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Relationship between ESG score and corporate financial performance: evidence from over 1000 companies in 23 developed countries.

Prof. Pierluigi Murro
SUPERVISOR

Prof. Rosella Santella
CO - SUPERVISOR

ID No. 720921 – Federico Amadio
CANDIDATE

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Abstract

The purpose of this paper is to assess the impact of environmental, social and governance (ESG) practices on corporate financial performance. This research, carried out using the Refinitiv Workspace platform for data collection and the SPSS statistical software for data processing, involved 1,255 mid and large cap companies of the MSCI World Index, for which data were collected for the years 2011 to 2018.

Multivariate linear regression was used to measure both the impact of the overall ESG score and the individual environmental, social and governance pillar scores on Return on Equity, Return on Assets and Price to Book Value per Share. In all regression models, the aggregate ESG and individual pillars score positively and statistically significantly impact financial performance, in line with the findings currently prevailing in the literature. Furthermore, the results of this study suggest that social and governance practices have a greater impact on financial performance than environmental ones.

Table of Contents

Introduction

The recent pandemic crisis is not only one of the most economically destructive events of the last 125 years, a period that includes two World Wars, the Great Depression and the global financial crisis, but the first sustainability crisis of the 21st century which should trigger an awakening for decision-makers to prioritize a more sustainable approach to finance by acting as a catalyst for ESG investing.[1]

This is the core concept of a report published in July 2020 by J.P. Morgan. From then, ESG investing continued to spread reaching $37.8 trillion in assets under management (AUM's) from $30.6 trillion in 2018 and $22.8 trillion in 2016. This inexorable growth does not seem to be stopping. By 2025, according to Bloomberg analysts, assuming a conservative growth rate of 15% (equal to half that of the last five years), ESG asset under management are on track to reach $53 trillion - more than a third of the projected $140.5 trillion AUM's.[2]

In terms of asset classes, 2020 was dominated by equity which has represented around half of total ESG AUM's, confirming the steady growth which began in 2016. However, the growth record belongs to green bonds. In Q3 2020, $65 billions new green bonds were issued bringing annual new issuance to $269.5 billions, up from 2019, and cumulative issuance since inception close to the $1 trillion mark. Social bonds and sustainability bonds have also started to proliferate. Social bonds, which differently from green bonds focus on non-environmental factors such as socioeconomic advancement and empowerment, cleared $70 billion in 2020, up from $20 billion in 2019.

Geographically, while Europe, the historic leader in sustainable finance, continues to account for more than half of global ESG assets, the US could overtake Europe as early as 2022. Furthermore, while Europe and the US will continue to represent almost the 90% of the ESG market, the new wave of growth coming from Asia - particularly Japan - should not be underestimated.

The acceleration that the pandemic has generated on the awareness of the negative impact that climate change and social justice issues are having on the world is reinforced by the exponential growth of ESG reporting. This growing attention is underscored in this year's

[1] JPMorgan Chase & Co. (2020). *Why COVID-19 Could Prove to Be a Major Turning Point for ESG Investing.*

[2] Bloomberg Intelligence. (2021). *ESG assets may hit $53 trillion by 2025, a third of global AUM*.

look at the progress that is being made on environmental sustainability, as many publicly traded companies take additional steps to improve their situations. So, if in 2011 approximately 20% of the largest 500 companies in the U.S. published a sustainability report[3], the volume has been increasing steadily ever since, reaching 96% of 250 world largest companies in 2020.[4]

The last year and a half have been a period of enormous change which, by highlighting the fragilities of the economic system, seems to have accelerated the process of reorienting stakeholders' attention on how corporations address economic, environmental and social sustainability. Based on this awareness, and after checking for a literature whose conclusions are not unequivocal, I decided to contribute by exploring the degree of correlation between companies' ESG scores and their financial performance.

This paper will start with an introductory chapter in which, after discussing the theme of corporate social responsibility, I will introduce the ESG system at a purely conceptual level by splitting it into environmental, social and governance dimensions. At the end of the first chapter, ESG will be framed within the current regulatory system the fragmentary nature of which leaves room for reflection on the need for a harmonized ESG measuring and disclosing standard.

The second chapter will complement the first in the process of approaching the main body of the work. I will consider the tools through which it is possible to quantify the financial and ESG performance of companies. These tools will in fact be central in the pursuit of the purpose of this work. Indeed, in chapter three a sample of 1,255 from 23 developed countries, belonging to the MSCI World Index, will be used to analyze the relationship between ESG Score and Corporate Financial Performance (CFP) in terms of both profitability and market valuation. The analysis will then be deepened as it will focus on assessing the relationship between individual environmental, social and governance dimensions and CFPs.

Finally, in the fourth and last chapter, results will be summarized and interpreted. The work will conclude with a presentation of its limitations and possible future research that may derive from it.

[3] Standard & Poor's. (2021). *State of Green Business 2021 - The Big Picture.*

[4] KPMG (2020). *The time has come. The KPMG Survey of Sustainability Reporting 2020*

1. Background Information

The acronym ESG, which stands for environmental, social and governance, encompasses a series of assessment elements, used by both managers and investors, to judge the sustainability of companies, with a view to an overall evaluation that goes beyond purely economic results. The aim of this chapter is to provide a conceptual framework for it and to analyze the process that led to its formulation. Therefore, a literature review of the corporate social responsibility concept follows.

1.1. Corporate Social Responsibility

The term corporate social responsibility (CSR) refers to the general belief that companies have a responsibility to society that goes beyond that of their shareholders or investors. This responsibility is extended to other stakeholders in society typically including consumers, employees, the wider community, government and the natural environment.

The CSR concept has a long and varied history, so much so that its emergence can be difficult to place in time. According to Archie B. Carroll (2008), the formal and methodical analysis of CSR is predominantly an American product of the 20th century, especially of the last 60 to 70 years.[5] This should not be taken to mean that prior to those years large companies were completely stranger to social issues as, following Murphy's classification, the period before the 1950s can be classified as the philanthropic era in which corporations 'donated to charities more than anything else'.[6] However, although recognizing or showing interest in the existence of social problems, these corporations did not feel responsible for them avoiding the integration of sustainability elements - other than strictly economic ones - in their business models.

1.1.1. CSR Awareness Era

Among the limited literary production of the 1950s, Bowen's *Responsibility of the Businessman* (1953) represents a milestone in the discussion of the topic, earning its author the title of 'father of corporate social responsibility' (Carroll 2008). Bowen was the first provider of a definition of CSR by referring to the obligations of businessmen 'to

[5] Carroll, A. B. (2008). *A history of corporate social responsibility: Concepts and practices*. The Oxford handbook of corporate social responsibility, 1.

[6] Murphy, P. E. (1978). *An evolution: Corporate social responsiveness*. University of Michigan Business Review, 6(30), 19-25.

pursue those policies, make those decisions, or follow those courses of action that are desirable in terms of society's goals and values'.[7]

The conceptual foundations of CSR were strengthened over the 1960s during which efforts to formalize the term were greatly intensified. Among the most important contributions is that of Keith Davis (1960), according to whom: 'Businessmen's decisions and actions taken for reasons at least partially beyond the firm's direct economic or technical interest'.[8] Davis provided a groundbreaking innovation that would be followed by William C. Frederick (1960) for whom social responsibility implied the use of human and economic resources for broad social purposes and not simply for the interests of several individuals and companies.[9] Finally, Clarence C. Walton (1967) stated: 'the new concept of social responsibility recognizes the intimacy of the relationship between business and society and realizes that these relationships must be kept in mind by top managers as the business and related groups pursue their respective goals'.[10] Anyway, during the 1960s CSR was still experiencing the 'growth and expansion phase' that, according to Muirhead (1999), would last until the mid-1980s.[11] In this period, contributions were more practical than theoretical and were in contrast with the identification, as the sole social responsibility of companies, of long-term value creation through the free market (Friedman 1962).[12]

1.1.2. Integrating CSR in Management

The main achievement of the 1960s, as can be deduced from the contributions that have been presented, is the introduction of the stakeholder concept which reveals a deep relationship between a company and all the social groups that may be affected by its actions. Along the same line, The Committee for Economic Development (1971)

[7] Bowen, H. R. (1953). *Responsibility of the businessman.*

[8] Davis, K. (1960). *Can business afford to ignore social responsibilities?*. California management review, 2(3), 70-76.

[9] Frederick, W. C. (1960). *The growing concern over business responsibility*. California management review, 2(4), 54-61.

[10] Walton, C. C. (1967). *Corporate social responsibilities*. Wadsworth Publishing Company.

[11] Muirhead, S. A. (1999). *Corporate contributions: The view from 50 years*. Conference Board.

[12] Friedman, M. (1962). *Capitalism and freedom*. University of Chicago press

observed: ‘business functions by public consensus and its fundamental purpose is to serve society's needs constructively by adapting to changing public expectations’.[13]

As Carroll and Shabana (2010) pointed out, the introduction of this concept was accelerated by the severe economic crisis that characterized the late 1960s and the 1970s, which triggered the introduction of environmental, ethic, labor, and civil rights themes in the academic, regulatory, and corporate environment.[14] Thus, many authors began to emphasize the importance of a managerial approach to CSR in which business leaders would apply traditional management functions to address CSR issues. This, combined with demanding regulations, led to the prediction, planning and organization of socially responsible practices as some early research, on all Bowman and Haire (1975)[15] and Homes (1976)[16] verified.

However, the plurality of CSR definitions and contexts of application created uncertainty about its understanding. This situation lasted until A. B. Carroll (1979) presented what is arguably the first unified definition of CSR stating that: ‘the social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time’.[17]

1.1.3. CSR Operationalization

The changed political climate of the 1980s led to a greater focus on reducing the legislative pressure on companies. Anyway, although governments were reducing their role in regulating corporate behavior, managers continued to face different social groups who still requested corporations to fulfil the social expectations of the time. In this context, scholars investigated CSR operationalization as a response to stakeholders. The first contribution to the operationalization of CSR came from Thomas M. Jones (1980)

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[13] Committee for Economic Development (CED). 1971. *Social Responsibilities of Business Corporations*. New York: CED.

[14] Carroll, A. B., & Shabana, K. M. (2010). *The business case for corporate social responsibility: A review of concepts, research and practice*. International journal of management reviews, 12(1), 85-105.

[15] Bowman, E. H., & Haire, M. (1975). *A strategic posture toward corporate social responsibility*. California management review, 18(2), 49-58.

[16] Holmes, S. L. (1976). *Executive perceptions of corporate social responsibility*. Business horizons, 19(3), 34-40.

Carroll, A. B. (1979). *A three-dimensional conceptual model of corporate performance. Academy of management review*, 4(4), 497-505.

who considered CSR as a decision-making process that influenced corporate behavior.[18] Jones' approach gave rise to a new area of debate that aimed at operationalizing CSR rather than the concept itself. This resulted in the proliferation of new models and frameworks including that of Tuzzolino and Armandi (1981) who integrated Carroll's definition of CSR with the Maslow's Hierarchy of Needs.[19]

To understand the operationalization of CSR during the 1980s, it is perhaps necessary to consider that the 1980s was a period of new societal concerns which took an international dimension in the areas of sustainable development and corporate behavior. It was during these years that the World Commission (1987) defined the sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.[20] Consequently, the most relevant societal concerns and expectations of corporate behavior revolved around environmental pollution, employment discrimination, consumer abuses, employee health and safety, quality of work life, deterioration of urban life, and questionable/abusive practices of multinational corporations.

1.1.4. CSR Goes Global

During the 1990s, the creation of international bodies and the signing of international agreements represented a major effort to set strict standards on climate issues and, indirectly, on corporate behavior. In these years, the subject of CSR took on a global dimension because of the combination of globalization and sustainable development. As Carroll (2008) stated, this was a period of great opportunity for large companies that enjoyed new markets and possibilities to tap into different business environments. At the same time, they began to face a higher reputational risk dependent on world-class which forced them to look at CSR to balance the great benefits and the great pitfalls that globalization implied. Despite the institutionalization of CSR, conceptually not much has developed in those years. Perhaps, the most famous contribution is that of Elkington

[18] Johnson, H. L. (1971*). Business in contemporary society: Framework and issues*. Wadsworth Publishing Company.

