named the legitimacy theory.

Nonetheless, companies should also be keeping into consideration their stakeholders' power and needs into consideration, which is why nowadays, with more and more shareholders and investors being interested in sustainable management being put in place by companies' management, companies will get better reputations and hence their values will increase along with the profits that shareholders will be making. Better reputation and the increase in value are mainly due to the better CSR rating the company will be making in consequence to the better ESG reporting they will be doing (Clarkson, 2008). For a while, the corporate social performance (CSP) was considered to be a responsibility of the company towards the investors as well as towards society, and there were even laws and regulations towards the government in order to ensure a certain ethical action that needed to be taken. A three-dimensional conceptual model of corporate social performance (Carroll, 1979).

Next to these 2 main theories we have also found a number of studies mentioning 2 others, such as the shared value theory and the resource-based view theory. According to studies (Porter, 2011), shared value has been adopted by big corporations such as Nestlé, in after societies started losing trust in businesses,

especially after the financial crisis of 2007, the main idea of the theory was to seek resolving the decline of social trust by showing that companies that create shared value for their stakeholders are capable of better financial performance than those who don't.

Regarding the resource-based theory, studies (Sharma, 2019) have found this could have a negative relation on a firm's financial performance. This theory

As a result, from hundreds of metanalysis, we have found many contradictory results (Orlitzky, 2003), the results can be described as such due to sometimes the confusion between terms such as CSR and ESG, some studies (Cavaco, 2010) concentrated on CSR and we noticed that they concentrated on the community ethics and the philanthropy, whereas ESG is considered and embedded part of companies' business strategies and focus more on performance indicators (Douglas, 2017).

Some contradictions can also be traced back on the origin of the ESG score improvement and whether it came from material or immaterial ESG affairs. For instance, in the study conducted by (Khan, 2016), the companies with a higher focus on material ESG issues, had a better stock performance compared to others who were more focused on immaterial ESG affairs. Similar findings were found recently by (Clark C. &, 2020), where they found evidence that focusing on material ESG issues are approved to be more efficient than focusing on immaterial ESG issues to enhance the firm's financial performance.

The complication regarding the contradictions of results can also be taken into account partially because the studies conducted were using different ESG metrics (Berg, 2019) and they could also be using different third-party sources for the ESG scores which will be giving different final results.

Many studies have focused only on a certain type or aspect of the ESG, with some research (Pelosi, 2016) suggesting that the social aspect including the acceptance of the firm by stakeholders represented mainly by the community they serve, can be overlooked in many cases. Hence, studies (Jitmaneeroj, 2017) demonstrated that value created by companies were mainly driven by the social engagement aspect rather than the environmental or governmental ones.

Nevertheless, these researches showed an overall positive correlation between CSR or ESG and the Financial performance or the company's profitability, unlike other studies such as (Fogler, 1975) (Rockness, 1986), whose researches concluded the lack of relation between the 2 factors, or even some case studies (Holman, 1990) (Waddock, 1997) that concluded that CSR practices engagement or trying to enhance one's ESGP (ESG Performance) can be determined as a cost rather than savings which led to a final interpretation that there is a negative correlation between the factors mentioned earlier.

The governance pillar of the ESG has not been ignored by researchers, even though there haven't been many studies overseeing this factor, but the ones that can be found (Mazzotta, 2017) (Melsa Ararat, 2015) (Adams, 2009) illustrated a positive

correlation between the economic performance of the companies and their sustainable governance strategies.

In certain specific cases conducted on banks, the burden they have can affect the results the studies can get, as the banks can have a direct social and environmental effect as well as an indirect one with the financing they could be providing to firms in order to put in place a certain project (Bouma, 2001).

For that reason, certain measures, such as encouraging consumers and clients to buy environmentally-friendly products, green fixed-income instruments, such as green bonds, as well as energy efficient mortgage, have been put in place by numerous banking institutions in order to get from under the society's scope by encouraging and contributing to sustainability growth (Eccles, 2013).

A number of academic and book work have demonstrated that as CSR can be complicated to define and as it depends on a number of measures and its score can be difficult to interpret in many companies which can sometimes demand extra investment which means extra costs, the term can be vulnerable to bending which will make it unfit for some cases (Ingio, 2019) (Miralles-Quiros, 2019).

Besides the term explained earlier that defines CSR as a set of situations where firms can profit from situations to engage in philanthropic actions going beyond their interest and the laws' requirements, CSR can also be defined on a long-term basis as a way of increasing the shareholders' value by taking up certain opportunities in order to manage certain future risks.

Recent contradictory results influenced by the different elements mentioned before were obvious when seeing studies such as (Giese, 2019), (Clark G. L., 2015), (Starks, 2016) and (Cunha, 2019), showing different conclusions based on long term studies (26 years and 12 years) for Working Average Cost of Capital (WACC) and the return of mutual funds. In the first case, (Clark G. L., 2015) found that in almost 9/10 cases, sustainability measures had a negative correlation effect with the WACC giving them a huge advantage, whilst in the second case the research concluded no distinction between sustainable and conventional mutual funds on a 12-year period. What (Cunha, 2019) then added was that geographically can then add an important element to the equations with certain regions being keener to develop sustainable opportunities with the concept of sustainable investment performance being distorted worldwide.

ESG as a simple factor, even with a great score cannot provide or allow a company to enhance or improve their financial performance, elements such the momentum, ESG and the socially responsible investment (SRI) are some of the variables that secretly contribute to this change (Figure 2). (Hernaus, 2019) made a distinction compared to other studies where she found out that as others have not distinguished between the different SRI strategies available which could and have led to different numbers and thus different and maybe inaccurate conclusions (Figure 3).

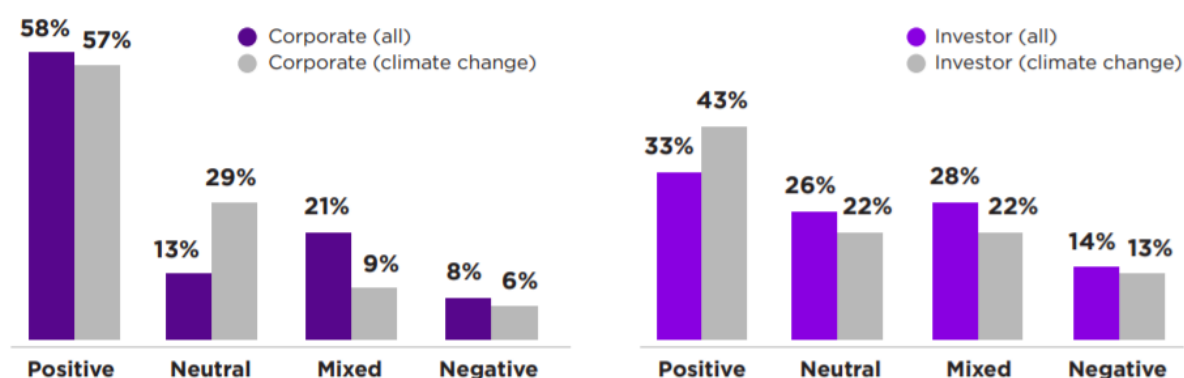


Figure 2: Positive and/or neutral results for investing in sustainability dominate (based on 245 studies published between 2016 and 2020 (Tensie Whelan, 2020))