[19] Tuzzolino, F., & Armandi, B. R. (1981). *A need-hierarchy framework for assessing corporate social responsibility*. Academy of management review, 6(1), 21-28.

[20] World Commission on Environment and Development. (1987). *Our common future*. Oxford: Oxford University Press.

(1994) with the introduction of the famous 'Triple Bottom Line', a framework in which the company balances social, environmental, and economic sustainability.[21]

1.1.5. From Strategic CSR to Shared Value Creation

In 2000, the United Nations launched the United Nations Global Compact (UNGC) with the aim of incorporating universal values of protection of human rights, environment and society into the global marketplace. Later, the European Commission presented a Green Paper called *Promoting a European Framework for Corporate Social Responsibility* (2001), which initiated the promotion of CSR as a distinctive European strategy. These initiatives testify to the broader dimension that was given to CSR at the beginning of the new millennium which originated from the assumption that large companies had to be responsive to social needs by integrating elements of sustainability into their strategies.

The direct link between the term CSR and business strategy, was further explored by Werther and Chandler (2005) who framed it within brand management.[22] According to the authors, the top-down effective implementation of SCSR should have led to competitive advantage. Later, based on the notion that companies could achieve competitive advantage through SCSR, Porter and Kramer (2006) presented the shared value creation model according to which companies could address the competitive environment by creating benefits for society and, at the same time, improve their competitive position.[23] After identifying three ways in which shared value could be generated (by reconceiving products and markets, by redefining productivity in the value chain and by creating supportive industry clusters where the company operates), they specified how the purpose of organizations should be reoriented in this respect (Porter, Kramer 2011).[24]

[21] Elkington, J. (1994) Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development. California Management Review, 36, 90-100.

[22] Werther Jr, W. B., & Chandler, D. (2005). *Strategic corporate social responsibility as global brand insurance*. Business Horizons, 48(4), 317-324.

[23] Porter, M. E., & Kramer, M. R. (2006). *Strategy & Society*. Harvard Business Review, 84.

[24] Porter, M. E., & Kramer, M. R. (2011). *Creating shared value*. Harvard Business Review (January-February).

Chandler (2016), building on his earlier work with Werther (2013)[25], provided a definition of SCSR: 'the incorporation of a holistic CSR perspective within a firm's strategic planning and core operations so that the firm is managed in the interests of a broad set of stakeholders to optimize value over the medium to long term'.[26] The central component of Chandler's SCSR - value optimization - implies the pursuit of purpose by companies through a focus on their area of expertise and a reorientation of their efforts towards value - rather than profit - integrating SCSR into the corporate culture, decision making process and day-to-day operations.

Net of theoretical contributions, the decade that has just ended has been of great importance for the topic of sustainable development. Paris Agreement, the launch of the 2030 Agenda for Sustainable Development and the adoption of seventeen Sustainable Development Goals (SDGs) will mark the ways of approaching CSR for the next 10 years. Although they do not represent a commitment for the private sector, the adoption of policies by the adopting countries will result in strong pressure on companies to adopt either new or improved business practices. This context presents an opportunity for CSR to keep growing in terms of conceptualization and implementation, especially as companies can adopt it as strategic framework with the aim of creating shared value (Agudelo, M. A. L., Jóhannsdóttir, L., & Davídsdóttir, B. 2019).[27]

1.2. From CSR to ESG

As explained in the previous pages, the concept of CSR has evolved considerably over the years. From a marginal element applied on a voluntary basis, it has become a mandatory strategic element that should permeate the entire organizational system of modern corporations. Moreover, the possibility of creating shared value between business and society arguably makes modern CSR less about 'corporate social responsibility' and more about 'corporate social integration'.

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[25] Chandler, D., & Werther, W. B. (2013). *Strategic corporate social responsibility: stakeholders, globalization, and sustainable value creation* (3rd ed.). United States of America: SAGE Publications.

[26] Chandler, D. (2016). *Strategic corporate social responsibility: sustainable value creation*. United States of America: SAGE Publications.

[27] Agudelo, M. A. L., Jóhannsdóttir, L., & Davídsdóttir, B. (2019*). A literature review of the history and evolution of corporate social responsibility. International Journal of Corporate Social Responsibility*, 4(1), 1-23.s

Understanding CSR - or at least contextualizing it - is a prerequisite for addressing ESG. However, although without CSR there would be no ESG, it should be firmly borne in mind that the two terms are not interchangeable and that, on the opposite, the concept of ESG was introduced to overcome the practical limitations of CSR.

Indeed, the conceptual nature of CSR tends to lead to a greater focus on corporate moral values than on practical concerns. Furthermore, the fact that it is more of a guideline than an operational tool makes it an internal function, and as such subject to discretion, about the definition, execution, and evaluation of CSR programs. On the opposite, ESG is a strictly quantitative tool that quantifies the impact of companies' environmental, social, and governance practices. In addition, the external measurement of ESG is a useful decision-making criterion for both investors and managers, allowing them to compare the effectiveness of ESG across companies.

It is therefore necessary to go one step further. The following section will present the ESG concept, by breaking it down into its three components, since its quantitative nature lends itself to the purpose of this paper.

1.2.1. Environmental

Environmental considerations, once considered marginal to the economic equation, now threaten to dampen economic growth. Issues such as climate risk, water scarcity, extreme temperatures and carbon emissions can directly influence a company's competitive positioning. Based on this awareness, it is evident that the management of environmental factors is a central component of ESG. In detail, if ESG factors measure the overall sustainability of a company, the environmental component is directly related to the way a company impacts on the environment. Therefore, ‘E’ encompasses a company's use of natural resources, waste management, environmental disclosure, efforts to reduce carbon emissions and the effect of its operations on the environment, both in its direct operations and through its supply chain. Risks and opportunities for both shareholders and stakeholders are considerable as underestimating or failing to take appropriate action to mitigate the environmental impact of companies’ operations can lead to reputational

damage, government or regulatory sanctions and criminal proceedings that can damage profitability or creditworthiness.[28]

1.2.2. Social

The social dimension of ESG is essentially about assessing the type of relationship between the company and the rest of society, including individuals and institutions. Based on the complex network of relationships that identify modern corporations, it follows that social criterion cover an extremely wide range of potential issues. Indeed, according to United Nation Principle of Sustainable Investment (UNPSI), social issues relevant to ESG analyses may include human rights, modern slavery, child labor, working conditions and employee relations. One of the most important relationships a company has is with its employees whose protections are enshrined in the International Labour Organization (ILO). In this respect, the 'S' variable considers labor management practices, human capital development, labor standards, safety, and compliance with human rights throughout the entire supply chain. The social dimension also encompasses the relationship with consumers through the quality and safety of the products offered, the social relevance of the company's mission statement, controversial sourcing and social activism.[29]

1.2.3. Governance

The last dimension of ESG is the governance variable, which refers to how a company is managed by its top management. In detail, 'G' can be divided into corporate governance and corporate behavior. Although the two terms are closely related, corporate governance refers to the internal organization of top management, including board diversity and inclusion, executive pay, ownership and control, and accounting. On the other hand, corporate behavior refers to the actions a company takes in dealing with external parties. This includes tax transparency, corruption and instability, business ethics and anti-competitive practices. In other words, the governance dimension essentially concerns the

[28] Standard & Poor's. (2020). *Understanding the "E" in ESG*

[29] Standard & Poor's. (2020). *What is the "S" in ESG?*

way in which executive management and the board of directors look after the interests of the company's various stakeholders.

1.3. Regulatory Framework

When it comes to analyzing the current regulation of ESG measuring and reporting, it is particularly complex to articulate the analysis between the perspectives of financial markets and large corporations as they are inextricably linked. In addition, the lack of harmony between ESG reporting standards, which is the result of policies that have been broken down to address major global problems, makes it impossible to obtain an overall picture of the situation, forcing an analysis of the phenomenon by economic area. In this regard, I will only consider the state of regulations in the European Union since, at the time this paper is written, ESG reporting in the United States is not yet mandatory. Furthermore, there is no evidence of ESG regulation standardization targets being pursued in the U.S. in the short term.

1.3.1. EU Corporate ESG-Related Disclosures

The process of standardizing the definition and processes of ESG factors was initiated in the summer of 2020 with the signing of the EU Taxonomy Regulation by the European Council and Parliament.[30] This new mandatory regime essentially applies to environmental considerations - to meet the approaching Paris Climate Agreement deadline - only introducing social and governance factors later, by the end of 2021. The aim of the Taxonomy is to define a single classification system regarding activities that can be defined as sustainable. These will have to comply with minimum safeguards and technical screening criteria - linked to ESG - which will be set out in a Delegated Act whose contents should be fully defined by the end of 2022. The standardization process should also be read with reference to the Non-Financial Reporting Directive (NFRD)[31] establishing non-financial reporting requirements for large public interest companies with more than 500 employees.

[30] Regulation (EU) 2020/852
[31] Directive 2014/95/EU

The Directive applies to approximately 11,700 companies divided into:

i. listed companies
ii. banks
iii. insurance companies
iv. other companies designated by national authorities as public interest entities.

These are required to present in their consolidated non-financial statement ‘information to the extent necessary for an understanding of the group’s development, performance, position, and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anticorruption, and bribery matters’, including:

i. brief description of the group’s business model
ii. description of the policies pursued by the group in relation to those matters, including due diligence processes implemented
iii. the outcome of the policies
iv. the principal risks related to those matters linked to the group’s operations including, where relevant and proportionate, its business relationships, products or services that are likely to cause adverse impacts in those areas, and how the group manages those risks
v. non-financial key performance indicators relevant to the business

Entities must also disclose: a description of the diversity policy applied in relation to the undertaking’s administrative, management and supervisory bodies about aspects such as age, gender, or educational and professional backgrounds; the objectives of that diversity policy; how it has been implemented; and the results in the reporting period.
Where the group does not pursue policies in relation to one or more of those matters, the consolidated non-financial statement must provide a clear and reasoned explanation for not doing so.

The final pillar of the ongoing harmonization process in the European Union is the Sustainable Finance Disclosure Regulation (SFDR)[32], which applies to investment companies that must disclosure:

i. the environmental sustainability of an investment and the provenance of any ESG claims made
ii. the risks investments present to ESG factors
iii. the risks ESG factors present to investments

As the 2019 KPMG report *Impact of ESG Disclosure: Embracing the Future* points out, the regulation of ESG disclosure in the EU is leading the way and is expected to have far-reaching effects. These effects will affect both large companies and financial markets, shaping the flow of investments and the sustainability practices of corporations.[33]

1.3.2. Towards Common Stakeholder Capitalism Metrics

As already stated, the establishment of a path towards standardization of ESG measurement and disclosure initiated in the European Union, is the exception to a system in which the existence of multiple ESG reporting frameworks and the lack of consistency and comparability of metrics prevent companies from credibly demonstrating their sustainability progress to all stakeholders. In fact, the growth of the ESG market has led to the proliferation of ESG rating services which, by assessing a company's sustainability performance in different ways, create several problems for their transparent evaluation.
In September 2020 the World Economic Forum (WEF), at its annual meeting in Davos, published a White Paper entitled '*Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation*'. This project, developed within the International Business Council (IBC) and in collaboration with Deloitte, EY, KPMG and PwC, defines a basic set of Stakeholder Capitalism Metrics (SCM) and information that can be used by both IBC member and non-IBC companies to report their core performance reporting against environmental, social and governance

[32] Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector
[33] KPMG (2019). *Impact of ESG Disclosure: Embracing the Future*

on a consistent way. The metrics are deliberately based on existing standards, with the short-term goal of accelerating convergence among leading private standard-setters and bringing greater comparability and consistency to the reporting of ESG information.
Metrics, divided into 21 Core and 34 Expanded, are organized under four pillars deeply interdependent: Governance, Planet, People and Prosperity. The inclusion of the prosperity pillar, namely ‘an ambition to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature', goes beyond simply ESG by highlighting the importance of prosperous societies and the role of business in fueling economic growth, innovation, and shared wealth. Without going into further detail here, what is important to stress is that, quoting the paper itself, ‘engaging in this process will allow companies to report more consistently and comparably on their creation of shared value, build trust between stakeholders and shareholders, and demonstrate that stakeholder capitalism can be a force for good in society and on the planet’.[34] In addition, the willingness to go beyond ESG must also be recorded. Anyway, what is reported should not be understood as binding, and therefore destined to mark the future of the topic but, at least in its current state, rather as a proposal towards a renewed stakeholders' capitalism.

[34] World Economic Forum. (2020). *Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation*.

2. Financial and ESG Performance Measurement Metrics

Having identified the essential characteristics and dimensions of the ESG concept, it is appropriate to proceed further in the discussion by identifying the main means through which companies' ESG performance can be quantified. These, as well as the presentation of the main metrics for measuring financial performance, will provide all the necessary tools to approach the main topic of this paper.

2.1. The ESG Data Landscape

The environmental, social and governance performance of most public companies, as well as that of some private ones, is quantified and ranked by various third-party reports and ratings providers. These ratings allow stakeholders to track the company's ESG performance over time and compare it with that of their competitors.[35]

The high number and proliferation of ESG rating providers, with over 600 ratings globally, makes any attempt to provide a comprehensive picture of the industry complex and subject to rapid obsolescence. For this reason, I will consider only the main ESG providers - categorized into fundamental, comprehensive and specialist[36] - whose characteristics and methodologies will be addressed according to the information disclosed by them.

2.1.1. Fundamental

Fundamental ESG data providers collect and aggregate publicly available data and disseminate it to end users in a systematic way. The data used by these providers typically include company documents and websites and non-governmental organizations. Examples of fundamental providers are Thomson Reuters ESG Research Data and Bloomberg ESG Data Service.

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[35] Huber, B. M., Comstock, M., Polk, D., & LLP, W. (2017). ESG reports and ratings: What they are, why they matter. In *Harvard Law School Forum on Corporate Governance and Financial Regulation* (Vol. 44).

[36] Li, F., & Polychronopoulos, A. (2020). What a difference an ESG ratings provider makes. *Research Affiliates*.

2.1.1.1. Thomson Reuters ESG Research Data

The Thomson Reuters ESG Research Data scores provide the relative ESG performance, commitment and effectiveness of around 10,000 companies with time series going back to 2002. In other words, the ESG scores reported by companies depend on their performance relative to that of their industry (for the environmental and social dimensions) and to that of their country of origin (for the governance dimension). With this approach, the provider lets the data define whether a company's performance is good or not based on contingent elements. Therefore, Thomson Reuters provides percentile rank scores (available both as percentages and as letters from A+ to D-).

Thomson Reuters methodology captures and calculates over 500 company-level ESG measures, including a subset of 186 of the most comparable and relevant by sector. These measures are grouped into 10 categories (resource use, emissions, innovation, workforce, human rights, community, product responsibility, stewardship, shareholders, CSR strategy) under the three ESG pillars. Performance in these 10 categories is based on numerical and dichotomous values extrapolated from publicly available documentation, on which both the ESG pillar value and the final ESG value depend. The final ESG value is obtained by summing up the values reported by the three dimensions (environmental, social and governance) weighted considering their relative importance in the industry to which the organization belongs.

Thomson Reuters also provides a second scoring tool called the Thomson Reuters ESG Controversy Score (ESGC) obtained integrating 23 specific controversy topics on the ESG scoring. The 23 additional ESGC topics are: anti-competition, business ethics, intellectual property, critical countries, public health, tax fraud, child labor, human rights, management compensation, management departures, consumer controversies, customer health & safety, privacy, product access, responsible marketing, responsible R&D, environmental, accounting, insider dealings, shareholder rights, diversity and opportunity, employee health & safety, wages, and working conditions.[37]

[37] Thomson Reuters ESG Scores. Thomson Reuters (2017)

2.1.1.2. Bloomberg ESG Data Service

Bloomberg's Environmental, Social & Governance dataset offers ESG metrics and ESG disclosure scores for more than 11,500 public listed companies in over 80 countries (equivalent to approximately 82% of global stock market capitalization) as well as time series beginning in 2006. ESG scoring (out of 100) is calculated on the basis of more than 600 company-derived and self-reported key indicators across 120 environmental, social and governance indicators, including: carbon emissions, climate change effect, pollution, waste disposal, renewable energy, resource depletion, supply chain, political contributions, discrimination, diversity, community relations, human rights, cumulative voting, executive compensation, shareholders' rights, takeover defense, staggered boards, and independent directors. In addition, Bloomberg ESG rating penalizes companies for missing disclosures.[38] Bloomberg also provides a range of highly specific ESG scoring services to assess company activities relative to industry peers:

i. Board Composition Scores
ii. Climate Transition Scores
iii. Environmental and Social (ES) Scores
iv. ESG Disclosure Scores
v. Bloomberg Gender-Equality Index Scores

2.1.2. Comprehensive

Comprehensive ESG data providers use a combination of objective and subjective elements to determine an overall ESG score. Generally, these providers develop their own defined and systematic analysis methodology that integrates company interviews/questionnaires and independent analysis with public information. These assessments are based on a combination of hundreds of different metrics covering all three ESG dimensions. In addition, these companies often scrutinize data from public websites and newspapers to supplement companies' ESG ratings with additional information as well as producing reports on industry and country trends. Examples of comprehensive providers include S&P Global ESG Score, MSCI ESG Research and Sustainalytics Company ESG Reports.

[38] Information available at Bloomberg.com

2.1.2.1. S&P Global ESG Scores

The S&P Global ESG Score provides data relevant to the ESG performance of over 7,300 companies representing approximately 95% of global market capitalization. Standard & Poor's' data collection and analysis methodology is based on Robeco SAM's annual Corporate Sustainability Assessment (CSA). The companies that are invited to take part in the CSA are:

i. Companies eligible for inclusion in the Dow Jones Sustainability Index (DJSI) series.
ii. Companies eligible for inclusion in the S&P ESG Index series.
iii. Companies that are of interest to the broader investment community

The CSA uses a consistent, rules-based methodology with specific approaches for 61 different industries. There are about 100 questions for each sector, and each question falls under one of 23 different themes or criteria. The criteria, in turn, fall into one of three dimensions: Environmental (E), Social (S), and Governance & Economic (G). Some criteria are common to all sectors, while others are sector specific. The CSA generates a total ESG score for each company covered, as well as individual scores for the three dimensions, with 100 being the best score in each case. The results for the 23 principles are aggregated into the three ESG dimensions and weighted based on relative importance within the industry. The S&P Global ESG Score is obtained as the sum of the three ESG dimensions.

In addition to ESG scores, there is also the ESG Evaluation, a unique assessment of a company's ESG strategy and ability to prepare for potential future risks and opportunities. This depends on the sum of ESG Profile and Preparedness. The 'Profile' assesses the exposure of an entity's operations to observable ESG risks and opportunities, considering corporate governance in mitigating risks and capitalizing on opportunities while 'Preparedness' measures a company's ability to anticipate and adapt to a variety of plausible long-term growth disruptions and opportunities and is composed of five dimensions (awareness, assessment, action plan, decision-making and culture.[39]

[39] Information available at spglobal.com

The ecosystem developed by Standard and Poor's also offers the Dow Jones Sustainability Index (DJSI). Based on Robeco SAM's ESG analysis, the index represents the ESG performance of the top 10% of the largest 2,500 companies across 60 industries in the S&P Global Broad Market Index. Again, information is collected through the CSA where between 80 and 120 questions cover 100 ESG issues such as: corporate governance, risk and crisis management, codes of business conduct, customer relationship management, policy influence, brand management, tax strategy, information security & cybersecurity, privacy protection, environmental reporting, environmental policy & management systems, and operational eco-efficiency. Dow Jones Sustainability Indices include:

i. DJSI North America: This index represents the top 20% of the largest 600 North American companies in the S&P Global BMI.
ii. DJSI Europe: This index represents the top 20% of the largest 600 European companies in the S&P Global BMI.
iii. DJSI Asia Pacific: This index represents the top 20% of the largest 600 companies in the Asia Pacific region in the S&P Global BMI.
iv. DJSI United States: This index represents the top 20% of the largest 600 U.S. companies in the DowJones Sustainability North America Index.

2.1.2.2. MSCI ESG Research

As an independent provider launched in 2010, MSCI aggregates more than 1,000 data points from company fillings, non-governmental organizations, government, media sources and alternative data to formulate a judgement about the ESG scoring of companies. As part of the MSCI group, MSCI ESG Research provides ESG ratings on over 6,000 global companies and over 400,000 equity and fixed income securities.

The ESG rating, which ranges from triple A to triple C, is constructed based on 37 parameters divided into 10 themes (climate change, natural resources, pollution & waste, environmental opportunities, human capital, product liability, stakeholder opposition, social opportunities, corporate governance, and corporate behavior) attributable to the three ESG dimensions. Companies are monitored continuously and systematically with

updates provided on a weekly basis. They are also invited to formally verify the accuracy of the data collected before the rating is made public.[40]

2.1.2.3. Sustainalytics Company ESG Reports

Sustainalytics provides ESG data on over 6,500 companies across 42 sectors. The ESG result, expressed in cents, is obtained by considering the variable importance of different ESG issues across industries. Sustainalytics covers at least 70 indicators in each sector divided into three dimensions:

i. Preparedness: Assessment of management systems and policies in place to help manage ESG risks.
ii. Disclosure: Whether corporate reporting meets international best practice standards and is transparent in relation to ESG issues.
iii. Performance (quantitative and qualitative): ESG performance based on quantitative metrics and evaluation based on a review of controversial incidents in which the company may have been involved.

Prior to publication of the ESG report, a draft report is heard by the company for review to obtain more feedback to complete the analysis with any missing information.

2.1.2.4. Vigeo Eiris (Moody's)

The ESG Score from Vigeo Eiris, an affiliate of Moody's, measures the degree to which companies consider and manage material Environmental, Social and Governance factors (i.e., business risks and opportunities that affect sustainable value creation for the company and/or its stakeholders).[41]

The score is based on 38 distinct ESG criteria framed within 40 industry specific models. Each criterion has a defined set of 'Principles of Action'. These determine the active content of the analysis. These principles are derived from universal and standardized norms issued by the United Nations, International Labour Organization and OECD.

[40] *MSCI ESG Rating Methodology*. MSCI ESG Research (2020)

[41] *ESG Assessment Methodology*. Vigeo Eiris (2020)

Scoring depends on subjecting each criterion to a management assessment consisting of three pillars (quality of leadership, extent of implementation and measure of effectiveness). VE's methodology also considers the different weights that the 38 criteria have within different industries. Each is given a weight between w0 (not relevant to the industry) and w3 (very relevant to the industry). Finally, the data is aggregated to provide both a single ESG scoring and specific scoring for all three E-S-G dimensions. VE's procedure for publishing the results considers feedback from the surveyed companies, which can comment or provide additional information.

2.1.2.5. ISS Quality Score

ISS is one of the leading providers of ESG data and analysis in the space. ISS's ISS Quality Score provides detailed corporate governance information for over 5,600 publicly traded companies globally. The rating, which ranges from 1st to 10th decile (with the 1st decile being associated with excellent governance practices), is based on 200 parameters divided into board structure, compensation/remuneration, shareholder rights, audit & risk oversight with different weights based on the region in which the company operates. ISS, through ISS-Ethix, also provides information on a wider range of ESG topics including, for example, controversial weapons screening, ethical screens, energy & extractives screen, global sanctions screening, research on companies' adherence to human rights, labour standards, environmental protection and anti-corruption.[42]

2.1.3. Specialist

Specialist ESG data providers provide detailed information on a specific ESG issue such as environmental scores, corporate governance, human rights and gender diversity. Because of the great specialization and expertise of these providers, their information is useful for companies and investors who want to focus on a particular field. However, it is worth considering how the same information can be provided by comprehensive providers because of the large amount of ESG data they acquire and maintain. Among the specialist providers is Carbon Disclosure Project (CDP).