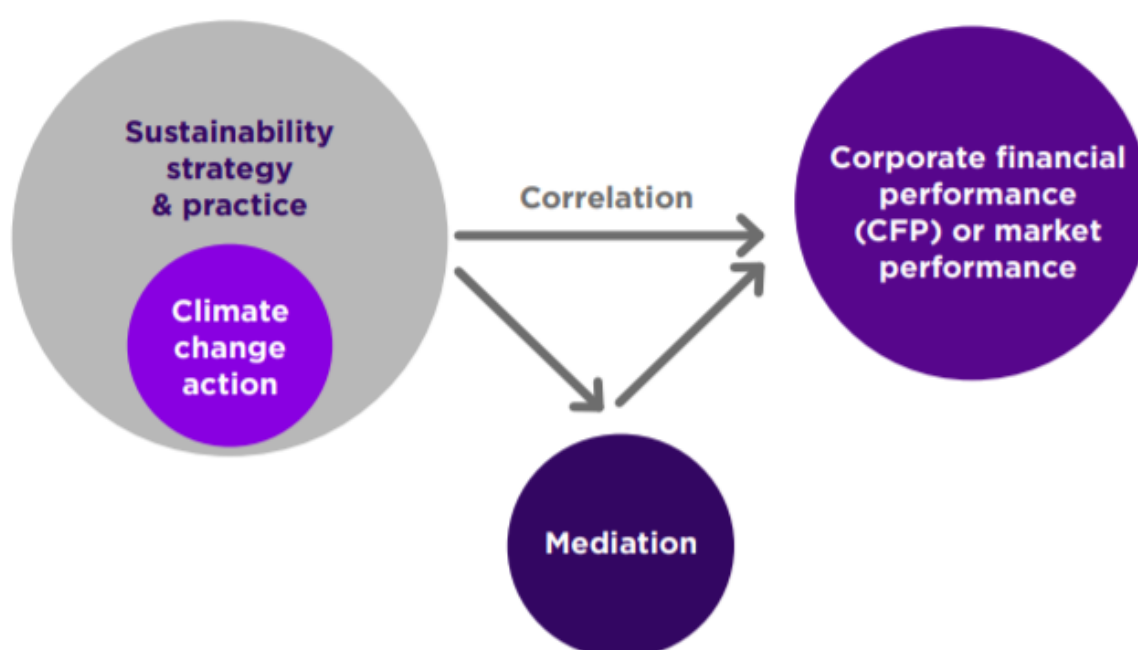


Figure 3: Conceptual overview of how investing in sustainability/ESG drives financial performance (Tensie Whelan, 2020)

Not all studies however can end up with negative or no correlation closure between ESG and CFP because of the usage of different factors or variables, some of the failed to differentiate between short, medium and long term effects: (Hang, 2019) for instance found no short term effect of sustainable corporate investment on CFP but a positive correlation between them on the long term.

Even just considering long-term projections, projecting and communicating ideas as a CEO of the future sustainable plans or strategies the company will be undertaking has shown positive reactions of the market cap and the stock market (Kotsantonis, 2019)

Part 2: Empirical approach

Our empirical analysis aims to identify the impact and the correlation between the Corporate's financial performance (CFP) and their environmental performance (CEP) and compare if the company performs better financially if they improve their environmental performance.

Chapter 1: Data, sources and sample

For our study, we gathered the most recent information for all the financial ratios and variables as well as for the ESG indicators. The sample we chose includes the 600 biggest companies in Europe and gathered in an index called "Euro Stoxx 600". The reason behind this choice was the domination of list grouping the top EPI score per country (Environmental Performance Indicator) by European countries (Figure 4).

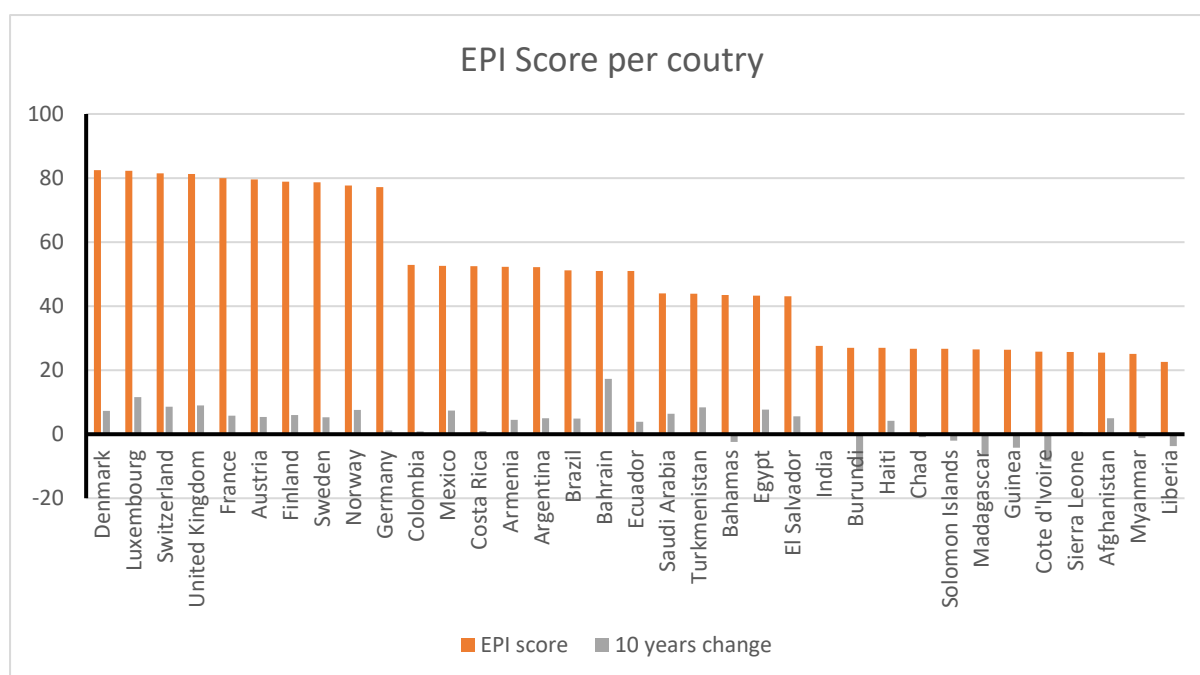


Figure 4: EPI per country (Wendling, 2020)

The dataset used in the research has been retrieved from Refinitiv (formerly Thomson Reuters DataStream). The variables used for financial proxies are WACC (Working Actual Cost of Capital), the companies' market cap, beta value, p/e ratio, total revenue, total return and the ROA (Return on Assets), from this list of variables we have decided to exclude the ROE, the leverage and the beta value, as the dataset retrieved did not have enough data concerning these variables.