[42] Information available at issgovernance.com

2.1.3.1. CDP

The CDP (formerly the Carbon Disclosure Project) is an international non-profit organization based in the United Kingdom, Germany and the United States of America. Founded in 2000, it supports over 9,600 companies, 810 cities, 130 states and regions to measure and manage their risks and opportunities on climate change, water security and deforestation. Its goal is to make environmental reporting and risk management a norm for business, driving disclosure, understanding and action towards a sustainable economy. CDP operates globally providing specialized programmes. These are Climate Change, Water, Supply Chain, Forests, Cities and Carbon Active Initiative. The latter is an investor-led initiative aimed at accelerating carbon reduction in highly polluting industries through projects that generate high returns on investment.

CDP provides an annual A-list of companies that score highly on the quality of their disclosure. These scores are calculated using a standardized methodology that measures the quality of a company's responses to a questionnaire. A company goes through four stages of judgement. It starts with disclosure of their current position, moving on to awareness (which looks at whether a company is aware of its environmental impact), management and, finally, leadership. In other words, a high CDP score indicates a company's environmental awareness, advanced sustainability management and leadership in tackling environmental challenges.[43]

2.1.4. Rating the Raters

The presentation of the main ESG providers, which different ranking methodologies have been briefly observed, leaves room for an in-depth analysis that must necessarily be reported as it profoundly influences any discussion related to the topic I am dealing with. In fact, the tangible differences between the plurality of subjects that provide services relating to the measurement of environmental, social and governance performance means that there is no reliable measure of a 'true ESG performance'. This has the potential to negatively influence investors' pricing of stocks and bonds, companies' efforts towards sustainability, as well as the quality of the outcome of empirical research.

[43] Information available at cdp.net

This thesis is reflected in the paper '*Aggregate Confusion: The Divergence of ESG Rating*' published by the MIT School of Management.[44] In conducting their research on the divergence of ESG providers, the authors considered six raters including Vigeo Eiris (Moody's), S&P Global, Sustainalytics, Thomson Reuters, MSCI. Avoiding going into too much detail on their methodology, it is worth reporting that there was an average correlation between the providers of 0.54 and a range between 0.38 and 0.71, making the ESG reporting industry relatively noisy.

There are essentially three sources of this divergence. The first is the scope divergence, or the fact that raters' assessments include different sets of attributes. In other words, one agency might include a category, such as carbon emission, while another might ignore it. Consequently, the ESG score, because it originates from different assumptions, will tend to diverge. The second cause has been identified as measurement divergence, i.e., the measurement of the same attribute with different indicators by different providers. As the authors themselves point out, for example, labour practices may be considered in terms of labour turnover by one agency and labour-related court cases taken against the firm by another. Although both capture the same attribute, the performance of the attribute will be different because it is derived from different evaluation methods. The third and final cause is weights divergence, i.e., the attribution of different weights to the same attributes by different providers. For example, for the purposes of defining the score relative to the environmental pillar, one provider might give greater importance to carbon emissions rather than to resource use, while another might prefer a diametrically opposed approach. Although the effects of scope, measurement and weight divergence are all intertwined, the MIT School of Management's analysis went further by breaking down the impact of each individual source on the overall divergence. In this regard, measurement divergence had the largest effect, followed by scope and weights divergence. In addition, researchers identified a fourth source of divergence which is referred to as the rater effect. The rater effect assumes correlated ratings across categories, so when a rating agency gives a high score in one category, it tends to give a good score in other categories as well. Despite the effect has not been investigated, it is attributed to some form of rating agency bias that causes ratings across categories to be statistically redundant.

[44] Berg, F., Koelbel, J. F., & Rigobon, R. (2019). *Aggregate confusion: The divergence of ESG ratings*. MIT Sloan School of Management.

In summary, this research shows that ESG rating divergence depends not only on differences of opinion but also on disagreements about underlying data since both scope and weights divergence represent disagreements about what the relevant categories of ESG performance are, and how important they are relative to each other.

In any case, the lack of a single criterion for calculating ESG performance should not paralyze the discussion of the subject as the problem exists only if one accepts that ESG rating must be based on elements of objectivity, leaving no room for the discretion of providers. Differently, it is perfectly legitimate for evaluators to have different views on the same issues as both raters and users tend to give varying importance to different categories for a firm's business success. For rating agencies, this should translate into a call for greater transparency that, through clearer communication of their measurement practices and methodologies, enables stakeholders to approach these tools in a more informed manner and in line with their objectives.

Along the same line - the awareness about the heterogeneity among the various ESG rating providers - the '*2019 Rate the Raters*'[45] report aims to rank the various providers on elements of subjectivity rather than objectivity. To pursue this objective, the report was created on the basis of surveys to which thousands of sustainability professionals responded. The 2019 report follows a similar report conducted in 2012. While in 2012 participants were asked to rate the credibility of the rating, in 2019 the focus was on quality and usefulness.

The analysis conducted provided insight into how respondents place less importance on usefulness than on rating quality. For the latter, the credibility of data sources is the most important factor in determining the quality of the rating, followed shortly by the quality of the methodology, the focus on material issues but also the experience and competence of the research team and the disclosure methodology. Regarding the quality dimension, respondents named RobecoSAM (the underlying asset of S&P Global ESG Score / Dow Jones Sustainability Index) as the best ESG provider followed by MSCI, CDP and Sustainalytics. They close, in order, with ISS, Bloomberg and Vigeo Eiris.

Perceptions of usefulness map closely to perceptions of quality with RobecoSAM, CDP, Sustainalytics and MSCI again at the top. However, the overall scores for usefulness were lower than those for quality. Regarding the usefulness dimension, greater geographical

[45] *Rate the Raters 2019: Expert Survey Results*. Sustainability (2019)

variability between North America and Europe must be reported. More specifically, North American respondents tend to consider CDP, Bloomberg and ISS more useful, while European respondents RobecoSAM, Thomson Reuters and Vigeo Eiris.
Concluding, in 2018 (as in 2012) survey respondents consistently identify RobecoSAM and CDP as leaders. MSCI and Sustainalytics also receive favorable reviews. Together, experts consider these four ratings a distinct top four compared to all other ratings covered in the 2018 survey. However, it is important to note that these results do not imply the superiority of one rating provider over another because, as is abundantly clear, this analysis addresses the issue by preferring subjectivity to objectivity.

2.2. Corporate Financial Performance Indicators

In pursuit of the main purpose for which this work is carried out, we cannot avoid considering the issue of corporate financial performance, i.e., the propensity of a company to generate profits using its assets in a given period.
The assessment of the financial performance of a company is of fundamental importance since the financial health of the organization impacts on stakeholders including, obviously, shareholders. In this regard, the entity is required to prepare, generally on an annual basis, a set of financial statements consisting of at least a balance sheet, income statement and cash flow statement.

i. The balance sheet provides information on the qualitative and quantitative composition of sources and uses of funds.
ii. The income statement summarizes the transactions and their effects in terms of profitability - net income - that the company has carried out during the period.
iii. The cash flow statement combines the balance sheet and the income statement. The analysis of this document allows one to trace the operating, investing and financing cash flows, thus obtaining an overview of how an organization obtains and disposes of its liquidity.

Financial ratios, i.e., information of a quantitative nature that determine, track, and project the economic well-being of a business, can be calculated on the basis of financial

statement documentation. Their nature does not make them very useful if taken individually, in fact they are used to carry out time-trends and peer analysis.

An overall financial assessment cannot fail to consider various aspects of the organization's financial health. For this reason, the main financial ratios, categorized into liquidity, leverage, profitability, turnover and market value, are briefly described below. However, what is important to underline is that, for the purpose of my work, I will consider profitability and market value ratios.

2.2.1. Liquidity Ratios

Liquidity ratios refer to the ability of an organization to repay its short-term obligations using and, if necessary, liquidating its current assets. Higher values of these indicators are associated with better short-term financial stability of the company. Among the most common liquidity ratios are the current ratio, quick ratio and cash ratio.

The current ratio, or short-term liquidity ratio, is a measure used to determine a company's ability to sell its tangible assets to pay off its short-term debt.

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$$

The quick ratio, also known as the acid test, is a more restrictive measure of a company's capacity as it calculates the ability to repay short-term debts through its most liquid assets.

$$Quick\ Ratio = \frac{Cash + Account\ Receivable}{Current\ Liabilities}$$

The cash ratio considers the ability of a company to repay short term debt only from its own cash or cash equivalents.

$$Cash\ Ratio = \frac{Cash + Cash\ Equivalents}{Current\ Liabilities}$$

2.2.2. Financial Leverage Ratios

Leverage ratios quantify the relative level of debt load a company has incurred by comparing total debt to a company's assets or capital. A high ratio indicates that a company may have incurred a higher level of debt than can reasonably be expected to service current cash flows. This is an important concern, as high leverage is associated with a higher risk of bankruptcy. The two main leverage ratios are the debt ratio and the debt/equity ratio.

Debt ratio compares assets to debt. A high value of this indicator indicates that asset purchases are debt-financed. As a result, the company is operating with minimal capital levels.

$$Debt\ Ratio = \frac{Total\ Debt}{Total\ Assets}$$

Debt to equity ratio compares equity to debt. A high ratio indicates that the business owners may not be providing sufficient equity to fund a business.

$$Debt\ to\ equity\ ratio = \frac{Total\ Debt}{Total\ Equity}$$

2.2.3. Turnover Ratios

A turnover ratio, representing the amount of assets or liabilities that a company replaces in relation to its sales, determines the efficiency with which a business utilizes its assets. Key asset turnover ratios include account receivables and inventory turnover ratio. In most cases, a high asset turnover ratio is considered good since it implies, respectively, that receivables are collected quickly and little excess inventory is kept on hand. This implies a minimal need for invested funds, and therefore a high return on investment.

$$Accounts\ Receivable\ Turnover\ Ratio = \frac{Net\ Credit\ Sales}{Average\ Account\ Receivables}$$

$$Inventory\ Turnover\ Ratio = \frac{Cost\ of\ Good\ Sold}{Average\ Inventory}$$

Conversely, a low liability turnover ratio (usually in relation to accounts payable) is considered good, since it implies that a company is taking the longest possible amount of time in which to pay its suppliers, and so retains its cash for a longer period.

$$Accounts\ Payable\ Turnover\ Ratio = \frac{Net\ Credit\ Purchases}{Average\ Account\ Payables}$$

2.2.4. Profitability Ratios

Profitability ratios quantify a company's propensity to create earnings and are therefore considered positive when they improve on a trend line or are systematically higher than those of competitors.

Profitability ratios tend to relate income to different groupings of expenses reported in the income statement. Examples are the gross profit ratio and the net profit ratio. However, there are some that relate income items to balance sheet items such as return on assets and return on equity. The intent of these latter measurements is to examine the efficiency with which management can produce profits, compared to the amount of equity or assets at their disposal. If the result of these measurements is high, it implies that the use of resources has been minimized.

The gross profit ratio is obtained as the ratio between gross profit, which is the difference between revenues and cost of goods sold, and revenues. This value allows to understand how much of the revenues remain after the payment of all fixed and variable costs attached to the goods and services sold.

$$Gross\ Profit\ Ratio = \frac{Revenues - Cost\ of\ Good\ Sold}{Revenues}$$

Unlike the gross profit margin, the net profit margin relates net profit, i.e., revenue less all expense items in the income statement, to revenue. This ratio allows to obtain the percentage of profit on revenues remaining even after taxes.

$$Net\ Profit\ Margin = \frac{Net\ Profit}{Revenues}$$

Among the profitability ratios that link the income statement and balance sheet, the return on assets (ROA) relates the net profit to the total amount of assets on the balance sheet. This value makes it possible to assess how effectively the company is using its assets to generate profits. However, this value is closely dependent on the industry in which the company operates. Companies operating in industries that require many assets will tend to have a lower value of this index.

$$Return\ on\ Asset = \frac{Net\ Income}{Total\ Assets}$$

Return on equity (ROE) measures the rate of return on the ownership interest or shareholders' equity of the common stock owners. It is a measure of a company's efficiency at generating profits using the shareholders' stake of equity in the business. In other words, return on equity is an indication of how well a company uses investment funds to generate earnings growth.

$$Return\ on\ Equity = \frac{Net\ Income}{Shareholders' Equity}$$

ROE lends itself to a further degree of analysis - called DuPont Analysis - which breaks it down into three main financial metrics: operating efficiency, asset use efficiency and financial leverage. The operating efficiency refers to the profit margin, the asset use efficiency relates the revenues to the aggregation of the assets recorded in the balance sheet while the leverage is given by the equity multiplier or the ratio between average assets and average equity.
ROE breakdown allows to understand which financial assets contribute most to it and thus identify strengths or weaknesses that should be addressed.