As for the ESGP indicators, we have decided to continue using the Refinitiv software, the data was collected in August 2021. The total ESG score includes 3 main sectors: governance score, social score and environmental score; these 3 sectors are divided into subsectors including

management score, shareholders score, CSR strategy (for the governance sector), workforce, human rights, community, product responsibility scores (for social pillar), innovation, resource use and innovation and strategy score (for environmental pillar).

These scores have been computed after the analysis of the KPIs (Key Performance Indicators) used to determine the scores of these pillars. This set of KPIs include (but not exclusive to) renewable energy use, total recycled water, accidental spills, renewable/clean energy products, employee satisfaction, number of women in the company, donations made and customer satisfaction.

The Refinitiv Eikon software provides a reliable source for the ESG as it takes into consideration the regions, time horizons and cultures from which companies operate, which gives out a more accurate source for the outcome. On top of that, the final ESG score provided by the software regroups the information declared by the companies themselves in annual reports, on their websites and on CSR reports, and the information gathered by third party groups and organizations. Eikon DataStream has also the advantage of using the z-scoring system by extracting an overall ESG score based on the weight of the relevant data points and then obtain a relative measure of performance expressed as a percentage.

Even though many studies have used similar resources and data for their studies, the particularity of this study is the updated dataset and figures used (data collected in august 2021), and the focus on the biggest 600 companies in Europe, the region with the highest EPI score per country. This will help us determinate the possibility of a correlation and its intensity between CFP and ESG and more specifically CEP.

In this study we will be mainly testing 2 hypotheses: the environmental performance of companies has an effect on their financial performance of these companies and the total ESGP has a positive impact on the companies' financial performance. We have used control variables, dependent and independent variables to verify these hypotheses.

We have gathered all the financial performance indicators as well as the ESGP indicators in an Excel file containing the information about the 600 companies grouped under the Euro Stoxx 600 index over 4 years period, with variables such as ESG dating from 3 fiscal years ago (FY -3) and other financial performance indicators for the 3 consecutive years.

Chapter 2: dependent variables

For our model, we decided to choose the financial performance indicators as the dependent variables. Based on many studies, many of them previously reviewed in the literature review, the financial performance of the companies has been computed using accounting and market variables. For the accounting variables we have decided to choose the ROE and ROA, and for the market value we have decided to use the Tobin's Q indicator which uses the total liabilities, companies' market cap, as well as their common equity. The Tobin's Q is a way to determine if the company creating value or destroying wealth: a score higher than 1 means they are creating value, while lower than one means the opposite.

Chapter 3: independent variables

The independent variables in our study have been presented by the ESGP indicators. We decided to use the indicators' scores over the course of 3 years preceding the years used for the dependent variables to determine if the positive (negative) variation of these scores have affected the variation of the financial indicators. We have used the Thomson Reuters DataStream software to retrieve the scores for each pillar as well as the overall scores for the companies. The overall ESG score has been calculated as follows:

- Environmental pillar (34%)/ represented as “E score”: resource use (11%), emissions (12%) and innovation (11%)
- Social pillar (35.5%)/ represented as “S score”: workforce (16%), human rights (4.5%), community (8%) and product responsibility (7%)
- Governance pillar (30.5%)/ represented as “G score”: management (19%), shareholders (7%) and CSR strategy (8%)

The overall ESG score/ represented as “ESG score”: is then given as a score going from 0 to 100 with 100 being the highest score.

We note that the score is relative to many factors such as the region or the country on which the companies operate and is relative to the sector of industry.

Chapter 4: control variables

Several studies discussed previously in the literature review part have used several control variables such as the leverage ratio used to determine the debt ratio of the firms, their size, as the bigger the company is, the bigger their possibility to make economies of scale, thus the higher the possibility of making more profits, and reduce costs, this is controlled by the total assets variable. The revenue is also an encountered variable we found used frequently in the studied researches, we have decided to compute the variation of the revenue using Thomas Reuters DataStream to get the variation from the past 3 financial years. To sum up, the control variables used for our model will be the leverage, total assets, revenue growth and the PE ratio.

Chapter 5: summary variables

We have decided to create a table down below to explain each variable used throughout the study.

Dependent variable	Formula
ROE	Net income / Total equity of common shares
ROA	Net income prior to financing costs / Total assets
Tobin's Q	Value of stock market / corporate net worth = (Equity Market value + liabilities market value) / (equity book value + liabilities book value)

Independent variable	Explanation
ESG score	ESG score according to Thomson Reuters
Environmental score	Environmental score according to Thomson Reuters
Social score	Social score according to Thomson Reuters
Governance score	Governance score according to Thomson Reuters

Control variables	Definition or formula
Total assets	Total of the companies' assets
Leverage	Total Debt / Total Equity Values for the end of the fiscal period
PE ratio	The ratio is used for valuing companies and to find out whether they are overvalued or undervalued.
Revenue growth	$((\text{Net income } n) - (\text{net income } n-1)) / (\text{net income } n-1)$

Chapter 6: Results

Descriptive statistics

In the figure down below (Figure 5), we present the number of observations per sector, according to the Thomson Reuters classification (TRBC). The sample we chose appears to be well balanced between the sectors, with the banking sector having the greatest number of observations, followed by the real estate and the industrial goods sectors.