2.2.5. Market Value Ratios

Market value ratios are used to assess the current price of a listed company's shares. These ratios are used by current and potential investors to determine whether a company's shares are over or undervalued. The most common market value ratios are the book value per share, market value per share, earnings per share, dividend yield and price/earnings ratio.

The book value per share ratio is obtained dividing the aggregate amount of stakeholders' equity by the number of outstanding shares. This measure accounts as a benchmark to assess whether the market value per share is higher or lower than the ratio.

The market value per share, calculated as the total market value of the business divided by the total number of shares outstanding, reveals the value the market assigns to a company's stock.

The earnings per share ratio is obtained dividing reported earnings by the total number of outstanding shares. This ratio does not provide information about the market price of the share, but it can be used to derive the price, these are estimated to be worth

The dividend yield, by relating the dividends paid in the year to the value of the share, it reports the return on investment to investors if they were to buy the shares at the current market price.

Finally, the price/earnings ratio relates the market price of the share to the company's reported earnings. The resulting multiple is used to assess whether the share is overvalued or undervalued compared to the same ratio calculated for competing companies.

3. Analysis

This chapter develops the central topic of the whole work, namely the assessment of the relationship between ESG performance and corporate financial performance (CFP).

3.1. Literature Review and Hypothesis Development

Theoretical discussions concerning the link between a firm's financial (CFP) and social performance (CSP) have traditionally polarized around two theories. The first, the agency theory, originates from Friedman's considerations about the profit maximization that firms - and consequently managers - had to pursue. The application of this theory to the issue of CSP predicts that agents (managers) are more likely to put in place good ESG practices to increase their reputation and prestige by including the issue of environmental and social sustainability in corporate operations. This would be to the detriment of the stockholders who would have to bear the greater financial burden of these practices resulting in reduced return on investment.

This theory is countered by the stakeholder theory which, by integrating the resource-based and market-based vision, links the economic sustainability of the business to the ability to balance and manage the interests of the company's stakeholders.[46] This second approach tends to be preferred also by virtue of the most recent theoretical developments that have identified a strategic and competitive dimension capable of generating value - and therefore higher performance - through risk and reputation management, better access to finance, human resources management, cost reduction through efficiency and sanctions avoidance (Reinhardt et al. (2008)[47]; Cochran (2007)[48]; Heal (2005)[49]; Greening and Turban (2000)[50], among others).

[46] Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. (2010). Stakeholder theory: The state of the art.

[47] Reinhardt, F. L., Stavins, R. N., & Vietor, R. H. (2008). Corporate social responsibility through an economic lens.

[48] Cochran, P. L. (2007). The evolution of corporate social responsibility. *Business horizons*, *50*(6), 449-454.

[49] Heal, G. (2005). Corporate social responsibility: An economic and financial framework. *The Geneva papers on risk and insurance-Issues and practice*, *30*(3), 387-409.

[50] Greening, D. W., & Turban, D. B. (2000). Corporate social performance as a competitive advantage in attracting a quality workforce. *Business & society*, *39*(3), 254-280.

Nevertheless, it is important to underline that empirical evidence tends to be inconsistent in this respect, admitting positive, negative, null and even mixed relationships between the financial and social performance of enterprises.

The first group of literature, under the heading of positive reporting, includes authors such as Orlitzky et al. (2003)[51], Wu (2006)[52], and Margolis et al. (2007)[53], Barnett and Salomon (2012)[54] and Margolis et al. (2009)[55] who have pointed to an economic and financial benefit from the introduction of sustainable practices. In contrast, Fisher-Vanden and Thorburn (2011)[56], for example, identified a negative relationship on financial performance following the announcement by companies to engage in sustainable practices, due to an adverse reaction of the market because of the onerousness of such practices. Finally, the existence of a U-shaped relationship between social and financial performance has also been verified, albeit only once, by Mittal et al. (2008)[57]. Nollet et al. (2016)[58] justified this relation through the higher costs that companies must bear in the initial phase of implementing sustainable practices.

Only recently a fragile consensus seemed to emerge following by far the most comprehensive study on this topic. The study, based on more than 2,000 empirical studies on the relation between CSP and CFP since the 1970s, favoring a dual vote-count and meta-analytical approach suggests that 'roughly 90% of studies find a nonnegative ESG-CFP relation (…) more importantly, most studies report positive findings' (Friede, Busch

[51] Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization studies*, *24*(3), 403-441.

[52] Wu, M. L. (2006). Corporate social performance, corporate financial performance, and firm size: A meta-analysis. *Journal of American Academy of Business*, *8*(1), 163-171.

[53] Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. (2007). Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. *Ann Arbor*, *1001*(48109-1234), 1-68.

[55] Barnett, M. L., & Salomon, R. M. (2012). Does it pay to be really good? Addressing the shape of the relationship between social and financial performance. *Strategic Management Journal*, *33*(11), 1304-1320.

[56] Fisher-Vanden, K., & Thorburn, K. S. (2011). Voluntary corporate environmental initiatives and shareholder wealth. *Journal of Environmental Economics and management*, *62*(3), 430-445.

[57] Mittal, R. K., Sinha, N., & Singh, A. (2008). An analysis of linkage between economic value added and corporate social responsibility. *Management Decision*.

[58] Nollet, J., Filis, G., & Mitrokostas, E. (2016). Corporate social responsibility and financial performance: A non-linear and disaggregated approach. *Economic Modelling*, *52*, 400-407.

and Bassen, 2015).[59] The study also suggests that the individual environmental, social and governance pillars relate positively to financial performance.

So, based on these recent developments, it seems reasonable to expect a positive and linear relationship between a company's ESG and financial performance. Consequently, the purpose of the analysis will be oriented to verify the following hypothesis:

i. Hypothesis 1 → Linear and positive relationship between ESG Score and Corporate Financial Performance
ii. Hypothesis 2 → Linear and positive relationship between Environmental Score and Corporate Financial Performance
iii. Hypothesis 3 → Linear and positive relationship between Social Score and Corporate Financial Performance
iv. Hypothesis 4 → Linear and positive relationship between Governance Score and Corporate Financial Performance

3.2. Research Methodology

The way in which the analysis was structured is explained below. The data source and sample, the variables and the model that was used will then be presented.

3.2.1. Data Source and Sample

The financial and ESG data collection was carried out using the Refinitiv Workspace platform. The workflow solution offered by Refinitiv, formerly Thomson Reuters and now a London Stock Exchange Group (LSEG) business, provides access to the largest historical archive of financial data contained in the Refinitiv Datastream database. Refinitiv shares financial information on macroeconomic movements, market indices, stock and bond markets and fundamental analysis on more than 85,000 active and inactive companies in 125 countries as well as ESG scoring for over 10,000 companies worldwide.

[59] Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, *5*(4), 210-233.

The companies considered for the analysis are constituents of the MSCI Global Index which, comprising 1,563 mid and large cap companies, covers approximately 85% of the free float-adjusted market capitalization in 23 developed countries.[60]

However, the index has not been taken as a whole, as it has been filtered to exclude financial companies. Following The Refinitiv Business Classification (TRBC) - of which a simplified schematic representation is given in *Figure 1* - companies operating in banking and investment services, financial technology (Fintech) and infrastructure and insurance business sectors were omitted because of their different capital structures, accounting and regulatory frameworks.

Economic Sector	Business Sector
Energy	Energy - Fossil Fuels, Renewable Energy, Uranium
Basic Materials	Chemical, Mineral Resources, Applied Resources
Industrials	Industrial Goods, Industrial and Commercial Services, Consumer Goods Conglomerates, Transportation
Consumer Cyclicals	Automobiles and Auto Parts, Cyclical Consumer Products, Cyclical Consumer Services, Retailers
Consumer Non-Cyclicals	Food and Beverages, Personal and Household Products and Services, Food and Drug Retailing
Financials	Banking and Investment Services, Financial Technology (Fintech) and Infrastrucuture, Insurance
Real Estate	Real Estate, Collective Investments, Investment Holding Company
Healthcare	Healthcare and Services Equipment, Pharmaceutical and Medical Research
Technology	Technology Equipment, Software and IT services, Telecommunications Services
Utilities	Utilities

Figure 1. The Refinitiv Business Classification (TRBC)

This narrowed down the final sample to 1,343 non-financial companies. To avoid distorting effects due to possible outliers, all dependent variables were subjected to a 10% winsorization. This restricted the sample to 1,255 companies. Of this sample, a breakdown by economic sector - according to the TRBC classification - and by geographical area is provided in *Figure 2* and *Figure 3* respectively.

[60] Developed Countries include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States.

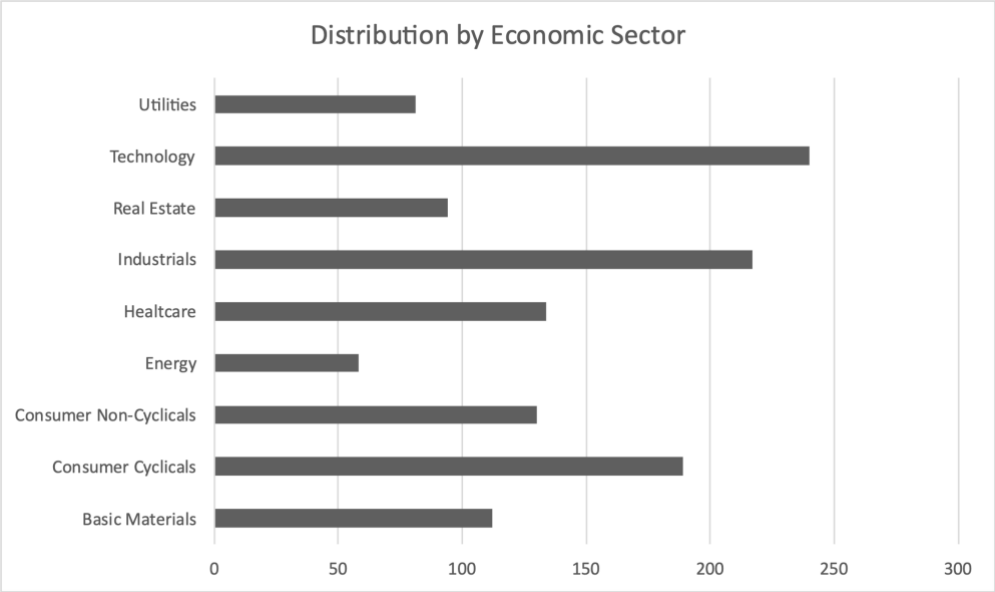

Figure 2. Distribution by Economic Sector

As can be seen in *Figure 2*, the economic sectors with the highest density of companies are Technology (240), Industrials (217) and Consumer Cyclicals (189). On the opposite, Utilities (81) and Energy (58) are the least dense.

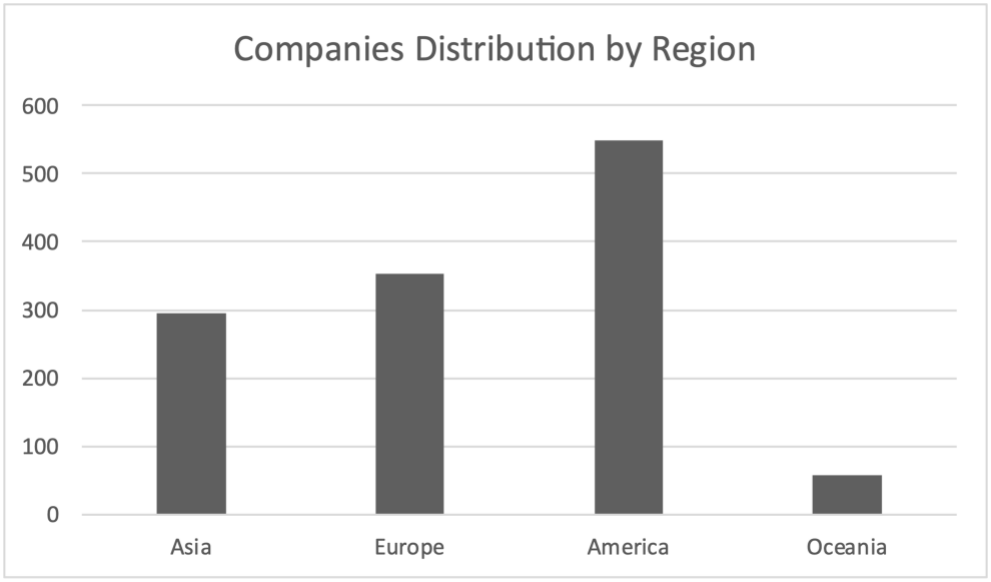

Figure 3. Distribution by Region

Looking at the distribution by geographical area in *Figure 3*, it is possible to observe that the index sample present a clear majority of North American companies (549) of which

the vast majority are from the United States (475). Europe is in second place (352), not far behind Asia (296). While the distribution of companies among European countries is relatively more homogeneous (see *Figure 4*), the trend in Asia is like that in America, with Japan accounting for 82.8% of the region. Pacific Ocean Region countries have fewer companies (58), 50 of which are Australian. The African continent has not been reported as no companies were considered in line with the composition of the market index.

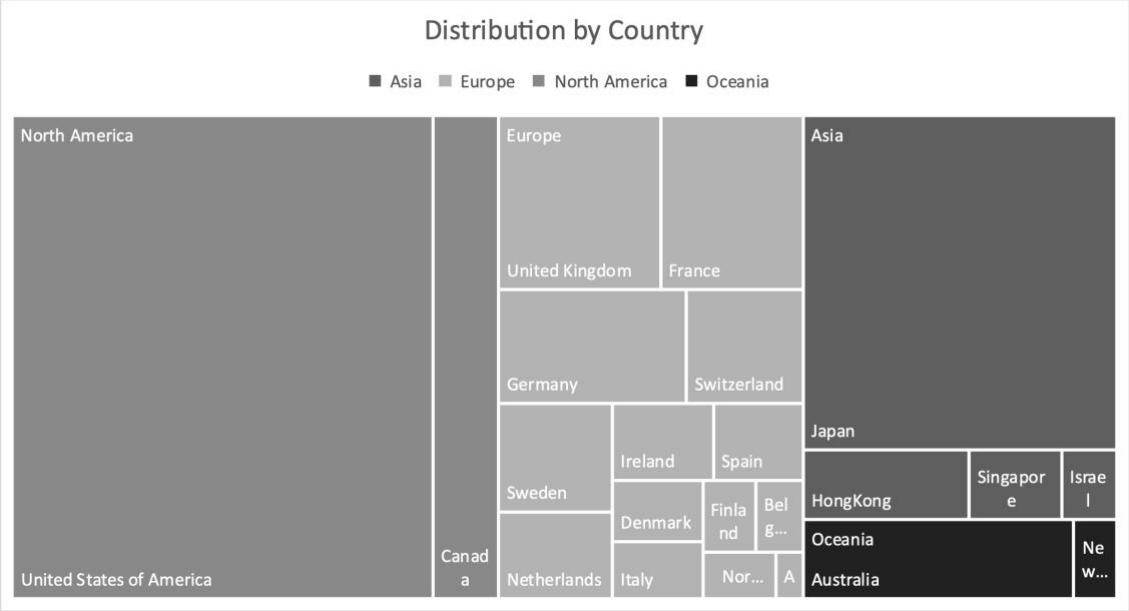

Figure 4. Distribution by Country

Lastly, data covering 8 fiscal years were considered. For the independent variables - ESG score - results covering all fiscal years between 2011 and 2018 were considered. For the dependent variables - financial performance - all data covering the fiscal years 2012 to 2019 were considered. So, 1 year lagged financial results were used to avoid problems of endogeneity. The control variables have been linked to the independent variables and therefore cover the same period (2011-2018). In total, a dataset consisting of 91,030 items was obtained.

3.2.2. Variables

Consistent with the purpose of the paper, the independent variables refer to the ESG scoring while the dependent variables refer to financial performance. In addition, control variables were introduced.

3.2.2.1. Independent Variables

The main independent variable considered is the ESG Score which scoring methodology has been reported in section 2.1.1.1. The ESG Score is assigned considering whether the surveyed company belongs to a given percentile to which a letter grade is assigned according to the conversion table shown below.

Score Range	Grade	Description
1 <= score < 0.916666	A+	"A" score indicates excellent relative ESG performance and high degree of transparency in reporting material ESG data publicly
0.916666 <= score < 0.833333	A	
0.833333 <= score < 0.750000	A-	
0.750000 <= score < 0.666666	B+	"B" score indicates good relative ESG performance and above-average degree of transparency in reporting material ESG data publicly
0.666666 <= score < 0.583333	B	
0.583333 <= score < 0.500000	B-	
0.500000 <= score < 0.416666	C+	"C" score indicates satisfactory relative ESG performance and moderate degree of transaprency in reporting material ESG data publicly
0.416666 <= score < 0.333333	C	
0.333333 <= score < 0.250000	C-	
0.250000 <= score < 0.166666	D+	"D" score indicates poor relative ESG performance and insufficient degree of transaparency in reporting material ESG data publicly
0.166666 <= score < 0.083333	D	
0.083333 <= score < 0.0	D-	

Figure 5. Refinitiv ESG Conversion Table

In addition to the ESG Score, the independent variables Environmental Pillar Score, Social Pillar Score and Governance Pillar Score were also used. The introduction of independent variables relating to the environmental, social and governance pillars makes it possible to assess more accurately which individual ESG dimension has a stronger effect on financial variables

3.2.2.2. Dependent Variables

The financial performance of the companies analyzed was quantified using profitability and market value indices.

Return on Equity (ROE) and Return on Asset (ROA) – presented in section 2.2.4. - were used as profitability proxies. The market value ratio used was the Price to Book Value per Share which is obtained by dividing the price of a share by the book value per share.

The Price to Book Value per Share allows us to understand whether the equity of a company is in line with the market value. So, the equity of a company is in line, higher or lower than the market value depending on whether the ratio is equal to, greater than or less than 1, respectively.

3.2.2.3. Control Variables

In addition to the independent and dependent variables, variables with a control function in relation to financial performance were also used in accordance with what is generally done in this area of research (Fischer and Sawczyn, 2013[61]; Choi and Wang, 2009[62]). The control variables used were the Size, Leverage and Beta. Analyzing the individual control variables in detail, it is worth pointing out that the use of Size - in the form of the natural logarithm of Total Assets - was employed because the size of a company can influence its financial results. In fact, according to the theory of economies of scale, larger companies can enjoy cost advantages. In addition, the size of an organization can be an indicator of the resources at its disposal and thus of its ability to implement ESG practices. Finally, the riskiness of the company was also considered. The variable Beta was used as a proxy for the company's exposure to systemic risk. The variable Leverage – Debt to Enterprise Value - was used as a proxy for specific risk. Companies that have a higher Debt to Enterprise Value will tend to be perceived as riskier. However, it should not be overlooked that, within certain limits, leverage can have a positive impact on profitability.

3.2.3. Model

The analysis was carried out by means of the SPSS statistical software. The output of its functions provides the regression statistics which is functional to our purpose but also the analysis of variance, which is relevant for the p-value, and the equation coefficients that have allow us to derive the regression equations. So, the following models have been used to test the hypotheses:

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[61] Fischer, T. M., & Sawczyn, A. A. (2013). The relationship between corporate social performance and corporate financial performance and the role of innovation: Evidence from German listed firms. *Journal of management control*, *24*(1), 27-52.

[62] Choi, J., & Wang, H. (2009). Stakeholder relations and the persistence of corporate financial performance. *Strategic management journal*, *30*(8), 895-907.

$$CFP = \alpha + \beta_1 ESGP + \beta_2 SIZE + \beta_3 LEVERAGE + \beta_4 BETA + \varepsilon$$

Where, CFP refers to all three financial performance indicators - operational (ROA), financial (ROE) and market performance (Price to Book Value per Share) - while ESGP refers to the overall ESG scoring (ESG Score) as well as to the scoring for the three dimensions (ENV Score, SOC Score, GOV Score).

3.3. Research Results

The results of the research are presented below. These have been organized between descriptive statistics, correlation matrix and regression analysis results.

3.3.1. Descriptive Statistics

Descriptive statistics for independent, dependent and control variables are displayed in *Table 1*.

	N	Mean	Std. Deviation	Skewness	Range	Min.	Max.
Panel A							
ESG Score	9103	46.37	27.40	-0.42	94.52	0.00	94.52
ENV Score	9103	44.36	32.32	-0.15	98.73	0.00	98.73
SOC Score	9103	46.72	29.52	-0.23	98.63	0.00	98.63
GOV Score	9103	47.07	28.87	-0.31	98.78	0.00	98.78
Panel B							
ROE	9103	0.13	0.09	0.71	0.48	-0.03	0.45
ROA	9103	0.05	0.04	0.57	0.17	0.00	0.17
Price to Book	9103	2.65	2.17	1.63	13.25	0.10	13.35
Panel C							
Size	8580	23.14	1.43	-0.45	14.19	13.11	27.30
Leverage	9103	0.23	0.21	1.33	2.41	0.00	2.41
Beta	9103	0.30	0.50	1.68	5.87	-0.86	5.01

Table 1. Descriptive Statistics

As can be seen in *Panel A*, the GOV Score has the highest average value (47.07) followed by the SOC Score (46.72), ESG Score (46.37) and ENV Score (44.36). The ENV Score also has the highest statistical variability (32.32), followed by SOC Score (29.52), GOV Score (28.87) and ESG Score (27.40). In addition, all the independent variables have a normal distribution as their skewness is in the ±1 range. On the other hand, the minimum

values assumed by the independent variables must be interpreted as a valuation not obtained or not available (null) in one of the years making up the period considered.

Panel B shows the descriptive statistics for the dependent variables ROE, ROA and Price to Book Value per Share. The average value of ROE (0.13) is higher than that of ROA (0.05). The same applies to the variability of results. Finally, both profitability indices show a normal distribution of results. The Price to Book Value per Share assumes an average value of 2.65 and a standard deviation of 2.17. The fact that the distribution is slightly asymmetrically positive suggests that the companies in the sample tend to have a higher equity valuation than the market value

Descriptive statistics for the control variables are given in *Panel C*. As can be seen, the farms in the sample tend to have different magnitudes. In fact, it must be remembered that the Size variable is expressed on a logarithmic scale.

Looking at the Leverage ratio, it is possible to notice that the sample includes both companies that are not indebted (0.00) and companies that are very indebted (2.41). The average value is 0.30 implying an average degree of indebtedness that does not exceed equity, even if there is an asymmetrically positive distribution of results.

The average Beta is 0.30. In other words, the sampled companies present a very limited systematic risk, probably because they belong to traditional economic sectors.

Table 2 shows the average values of the ESG score and individual pillars over the period. As can be seen, over the period (2011-2018), the average value has tended to increase, reflecting the increasing importance attributed to the issue of sustainability.