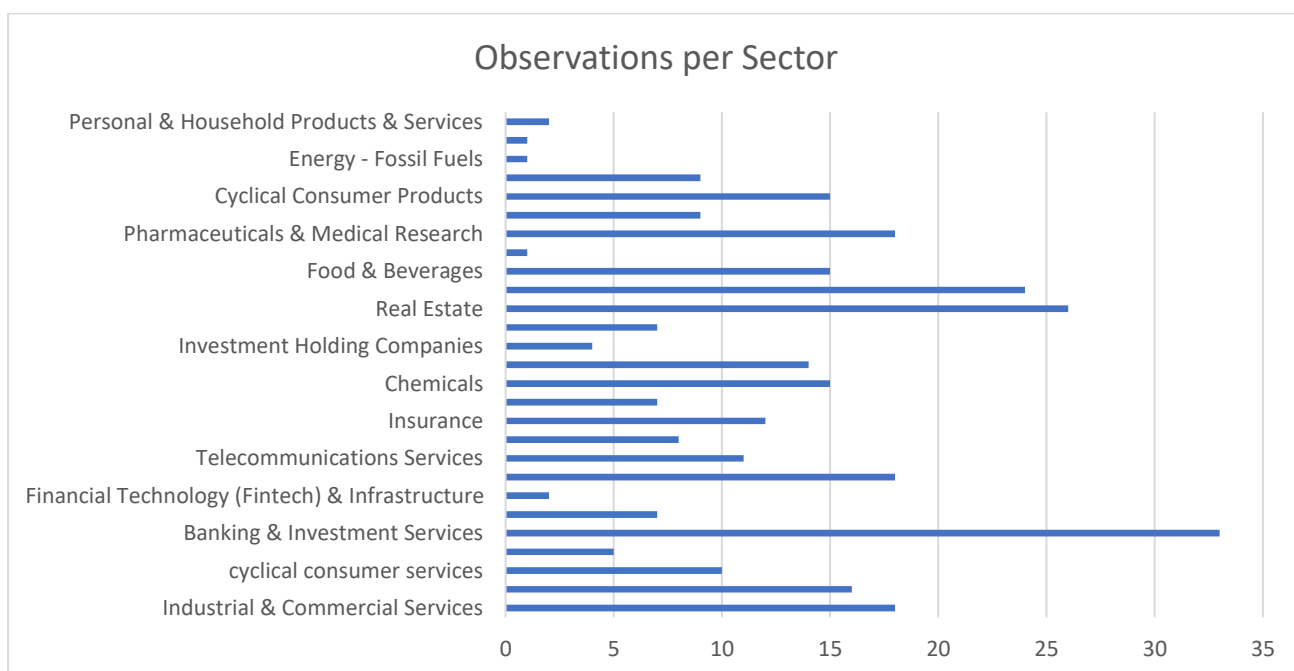


Figure 5: observations per sector

The tables down below represent the descriptive statistics of all our dependent, independent and control variable over the course of 6 financial years (FY0 = current financial year), the difference in these 2 tables is the lack of blank or null observations in the second table. This can help us reduce the number of statistical

errors that can possibly be made by using these observations. Even though this made us reduce our number of observations by half (300 observations (299(Figure 7) vs 600(Figure 6)), we now get a clearer picture of how real the relationship is.

	Mean	Median	S.D.	Min	Max
GscoreFY5	45.37	48.50	30.22	0.0000	96.04
GscoreFY4	47.07	52.76	29.39	0.0000	97.28
GscoreFY3	50.71	55.19	27.40	0.0000	97.29
GscoreFY2	57.73	61.72	24.77	0.0000	97.09
GscoreFY1	61.23	64.43	22.16	0.0000	98.40
SscoreFY5	51.01	58.25	32.52	0.0000	98.63
SscoreFY4	54.39	62.51	31.89	0.0000	97.44
SscoreFY3	59.82	68.33	29.00	0.0000	98.24
SscoreFY2	64.52	70.90	24.83	0.0000	97.32
SscoreFY1	67.99	72.79	21.59	0.0000	97.18
EscoreFY5	48.03	56.27	33.42	0.0000	98.08
EscoreFY4	50.32	56.99	32.28	0.0000	97.90
EscoreFY3	53.46	60.32	30.80	0.0000	98.35
EscoreFY2	57.83	63.90	28.38	0.0000	99.12
EscoreFY1	61.60	67.21	25.78	0.0000	98.89
ESGScoreFY5	48.75	56.23	29.83	0.0000	93.57
ESGScoreFY4	51.35	59.80	28.75	0.0000	93.03
ESGScoreFY3	55.57	60.60	26.16	0.0000	93.65
ESGScoreFY2	60.92	64.30	22.51	0.0000	94.33
ESGScoreFY1	64.44	68.34	19.30	0.0000	93.70
	Mean	Median	S.D.	Min	Max
TotAssetsFY4	6.883e+010	7.911e+009	2.202e+011	0.0000	2.259e+012
TotAssetsFY3	6.826e+010	8.493e+009	2.125e+011	0.0000	2.102e+012
TotAssetsFY2	7.017e+010	9.393e+009	2.165e+011	0.0000	2.230e+012
TotAssetsFY1	7.400e+010	1.044e+010	2.276e+011	0.0000	2.422e+012
TotAssetsFY0	7.855e+010	1.071e+010	2.441e+011	0.0000	2.488e+012
PEFY4	25.49	18.27	77.48	0.0000	1403
PEFY3	57.02	19.12	427.5	0.0000	6804
PEFY2	20.70	15.18	26.96	0.0000	314.8
PEFY1	56.68	19.74	526.0	0.0000	12458
PEFY0	40.38	21.53	105.4	0.0000	1873
ROAFY4	0.06017	0.04690	0.1225	-0.6049	2.338
ROAFY3	0.06859	0.05465	0.1181	-0.5934	2.179
ROAFY2	0.06229	0.04979	0.1213	-0.5972	2.368
ROAFY1	0.05685	0.04539	0.1164	-0.8394	2.139
ROAFY0	0.03913	0.03637	0.09066	-0.4339	0.8490
ROEFY4	0.1867	0.1233	1.117	-5.144	26.05
ROEFY3	0.1556	0.1390	1.082	-20.83	11.91
ROEFY2	0.1868	0.1360	0.5449	-0.7309	11.10
ROEFY1	0.1650	0.1328	0.3363	-1.885	6.641
ROEFY0	0.1460	0.1045	0.8601	-2.142	20.46
TobinsqFY4	1.950	1.410	2.831	0.0000	61.05
TobinsqFY3	2.135	1.532	2.798	0.0000	58.02
TobinsqFY2	1.953	1.319	2.835	0.0000	61.37
TobinsqFY1	2.245	1.501	2.913	0.0000	57.26
TobinsqFY0	2.302	1.482	2.418	0.0000	35.65
RevGrowthFY4	-0.03598	0.01865	2.005	-46.48	6.167
RevGrowthFY3	0.1269	0.08273	0.8855	-16.11	6.438
RevGrowthFY2	0.1446	0.08689	0.5251	-4.509	6.214
RevGrowthFY1	0.06419	0.06615	0.4269	-3.852	5.183
RevGrowthFY0	-0.2022	-0.1536	1.364	-12.67	13.23
LeverageFY4	0.7973	0.5404	1.577	-16.72	11.05
LeverageFY3	0.8728	0.5436	2.905	-14.29	64.11
LeverageFY2	0.7697	0.5795	2.305	-46.51	10.16
LeverageFY1	0.9659	0.6703	1.243	-7.878	8.914
LeverageFY0	1.243	0.7191	3.876	-2.907	83.10

Figure 6: Summary statistics for dependent, independent and control variables including null observations

	Mean	Median	S.D.	Min	Max
GscoreFY5	56.08	58.58	22.83	3.958	96.04
GscoreFY4	56.85	59.59	22.28	4.502	94.35
GscoreFY3	57.93	59.97	21.56	5.495	93.75
GscoreFY2	63.05	65.50	20.82	6.533	97.09
GscoreFY1	64.74	67.51	19.43	15.26	96.02
SscoreFY5	64.77	68.23	21.17	2.880	98.63
SscoreFY4	67.37	71.64	20.60	2.129	97.21
SscoreFY3	70.28	73.28	18.98	4.251	98.24
SscoreFY2	72.26	74.17	17.63	6.287	97.32
SscoreFY1	74.14	77.19	16.73	14.29	97.18
EscoreFY5	61.74	66.30	24.28	1.410	98.08
EscoreFY4	63.05	68.07	22.89	2.475	97.90
EscoreFY3	65.19	68.77	21.43	1.279	98.35
EscoreFY2	67.11	71.16	20.93	1.910	98.74
EscoreFY1	69.10	73.54	20.34	9.873	98.89
ESGScoreFY5	61.65	64.30	17.82	7.276	93.57
ESGScoreFY4	63.29	65.18	16.94	9.994	93.03
ESGScoreFY3	65.37	67.70	15.70	16.78	93.65
ESGScoreFY2	68.23	70.02	14.84	16.15	94.33
ESGScoreFY1	70.09	71.37	14.07	25.90	93.70
	Mean	Median	S.D.	Min	Max
TotAssetsFY4	6.697e+010	9.951e+009	1.987e+011	5.294e+008	2.077e+012
TotAssetsFY3	6.810e+010	1.036e+010	1.966e+011	7.585e+008	1.950e+012
TotAssetsFY2	7.024e+010	1.088e+010	2.025e+011	8.407e+008	2.041e+012
TotAssetsFY1	7.453e+010	1.182e+010	2.150e+011	8.540e+008	2.165e+012
TotAssetsFY0	7.827e+010	1.246e+010	2.336e+011	8.541e+008	2.488e+012
PEFY4	34.23	21.81	106.8	2.309	1403
PEFY3	26.69	20.14	42.39	4.147	500.0
PEFY2	19.67	16.63	14.67	1.976	155.6
PEFY1	26.39	20.22	31.84	6.606	477.2
PEFY0	46.94	23.26	132.5	6.040	1873
ROAFY4	0.06534	0.05307	0.06044	-0.02441	0.4244
ROAFY3	0.06912	0.06061	0.05658	0.0006795	0.3815
ROAFY2	0.06562	0.05754	0.05262	0.0006979	0.3625
ROAFY1	0.05956	0.05226	0.04864	-0.003260	0.3296
ROAFY0	0.04844	0.04029	0.04969	-0.09160	0.3326
ROEFY4	0.1719	0.1520	0.3563	-5.144	1.801
ROEFY3	0.2195	0.1632	0.6100	-1.092	10.35
ROEFY2	0.1902	0.1563	0.2079	-0.7309	2.735
ROEFY1	0.1800	0.1482	0.1642	-0.7061	1.849
ROEFY0	0.1496	0.1237	0.1346	-0.6915	0.7386
TobinsqFY4	1.936	1.631	1.193	0.7860	9.126
TobinsqFY3	2.021	1.692	1.225	0.8433	8.611
TobinsqFY2	1.810	1.427	1.114	0.7279	10.62
TobinsqFY1	2.003	1.552	1.351	0.7071	13.30
TobinsqFY0	2.063	1.527	1.528	0.7970	14.10
RevGrowthFY4	0.1104	0.05559	0.3469	-0.5725	3.008
RevGrowthFY3	0.1220	0.08046	0.2740	-0.7764	2.220
RevGrowthFY2	0.08985	0.08678	0.1845	-0.5787	1.216
RevGrowthFY1	0.05992	0.06825	0.1813	-0.7077	0.9673
RevGrowthFY0	-0.1651	-0.1370	0.3692	-3.117	1.535
LeverageFY4	0.9359	0.5900	1.404	-7.484	11.05
LeverageFY3	0.8905	0.5861	1.179	-2.745	9.248
LeverageFY2	0.9882	0.6149	1.332	-2.420	10.16
LeverageFY1	1.054	0.6949	1.264	-2.809	8.914
LeverageFY0	1.056	0.7716	1.178	-2.907	8.231

Figure 7: Summary statistics including all dependent, independent and control variables excluding null observations

We notice a smaller gap between the mean and the median for the independent variables, along with the fact that for both tables, the average ESG score is increasing alongside the individual environmental, social and governance pillar scores. It is also important to note that in both tables we notice that for the Tobin's Q variable, the median and the average are well above the score of 1 which means they are all capable of creating value for the stock market.

The ROE and ROA variables seem also to be more or less stable over the course of the past 5 years (except the last financial years because of covid-19 reasons and conditions), this fact increases the validity of our data.

The statistical description shows a positive revenue growth in the previous 4 fiscal years and a small decrease during the last year (because of lockdown and the decrease of companies' net income during this period). Along with that, we notice a constant increase of leverage from FY-4 to FY0.

Correlation matrix

Appendix shows the complete correlation matrix between all our dependent, independent and control variables used for the research. In the correlation matrix we notice a greater correlation between the ESG and the Environment Pillar and Social pillar scores than with the Governance score. We also notice a higher correlation coefficient between the environment and social score, which can be explained by the constant pursuit of social and environmental policies more than the governance ones. Thus, we can say that the governance pillar is somehow disassociated from the social and environmental pillars even though they are positively correlated.

Figure 8

Correlation Coefficients, using the observations 1 - 299
5% critical value (two-tailed) = 0.1135 for n = 299

ESG	EScore	SSCORE	Gscore	
1.0000	0.8005	0.8606	0.6368	ESG
	1.0000	0.6675	0.2279	EScore
		1.0000	0.2957	SSCORE
			1.0000	Gscore

Figure 8: Correlation Matrixes ESG FY-5 to FY-1

Unsurprisingly, in the table down below, we notice a positive correlation between ROE and ROA (around 0.21) (Table 1), as well as another positive correlation between Total assets and the ESG scores (Table 2), same goes for Tobin's Q correlation with ROA and ROE that are highly correlated (0.80 and 0.21 respectively) which represents a stock market valuation indicator. Interestingly, we note a negative correlation coefficient between the ESG score and the ROA (Table 2), as well as with Tobin's Q, in contrary to the strong positive correlation with the ROE (0.057).