Variables	2018	2017	2016	2015	2014	2013	2012	2011
ESG Score	54.77	51.94	49.15	46.12	42.93	41.77	40.52	39.13
ENV Score	50.75	47.76	45.38	42.93	40.68	39.92	38.89	37.24
SOC Score	57.01	54.16	50.46	47.02	42.99	41.30	39.89	38.59
GOV Score	54.09	51.49	49.85	47.04	44.31	43.50	42.39	41.03

Table 2. ESG Dimensions Average Value by Year - Table

As can be seen in *Figure 6*, the aggregate ESG score and the individual pillars grew more strongly between 2014 and 2018 than in the previous three years. Moreover, between 2014 and 2018, the social dimension recorded the highest average value.

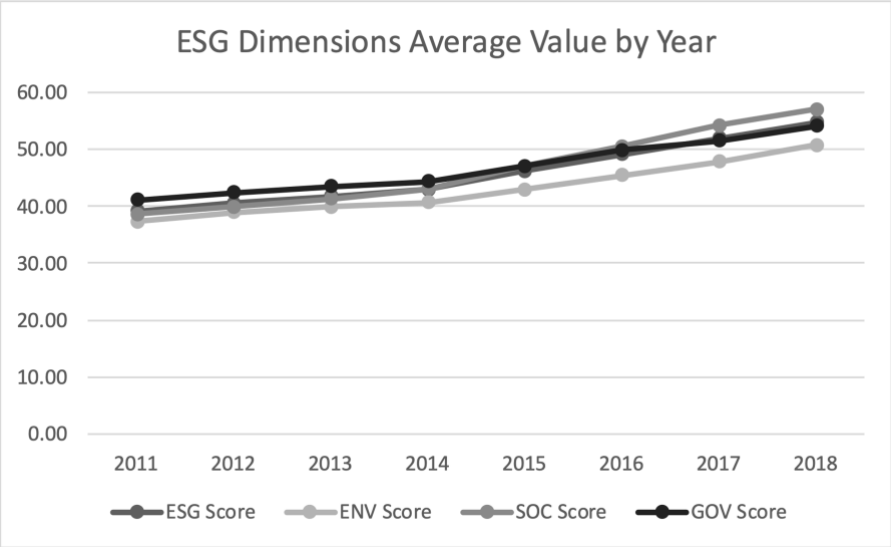

Figure 6. ESG Dimensions Average Value by Year

3.3.2. Correlation Analysis

The correlation matrix between the independent, dependent and control variables for our entire sample of 1,255 companies is displayed in *Table 3*. The Pearson coefficients, obtained using the pairwise method, are shown below.

	ESG Score	ENV Score	SOC Score	GOV Score	ROE	ROA	Price to Book	Size	Leverage	Beta
ESG Score	1									
ENV Score	.909**	1								
SOC Score	.944**	.825**	1							
GOV Score	.843**	.645**	.693**	1						
ROE	.274**	.177**	.289**	.254**	1					
ROA	.203**	.111**	.198**	.215**	.688**	1				
Price to Book	.078**	-0.012	.118**	.076**	.622**	.479**	1			
Size	.567**	.556**	.522**	.445**	.031**	-.130**	-.272**	1		
Debt	.303**	.311**	.265**	.260**	-.045**	-.298**	-.220**	.467**	1	
Beta	.244**	.195**	.246**	.206**	.128**	.120**	.088**	.113**	.046**	1

** Correlation is significant at the 0.01 level (two-tailed).

Table 3. Correlation Matrix

The ESG Score shows a positive and significant correlation with ROE (0.274), ROA (0.203) and Price to Book (0.078). In turn, ENV Score, SOC Score and GOV Score show a positive and significant correlation with both ROE and ROA. On the other hand, the Price to Book Value is positively and significantly correlated with the SOC Score (0.118) and the GOV Score (0.076) but not with the ENV Score (-0.012) with which, however, there is no significant correlation. Among the three ESG dimensions, the SOC Score variable presents an almost absolute positive correlation (0.944) with the overall ESG

Score followed by the ENV Score (0.909) and the GOV Score (0.843). These results were fully expected. What is instead important to underline is that there is a higher degree of correlation between the ENV Score and the SOC Score (0.825) than between the GOV Score and the ENV Score (0.645) and the SOC Score (0.693). These results can be explained by assuming that companies simultaneously implement more sustainable social and environmental practices than governance ones.

As fully expected, ROE and ROA have a high degree of correlation (0.688). The correlation between Price to Book and ROE and ROA, is positive and stands at 0.622 and 0.479 respectively. As is perfectly predictable, companies with higher profitability tend to be more valued by the market.

Turning our attention to the control variables, we can observe that the Size variable is positively and significantly correlated with ESG performance. This confirms the assumption that larger companies, having more resources, tend to implement ESG practices more effectively. In turn, there is a slightly positive correlation with ROE (0.031) but negative correlation with ROA (-0.130) and Price to Book (-0.272). These results - net of what is observed for ROE - are puzzling as they tend to disprove the theory of economies of scale.

Observing the Leverage variable, it is possible to note that it is positively and significantly correlated with the independent variables. This indicates that more indebted companies tend to have better ESG performance. This is fully consistent with the interpretation of leverage as a proxy for specific risk as sustainable investments tend to expose the company to a certain degree of risk. Furthermore, a greater recourse to borrowing may result in greater available resources - and the correlation with the Size variable (0.467) confirms this - reinforcing what has been said previously. On the contrary, the variable Leverage is negatively correlated with ROE (-0.045) and ROA (-0.298) probably due to the potential adverse effects of debt on profitability. The negative correlation with Price to Book (-0.220) can be interpreted as the market's tendency to undervalue indebted companies because they are less profitable or riskier. Finally, by analyzing the Beta variable - which expresses systematic risk - it is possible to note that it is positively and significantly correlated with the independent variables. Again, it can be justified by assuming that ESG investing can expose the company to fluctuations. As expected, Beta is positively correlated with the variable Leverage (0.046) and with the financial

performance indicators. In addition, a positive correlation was found with the variable Size (0.113) which tends to confirm the fact that as company size increases, there will be greater sensitivity to market fluctuations.

3.3.3. Regression Analysis

Below are the results of the multivariate regression analysis carried out on our sample of 1,255 firms. The analysis first focused on the relationship between the independent variable 'ESG Score' and the dependent variables 'ROE', 'ROA' and 'Price to Book'. Once the relationship between the aggregate ESG result and the financial performance was verified, the analysis turned to analyze the relationship between the individual ESG pillars (represented by the independent variables 'ENV Score', 'SOC Score' and 'GOV Score') and the financial performance.

As can be seen from *Table 4*, the regression showed a positive relationship between ESG Score and ROE (0.076). This implies that as the ESG Score increases, the return on equity improves. *Table 4* also shows the coefficients for the control variables. In this respect, we note a weak negative relationship between ROE and Size (-0.001) and a negative, albeit more significant, relationship with the variable Leverage (-0.079) as perfectly reliable. Finally, the variable Beta is positively but marginally related to ROE (0.008). All the results - net of the Size variable - are significant (p-value<0.001). The model also presented an R of 0.256 and an Adjusted R-squared of 0.065.

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.134	0.019	0.000	7.016	<,001
ESG Score	0.076	0.005	0.215	16.689	<,001
Size	-0.001	0.001	-0.014	-0.967	0.334
Leverage	-0.079	0.005	-0.177	-14.972	<,001
Beta	0.008	0.002	0.046	4.34	<,001

Table 4. Regression Analysis ESG Score - Return on Equity, 1-year lagged

Table 5 shows the results for ROA. Once again, the ESG Score shows a positive relationship (0.037), indicating that as the ESG Score increases, the return on assets

increases. As can be expected, the control variables showed a similar dynamic to the previous case. However, in this case all variables are significant (p-value<0.001). The model presented an R of 0.454 and an Adjusted R-squared of 0.206.

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.104	0.008	0.000	12.953	<,001
ESG Score	0.037	0.002	0.227	19.083	<,001
Size	-0.002	0.000	-0.066	-5.128	<,001
Leverage	-0.086	0.002	-0.424	-38.925	<,001
Beta	0.004	0.001	0.047	4.763	<,001

Table 5. Regression Analysis ESG Score - Return on Asset, 1-year lagged

Finally, *Table 6* shows the results when Price to Book is set as the dependent variable. Once again, the ESG Score has a positive impact - albeit less than that which it has on the profitability indices - on the market index as the coefficient stands at the value 0.013. In other words, the implementation of ESG practices has a positive effect on the market's evaluation of the company. The control variables behave in line with the two previous cases. All results are significant (p-value<0.001), the R-value stood at 0.354 and the Adjusted R-squared at 0.125.

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	11.611	0.427	0.000	27.176	<,001
ESG Score	0.013	0.001	0.155	12.532	<,001
Size	-0.386	0.02	-0.259	-19.322	<,001
Leverage	-2.389	0.118	-0.229	-20.172	<,001
Beta	0.206	0.043	0.049	4.761	<,001

Table 6. Regression Analysis ESG Score - Price to Book Value per Share, 1-year lagged

As can be perfectly verified in *Table 4*, *Table 5* and *Table 6*, a positive and linear relationship was verified between ESG Score and CFP over the reference period. This relationship tends to be stronger when profitability indices (ROE and ROA) are considered as dependent variables, while it is less intense - but still positive - when Price to Book is considered.

Based on this evidence, it is possible to proceed further in the analysis by analyzing the effects of individual ESG pillars on financial performance. The regression analysis between the single ESG dimensions and the dependent variables have been conducted separately to avoid any distorting effects deriving from multicollinearity due to the high degree of correlation between the three independent variables. For the sake of simplicity, explanatory tables for the individual ESG pillars are given in the appendix section.

Appendix C shows the results of the regression analysis set ENV Score as an independent variable. This has a positive impact on ROE (0.026) and ROA (0.016) and a positive, albeit very low, impact on Price to Book (0.003). These results testify to the fact that the companies in the sample that have implemented effective environmental sustainability practices have reported superior results in terms of profitability as well as being subject to a positive evaluation by the market. The control variables essentially tend to replicate the results observed above. What is important to note is that all variables - except for Size in *Table 8* - are significant, with a p-value of <0.001. Finally, the adjusted R-squared values for the three cases were 0.04 for ROE, 0.183 for ROA and 0.125 for the Price to Book.

Appendix D shows the same results replacing the SOC Score as the independent variable. The SOC Score also has a higher effect on ROE (0.075) and ROA (0.029) than on Price to Book (0.015). Again, therefore, companies that have implemented more effective social sustainability practices have shown higher market performance and profitability. Once again, all variables - net of Size in *Table 10* - proved to be significant assuming a p-value<0.001. Finally, the adjusted R-squared for the three models with the SOC Score as an independent variable were 0.072 for ROE, 0.199 for ROA and 0.151 for Price to Book, respectively.

Finally, *Appendix E* shows the results using GOV Score as the independent variable. Similarly, the GOV Score has a positive impact on ROE (0.056), ROA (0.031) and, albeit with less intensity, Price to Book (0.008). Once again, companies that have implemented

effective governance practices have enjoyed a higher market valuation and a higher return in terms of profitability. Once again, all variables - apart from Size in *Table 13* and *Table 14* - were found to be significant assuming a p-value<0.001. The three regression models with GOV Score assumed adjusted R-squared values of 0.057 for ROE, 0.205 for ROA and 0.131 for Price to Book.

The findings in this section allowed us to verify the positive effect between the ESG Score and the three financial performance variables. Specifically, it was verified that the ESG Score has a greater impact on ROE than ROA and Price to Book ratio.

The analysis also highlighted the impact of the individual ESG dimensions on financial performance. In this regard, it was noted that the ENV Score is the predictor with the lowest impact on the dependent variables as systematically lower coefficients were observed compared to cases where SOC Score and GOV Score were used as explanatory variables. Specifically, the greatest impact on ROE and Price to Book is generated by the SOC Score while the GOV Score has the greatest impact on ROA.

However, it should be emphasized that in all cases considered, the predictivity of the model was not particularly high. This should not lead to consider the results as invalid, since the analysis conducted has no predictive purpose.

4. Conclusion

The longstanding and growing interest in why companies implement environmental, social and governance (ESG) practices was the basis for this paper, in which I set out to investigate the relationship between ESG score and corporate financial performance (CFP) expressed in terms of both profitability and market value.