Correlation coefficients, using the observations 1 - 299
5% critical value (two-tailed) = 0.1135 for n = 299

Tobin's Q	ROE	ROA	
1.0000	0.2135	0.8049	Tobin's Q
	1.0000	0.2108	ROE
		1.0000	ROA

Table 1: ROE, ROA and Tobin's Q correlation

Correlation coefficients, using the observations 1 - 299
5% critical value (two-tailed) = 0.1135 for n = 299

ESG	ROA	ROE	Tobin's Q	Total Asset	
1.0000	-0.0476	0.0570	-0.0738	0.1936	ESG
	1.0000	0.2108	0.8049	-0.3091	ROA
		1.0000	0.2135	-0.0691	ROE
			1.0000	-0.2221	Tobin's Q
				1.0000	Total Asset
		Pe ratio	RevGrowth	Leverage	
		0.0629	-0.0536	0.0609	ESG
		0.0027	0.1070	-0.3241	ROA
		0.0383	-0.0295	0.2515	ROE
		0.1034	0.1045	-0.2361	Tobin's Q
		-0.0476	-0.1170	0.2617	Total Asset
		1.0000	-0.0961	-0.0472	Pe ratio
			1.0000	-0.1728	RevGrowth
				1.0000	Leverage

Table 2: ESG, dependent variables and control variables correlation

Correlation coefficients, using the observations 1 - 299
5% critical value (two-tailed) = 0.1135 for n = 299

ESG	Total Asset	Pe ratio	RevGrowth	Leverage	
1.0000	0.1936	0.0629	-0.0536	0.0609	ESG
	1.0000	-0.0476	-0.1170	0.2617	Total Asset
		1.0000	-0.0961	-0.0472	Pe ratio
			1.0000	-0.1728	RevGrowth
				1.0000	Leverage

Table 3: independent and control variables correlation

The level of corporate debt shows to be positively correlated with ESG scores (Table 3), which means that the greater the debt of a company, the higher their ESG score, which can explain that many of the companies' investments are directed towards investing in CSR strategies and in implementing ESG policies. We can also notice a positive correlation between the total assets (representing the size of the company) and the leverage ratio, which could mean that the bigger the company, the more debt they have.

Linear regression

Many regression tests (OLS tests conducted on Gretl) have been conducted in order to find the significance level of the correlations between the variables and determine the validity of the hypotheses proposed earlier in the study.

The regression will estimate the relationship between the dependent variable and the independent ones. The tables down below will represent the OLS tests ran in order to ascertain the soundness of the hypotheses.

After each OLS test, we omitted the variables that were not significant at at least 10%, this will help us exclude variables with insignificant coefficients and will increase the OLS estimation. This method will help us reduce our model by removing the variables with the highest p-values. We then chose to start with the most complex model and reduce it by removing insignificant variables until having all significant variables. We can find the complete OLS regression models in the appendix 2, while the omitted variables test in the tables.

From the tables down below, in addition to **Appendix 2**, display the results of different regressions of the ESG score on the 3 financial performance variables. We notice that ESG has a positive effect only on ROE and not on Tobin's Q nor on ROA. Besides that, the significance level on ROE is much higher than that it has on ROA or on Tobin's Q. according to studies such as (Faccio, 2005), the leverage ratio has a negative effect on Tobin's Q which we can notice in Table 4. It also has a small negative but significant effect on ROA (-0.008***) and significant positive effect on ROE (0.06***). We also note that the size variable represented by Total Assets has significantly negative on effect on Tobin's Q, which disproves that the theory of the economies of scale. We note that for the 3 regressions the R squared is between 0.43 and 0.71 which are considered to be suitable levels, alongside the F-statistics that present a significant level for the 3 regressions.

Model 1: OLS, using observations 1-299
Dependent variable: TobinsQ

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
SSCORE	0.0270710	0.00159973	16.92	<0.0001	***
Leverage	-0.103206	0.0618153	-1.670	0.0961	*
RevGrowth	1.03091	0.521184	1.978	0.0489	**
Pe ratio	0.00380020	0.00177285	2.144	0.0329	**

Total Asset	-1.19941e-012	3.64175e-013	-3.294	0.0011	***
-------------	---------------	--------------	--------	--------	-----

Mean dependent var	9.833046		S.D. dependent var	6.154911
Sum squared resid	11564.53		S.E. of regression	6.271774
Uncentered R-squared	0.712318		Centered R-squared	-0.024397
F(5, 294)	145.5926		P-value(F)	2.36e-77
Log-likelihood	-970.7232		Akaike criterion	1951.446
Schwarz criterion	1969.949		Hannan-Quinn	1958.852

Table 4: Tobin's Q OLS test (after omitting variables)

Model 2: OLS, using observations 1-299
Dependent variable: ROE

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
ESG	0.00462624	0.00108316	4.271	<0.0001	***
EScore	-0.00262285	0.00106363	-2.466	0.0142	**
Leverage	0.0604890	0.0114405	5.287	<0.0001	***
Total Asset	-1.74671e-013	0.000000	-2.575	0.0105	**

Mean dependent var	0.911230		S.D. dependent var	1.222547
Sum squared resid	399.6852		S.E. of regression	1.163987
Uncentered R-squared	0.423810		Centered R-squared	0.102631
F(4, 295)	54.24590		P-value(F)	3.06e-34
Log-likelihood	-467.6525		Akaike criterion	943.3051
Schwarz criterion	958.1069		Hannan-Quinn	949.2295

Table 5: ROE OLS test (after omitting variables)

Model 3: OLS, using observations 1-299
Dependent variable: ROA

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
SSCORE	0.00101119	4.91936e-05	20.56	<0.0001	***
Leverage	-0.00809235	0.00232645	-3.478	0.0006	***
TotalAsset	0.000000	0.000000	-4.839	<0.0001	***

Mean dependent var	0.308085		S.D. dependent var	0.244907
Sum squared resid	16.76360		S.E. of regression	0.237979
Uncentered R-squared	0.637573		Centered R-squared	0.062115
F(3, 296)	173.5722		P-value(F)	6.40e-65
Log-likelihood	6.481781		Akaike criterion	-6.963562
Schwarz criterion	4.137768		Hannan-Quinn	-2.520298

Table 6: ROA OLS test (after omitting variables)

Conclusion

This study examined the relationship between corporate financial performance, corporate environmental performance, corporate social performance and corporate governance performance. We used the EuroStoxx600 index excluding null observations in order to get the most accurate results, extracting data from a main source (Thomson Reuters DataStream) in order to avoid biases or misinformation, for the years FY-5 to FY0, as certain variables can have staggered effects on others.

We used E score, S score, G score and ESG score as our environmental indicators, and also as our independent variables. Meanwhile we used ROE, ROA and Tobin's Q as our dependent variables to measure the corporate's financial performance. Several control variables such as the leverage, PE ratio, the size of the companies and their revenue growth were included in the model.

Several meta-analyses, including (Friede, 2015) found a positive relationship between the CFP and the CEP in 9 out of 10 cases, which helped affirm and reassure our usage of data, and the validity of our results throughout the study, as well as the interpretations of final results.

The model resulted in clear results of a positive effect of ESG on ROE, as well as a positive effect of individual Env, Soc and Gov scores on Tobin's Q and ROA on different significance levels. The only negative effects ESG or individual pillar scores have on either one of the 3 financial indicators were insignificant.

The results of our study can be of high value for practitioners as it proves the need of incentives to implicate for CSR strategies and ESG practices in companies, which will, evidently improve their financial performance and enhance their capability of creating value and increasing their market and stock value.

Limits

We finally needed to highlight the limits of our study as we just covered the period of 5 years (FY-5 to FY-1 for independent variables and FY-4 to FY0 for the rest) and just covered 299 of the 600 biggest companies in Europe due to the lack of sufficient observations. We also covered data collected from a single source, this can be solved by comparing results collected from different sources with each other to limit the number of missing observations.

Appendixes:

Appendix 1:

Correlation coefficients, using the observations 1 - 299
5% critical value (two-tailed) = 0.1135 for n = 299

ESG	EScore	SSCORE	Gscore	TobinsQ	
1.0000	0.8005	0.8606	0.6368	-0.0738	ESG
	1.0000	0.6675	0.2279	-0.0994	EScore
		1.0000	0.2957	0.0410	SSCORE

			1.0000	-0.1345	Gscore
				1.0000	TobinsQ
ROE	ROA	TotalAsset	Pe ratio	RevGrowth	
0.0570	-0.0476	0.1936	0.0629	-0.0536	ESG
-0.0336	-0.0533	0.2235	-0.0082	-0.0125	EScore
0.0703	0.0213	0.1437	0.0916	-0.0424	SSCORE
0.0738	-0.0992	0.1396	0.0563	-0.0824	Gscore
0.2135	0.8049	-0.2221	0.1034	0.1045	TobinsQ
1.0000	0.2108	-0.0691	0.0383	-0.0295	ROE
	1.0000	-0.3091	0.0027	0.1070	ROA
		1.0000	-0.0476	-0.1170	TotalAsset
			1.0000	-0.0961	Pe ratio
				1.0000	RevGrowth
				Leverage	
				0.0609	ESG
				0.0795	EScore
				0.0352	SSCORE
				0.0704	Gscore
				-0.2361	TobinsQ
				0.2515	ROE
				-0.3241	ROA
				0.2617	TotalAsset
				-0.0472	Pe ratio
				-0.1728	RevGrowth
				1.0000	Leverage

Appendix 2:

Model 1: OLS, using observations 1-299
Dependent variable: TobinsQ

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
ESG	-0.0239777	0.0371377	-0.6456	0.5190	
EScore	0.00149223	0.0114574	0.1302	0.8965	
SSCORE	0.0395360	0.0160779	2.459	0.0145	**
Gscore	0.0103900	0.0122738	0.8465	0.3980	
Leverage	-0.107471	0.0626582	-1.715	0.0874	*
RevGrowth	1.06636	0.523059	2.039	0.0424	**
Pe ratio	0.00355101	0.00178521	1.989	0.0476	**
TotalAsset	-1.18271e-012	3.71653e-013	-3.182	0.0016	***

Mean dependent var	9.833046		S.D. dependent var	6.154911
Sum squared resid	11479.49		S.E. of regression	6.280797
Uncentered R-squared	0.714434		Centered R-squared	-0.016863
F(8, 291)	91.00360		P-value(F)	1.26e-74
Log-likelihood	-969.6197		Akaike criterion	1955.239
Schwarz criterion	1984.843		Hannan-Quinn	1967.088

Model 2: OLS, using observations 1-299
Dependent variable: ROE

	Coefficient	Std. Error	t-ratio	p-value	
ESG	0.00771943	0.00691352	1.117	0.2651	
EScore	-0.00373585	0.00213289	-1.752	0.0809	*
SSCORE	-0.000736856	0.00299304	-0.2462	0.8057	
Gscore	-0.00149535	0.00228487	-0.6545	0.5133	
Leverage	0.0621523	0.0116644	5.328	<0.0001	***
RevGrowth	0.0388942	0.0973720	0.3994	0.6899	
Pe ratio	0.000196982	0.000332332	0.5927	0.5538	
TotalAsset	-1.62358e-013	0.000000	-2.347	0.0196	**

Mean dependent var	0.911230		S.D. dependent var	1.222547
Sum squared resid	397.8226		S.E. of regression	1.169225
Uncentered R-squared	0.426495		Centered R-squared	0.106813
F(8, 291)	27.05075		P-value(F)	3.14e-31
Log-likelihood	-466.9542		Akaike criterion	949.9085
Schwarz criterion	979.5120		Hannan-Quinn	961.7572

Model 3: OLS, using observations 1-299
Dependent variable: ROA

	Coefficient	Std. Error	t-ratio	p-value	
ESG	-0.00088211	0.00140893	-0.6261	0.5318	
EScore	0.000289220	0.000434670	0.6654	0.5063	
SSCORE	0.00117366	0.000609963	1.924	0.0553	*
Gscore	0.000452580	0.000465643	0.9719	0.3319	
Leverage	-0.00819194	0.00237713	-3.446	0.0007	***

RevGrowth	0.0277473	0.0198438	1.398	0.1631	
	6.85975e-06	6.77271e-05	0.1013	0.9194	
TotalAsset	0.000000	0.000000	-4.752	<0.0001	***

Mean dependent var	0.308085		S.D. dependent var	0.244907
Sum squared resid	16.52235		S.E. of regression	0.238281
Uncentered R-squared	0.642789		Centered R-squared	0.075613
F(8, 291)	65.45561		P-value(F)	1.28e-60
Log-likelihood	8.648956		Akaike criterion	-1.297913
Schwarz criterion	28.30564		Hannan-Quinn	10.55079

Bibliography

- Accenture. (2019). *Accenture Chemicals Global Consumer Sustainability Survey 2019*.
- Adams, R. B. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 291–309.
- Aysa Stamenova, G. C. (2020). 10 Reasons Why Companies Should Use a Cloud-Based Intranet. *onix*.
- Berg, F. K. (2019). Aggregate Confusion: The Divergence of ESG Ratings. *SSRN Electronic Journal*.
- Bouma, J. J. (2001). *Sustainable banking: The greening of finance*. . Routledge.
- Bragdon, J. a. (1972). Is Pollution Profitable? *Risk Management*.
- Carroll, A. (1979). A three-dimensional conceptual model of corporate social performance. *Academy of Management Review*, 497-505.
- Cavaco, S. a. (2010). Complementarity between CSR practices and corporate performance: an empirical study. In P. a. Crifo, *Corporate Social Responsibility: From Compliance to Opportunity*.
- Clark, C. &. (2020). *ESG Improvers: An Alpha Enhancing Factor*. Retrieved from Rockefeller Capital Management: https://rcm.rockco.com/insights_item/esgimprovers-an-alpha-enhancing-factor/
- Clark, G. L. (2015). *From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance*. University of Oxford.
- Clarkson, P. L. (2008). Revisiting the relation between environmental performance and environmental disclosure – an empirical analysis. In *Accounting, Organizations and Society* (pp. 303-327).
- Cunha, F. E. (2019). Can Sustainable Investments Outperform Traditional Benchmarks? Evidence from Global Stock Markets. *Business Strategy and the Environment*, 682-697.
- David A. Jones, C. R. (2013). Why Are Job Seekers Attracted by Corporate Social Performance? Experimental and Field Tests of Three Signal-Based Mechanisms. *Academy of Management Journal*.
- (1992). *Declaration of the UN Conference on the Human Environment*. Rio de Janeiro: United Nations.
- Douglas, E. V. (2017). Responsible Investing: Guide to ESG Data Providers and Relevant Trends. *The Journal of Environmental Investing*,, 92–114.
- Eccles, R. G. (2013). Sustainability in financial services is not about being green. *Harvard Business Review*.
- Faccio, M. &. (2005). *Debt and expropriation*.
- Fogler, H. a. (1975). A note on social responsibility and stock valuation. *Academy of Management Journal*, 155–160.
- Freeman, R. (1984). *Strategic Management: A Stakeholder Approach*. Boston.

- Friede, G. B. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 210–233.
- Giese, G. L.-E. (2019). Foundations of ESG Investing: How ESG Affects Equity Valuation, Risk, and Performance. *The Journal of Portfolio Management*, 69–83.
- (2020). *Global risk report 2020*. World Economic Forum.
- Gunnar Friede, T. B. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 210–233.
- Hang, M. G.-K. (2019). It is merely a matter of time: A meta-analysis of the causality between environmental performance and financial performance. *Business Strategy and the Environment*, 257–273.
- Hernaus, A. I. (2019). Exploring the strategic variety of socially responsible investment—Financial performance insights about SRI strategy portfolios. *Sustainability Accounting Management and Policy Journal*, 545–569.
- Holman, W. N. (1990). The impact of corporate social responsiveness on shareholder wealth. In *Corporation and Society Research: Studies in Theory and Measurement* (pp. 265–280). Greenwich: JAI Press.
- Ingio, E. A. (2019). Sustainability Orientated Innovation Dynamics: Levels of Dynamic Capabilities and Their Path-Dependent and Self-Reinforcing Logics. *Technological Forecasting & Social Change*, 334–351.
- Jitmaneeroj, B. (2017). The impact of corporate social responsibility on firm value: an application of structural equation modelling. *International Journal of Business Governance and Ethics*, 306–329.
- Kang Yang Trevor Yu, P. D. (2014). *The Oxford Handbook of recruitment*. OPU USA.
- Khan, M. S. (2016). Corporate Sustainability: First Evidence on Materiality. *The Accounting Review*, 1697–1724.
- Kotsantonis, S. R. (2019). The Economic Significance of Long-Term Plans. *Journal of Applied Corporate Finance*, 22–33.
- Mazzotta, R. B. (2017). Does board diversity affect firm performance? Evidence from the Italian financial sector. *International Journal of Business Governance and Ethics*, 65–89.
- Melsa Ararat, M. A. (2015). *How Board Diversity Affects Firm Performance in Emerging Markets: Evidence on Channels in Controlled Firms*. Wiley Online Library.
- Miralles-Quiros, J. L.-Q. (2019). Diversification Benefits of Using Exchange-Traded Funds in Compliance To The Sustainable Development Goals. *Business, Strategy & the Environment*, 244–255.
- Morris, J. (2014). Business and society: defining the 'social licence'. *The Guardian*.
- Moser, P. R. (2016). Managers' green investment disclosures and investors' reaction. *Journal of Accounting and Economics*, 239–254.

- Moyle, J. K., & Lynn, C. D. (2018). THE BUSINESS CASE FOR SUSTAINABILITY IN SURGERY. *Practice Greenhealth*.
- Orlitzky, M. S. (2003). Corporate social and financial performance: a metaanalysis. *Organization Studies*, 403-441.
- Pekovic, M. A. (2012). Environmental standards and labor productivity: Understanding the mechanisms that sustain sustainability. *Journal of Organizational Behavior*.
- Pelosi, N. a. (2016). 'Managing the 'S' in ESG: the case of indigenous peoples and extractive industries'. *Journal of Applied Corporate Finance*, 87-95.
- Porter, M. E. (2011). Creating shared value. *Harvard Business Review*, 62-77.
- Przychodzen, P. &. (2015). Relationships Between Eco-Innovation and Financial Performance – Evidence from Publicly Traded Companies in Poland and Hungary. *Journal of Cleaner Production*, 253-263.
- Richard A. Clarke, R. N. (1994). The challenge of going green. *Harvard Business Review*.
- Rockness, J. S. (1986). Hazardous waste disposal, corporate disclosure, and financial performance in the chemical industry. *Advances in Public Interest Accounting*, 167-191.
- Schwahn, L. (2021). What Do Solar Panels Cost and Are They Worth It? *Nerd Wallet*.
- Sharma, D. &. (2019). Resource-based view on corporate sustainable financial reporting and firm performance: evidences from emerging Indian economy. *International Journal of Business Governance and Ethics*.
- Shrivastava, J. P. (2020). Why businesses should go green. *Environment Journal*.
- Starks, L. a. (2016). *SRI Funds: Investor Demand, Exogenous Shocks and ESG Profiles*. University of Canterbury, Department of Economics and Finance.
- Stevens, P. (2020). ESG index funds hit \$250 billion as pandemic accelerates impact investing boom. *CNBC*.
- Sutton, S. (2015). How Telecommuting Reduced Carbon Footprints at Dell, Aetna and Xerox. *Entrepreneur*.
- Tensie Whelan, U. A. (2020). *ESG and Financial Performance: Uncovering the Relationship by Aggregating Evidence from 1,000 Plus Studies Published between 2015 – 2020*. Rockefeller Asset Management.
- U.S department of energy. (2020). *Lighting Choices to Save You Money*. Retrieved from Energy.gov: <https://www.energy.gov/energysaver/save-electricity-and-fuel/lighting-choices-save-you-money>
- University of California - Los Angeles. (2012). Employees at 'green' companies are significantly more productive, study finds. *ScienceDaily*.
- Waddock, S. a. (1997). The corporate social performance-financial performance link. *Strategic Management Journal*, 303-319.
- Weber, O. (2014). The Financial Sector's Impact on Sustainable Development. *Journal of Sustainable Finance & Investment*, 4, 1-8.

Wendling, Z. A. (2020). *2020 Environmental Performance Index*. New Haven, CT: Yale Center for Environmental.

WSP. (2020). *Office vs Home Working: How we can save our carbon footprint*. WSP.

Yifat, T. (2017). Optimize Resources with Big Data. *Network for business sustainability*.