The main body of this paper was developed from a literature review through which the current conceptual framework of the topic under analysis was reconstructed. In this regard, the literature proved to be particularly heterogeneous, since several studies have come up with positive, null, negative and even mixed relationships between the ESG and financial performance. In any case, it is necessary to specify that the most recent developments, which have underlined a positive link between ESG and CFPs, have induced me to formulate four hypotheses according to which there is a linear and positive relationship not only between the aggregate ESG score and financial performance but also between the latter and the individual environmental, social and governance pillars.

Hypothesis testing was based on the construction of a sample obtained from the MSCI Global market index which, consisting of 1563 mid and large size companies, represents 85% of the market capitalization in 23 developed countries. Financial companies were eliminated from the original sample to make it more homogeneous as they have different capital structures, accounting and regulatory frameworks.

A total of 10 variables were used, 4 of which were independent (ESG Score, ENV Score, SOC Score, GOV Score), 3 were dependent (ROE, ROA, Price to Book Value per Share) and 3 were control variables (Size, Leverage, Beta) as is the practice in this area of research. Data, extracted from the Refinitiv platform, were collected over the period 2011-2018 except for dependent variables for which a 1-year lagged approach was preferred to avoid endogeneity issues. In addition, the dependent variables were subjected to a 10% winsorization to reduce any distorting effect of outliers. As a result, the final sample consisted of 1,255 firms for a total of 91,030 statistical observations.

The results of the analysis conducted using SPSS statistical software were organized into descriptive statistics, correlation analysis and regression analysis. The correlation analysis highlighted positive and statistically significant relationships between the independent and the dependent variables. Thus, a positive correlation was found between ESG Score and ROE, ROA and Price to Book per Share. When analyzing the degree of

correlation between the individual ESG pillars, it was found that SOC Score and GOV Score tend to be more strongly correlated with CFPs than ENV Score.

The correlation analysis was followed and completed by regression analysis. In detail, a greater positive impact of the ESG score on profitability than on market value was identified. The analysis went further by looking for the same link using the individual environmental, social and governance pillars as predictors. Once again, the link between individual ESG dimensions and financial performance was verified. However, it was observed that environmental sustainability practices have less impact on corporate performance than social and governance ones.

The results obtained in this paper places it perfectly in line with the prevailing theoretical strand in this area of research. In fact, the statistical significance that has been recorded makes it possible to fully accept the hypotheses formulated, i.e., that there is a positive and linear relationship both between the ESG Score and financial performance and between the latter and the individual environmental, social and governance pillars. Moreover, to further support the relevance of the results, it is crucial to specify that although the observed correlation coefficients, being in the range (0-0.4), tend to be generally considered modest (Cohen, 1988)[63], recent developments, aimed at favoring a contingent approach, consider them as common effects size in the social sciences. (Plonsky, L., & Oswald, F. L. 2014).[64]

Consequently, the results of this study may be of considerable interest to several company stakeholders. Indeed, the identification of a positive relationship between ESG on the one hand and profitability, and to a different extent market valuation on the other, should be an incentive for managers to increase the performance and disclosure of environmental, social and governance sustainability of the companies they manage by favoring - in accordance with my findings - social and governance practices over environmental ones. Similarly, for investors, greater corporate sustainability could mean a greater return on investment under the same conditions considering, again, the differential effects on the performance of the three sustainability pillars. Finally, these results are also of interest to policymakers. Indeed, the evidence suggests that the implementation of sustainable

[63] Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Academic press.

[64] Plonsky, L., & Oswald, F. L. (2014). How big is "big"? Interpreting effect sizes in L2 research. *Language learning*, *64*(4), 878-912.

practices does not lead to anti-economic behaviors. This should suggest the establishment of a stronger regulatory framework to encourage the implementation of such practices.

4.1. Limitations

This work is obviously not exempt from limitations and assumptions. The first limitation depends directly on the sample I decided to use. The MSCI Global index, due to its construction, appears homogeneous in terms of country and industry of the companies that compose it. Consequently, the results that have been identified cannot be generalized to a specific industry or geographical region. In addition, the index is only composed of developed countries, so nothing has been analyzed regarding the relationship between ESG and CFPs in developing countries which, as such, have different economic and legal contexts. The choice of using only 1-year lagged dependent variables meant that the focus was only on short-term effects. Nothing was observed about the long-term effects of ESG practices. Another important limitation is the ESG provider from which the ESG data were obtained. As discussed at length in chapter 2, different ESG providers are characterized by different ESG score formulation methodologies. Therefore, the use of data provided by one provider rather than another may lead to variability in the results obtained.

4.2. Avenues of Research

Based on the limitations of this paper, it is possible to identify several avenues of research. The first originates precisely from the impossibility of generalizing the results to specific industries or countries. It might be interesting to conduct an analysis - even a cross-analysis - between companies belonging to the same industry or country. This would allow to understand how belonging to one industry rather than another influences the ESG-CFPs nexus. The analysis can also be extended to the financial sector of which nothing has been analyzed. The same applies to country affiliation. In this case, the analysis could also include the situation in developing countries. Moreover, the effects of ESG in the long term could be considered using differently lagged dependent variables as well as whether environmental, social and governance practices present time manifestation differentials on CFP. Finally, the analysis could be conducted by collecting

data from different providers to assess the reliability and replicability of the results obtained here.

Appendix

A. List of Abbreviations

AUM – Asset Under Management
CDP – Carbon Disclosure Project
CFP – Corporate Financial Performance
CSA – Company Sustainability Assessment
CSP – Corporate Social Performance
CSR – Corporate Social Responsibility
ESG – Environmental. Social, Governance
IBC - International Business Council
ILO – International Labour Organization
ISS – Institutional Stakeholder Services
LSEG – London Stock Exchange Group
MSCI - Morgan Stanley Capital International
NFRD – Non-Financial Reporting Directive
ROA – Return on Asset
ROE – Return on Equity
S&P – Standard & Poor's
SCM – Stakeholder Capitalism Metrics
SCSR – Strategic Corporate Social Responsibility
SDGs – Sustainable Development Goals
SFDR - Sustainable Finance Disclosure Regulation
TRBC – The Refinitiv Business Classification
UNGC – United Nations Global Compact
UNPSI – United Nation Principle of Sustainable Investment
WEF – World Economic Forum

B. Sample: Top 100 Companies by Market Capitalization

Apple Inc
Microsoft Corp
Alphabet Inc
Amazon.com Inc
Facebook Inc
Tesla Inc
Berkshire Hathaway Inc
NVIDIA Corp
Visa Inc
Johnson & Johnson
Walmart Inc
UnitedHealth Group Inc
LVMH Moet Hennessy Louis Vuitton
Nestle SA
Roche Holding AG
Mastercard Inc
Procter & Gamble Co
Home Depot Inc
ASML Holding NV
PayPal Holdings Inc
Walt Disney Co
Adobe Inc
Pfizer Inc
Comcast Corp
Toyota Motor Corp
Nike Inc
Eli Lilly and Co
L'Oreal SA
Oracle Corp
Coca-Cola Co
Cisco Systems Inc
Netflix Inc
Salesforce.Com Inc
Novartis AG
Verizon Communications Inc
Danaher Corp
Exxon Mobil Corp
Abbott Laboratories
PepsiCo Inc
Accenture PLC
Thermo Fisher Scientific Inc
Intel Corp
Abbvie Inc
Costco Wholesale Corp
Merck & Co Inc
AT&T Inc
Broadcom Inc
Novo Nordisk A/S
AstraZeneca PLC
Shopify Inc
Chevron Corp
SAP SE
Mcdonald's Corp
T-Mobile US Inc
Medtronic PLC
Sea Ltd
Texas Instruments Inc
United Parcel Service Inc
Prosus NV
Nextera Energy Inc

Linde PLC
Qualcomm Inc
Philip Morris International Inc
Honeywell International Inc
BHP Group Ltd
BHP Group PLC
Bristol-Myers Squibb Co
Moderna Inc
Hermes International SCA
Intuit Inc
Royal Dutch Shell PLC
Unilever PLC
Union Pacific Corp
Charter Communications Inc
Volkswagen AG
Lowe's Companies Inc
Siemens AG
Keyence Corp
Starbucks Corp
Sanofi SA
American Tower Cor
Amgen Inc
Advanced Micro Devices Inc
Raytheon Technologies Corp
Intuitive Surgical Inc
Boeing Co
International Business Machines Corp
Sony Group Corp
Target Corp
Estee Lauder Companies Inc
Square Inc
Applied Materials Inc
Rio Tinto Ltd
Rio Tinto PLC
ServiceNow Inc
Diageo PLC
3M Co
TotalEnergies SE
Snap Inc

C. Regression Analysis ENV Score – CFP

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.051	0.019	0.000	2.631	0.009
ENV Score	0.026	0.004	0.09	7.048	<,001
Size	0.004	0.001	0.059	4.244	<,001
Leverage	-0.083	0.005	-0.185	-15.417	<,001
Beta	0.012	0.002	0.069	6.398	<,001

Table 7. Regression Analysis ENV Score - Return on Equity, 1-year lagged

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.072	0.008	0.000	8.828	<,001
ENV Score	0.016	0.002	0.120	10.173	<,001
Size	-9,25E-05	0.000	-0.003	-0.247	0.805
Leverage	-0.088	0.002	-0.432	-39.086	<,001
Beta	0.006	0.001	0.068	6.853	<,001

Table 8. Regression Analysis ENV Score - Return on Asset, 1-year lagged

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	9.94	0.430	0.000	23.111	<,001
ENV Score	0.003	0.001	0.048	3.906	<,001
Size	-0.294	0.02	-0.197	-14.801	<,001
Leverage	-2.447	0.119	-0.234	-20.508	<,001
Beta	0.281	0.043	0.067	6.497	<,001

Table 9. Regression Analysis ENV Score - Price to Book Value per Share, 1-year lagged

D. Regression Analysis SOC Score - CFP

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.135	0.019	0.000	7.228	<,001
SOC Score	0.075	0.004	0.231	18.623	<,001
Size	-0.001	0.001	-0.014	-1.05	0.294
Leverage	-0.077	0.005	-0.172	-14.562	<,001
Beta	0.008	0.002	0.042	3.967	<,001

Table 10. Regression Analysis SOC Score - Return on Equity, 1-year lagged

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.09	0.008	0.000	11.382	<,001
SOC Score	0.029	0.002	0.194	16.779	<,001
Size	-0.001	0.000	-0.04	-3.188	0.001
Leverage	-0.086	0.002	-0.422	-38.458	<,001
Beta	0.004	0.001	0.05	5.072	<,001

Table 11. Regression Analysis SOC Score - Return on Asset, 1-year lagged

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	12.061	0.417	0.000	28.956	<,001
SOC Score	0.015	0.001	0.196	16.511	<,001
Size	-0.411	0.019	-0.275	-21.203	<,001
Leverage	-2.331	0.118	-0.223	-19.792	<,001
Beta	0.174	0.043	0.041	4.054	<,001

Table 12. Regression Analysis SOC Score - Price to Book Value per Share, 1-year lagged

E. Regression Analysis GOV Score - CFP

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.072	0.018	0.000	3.976	<,001
GOV Score	0.056	0.004	0.167	14.088	<,001
Size	0.002	0.001	0.035	2.669	0.008
Leverage	-0.081	0.005	-0.181	-15.256	<,001
Beta	0.01	0.002	0.058	5.427	<,001

Table 13. Regression Analysis GOV Score - Return on Equity, 1-year lagged

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	0.08	0.008	0.000	10.559	<,001
GOV Score	0.031	0.002	0.201	18.537	<,001
Size	-0.001	0.000	-0.026	-2.211	0.027
Leverage	-0.087	0.002	-0.428	-39.239	0.000
Beta	0.005	0.001	0.056	5.713	<,001

Table 14. Regression Analysis GOV Score - Return on Asset, 1-year lagged

	Un-standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p-value
Constant	10.3	0.404	0.000	25.468	<,001
GOV Score	0.008	0.001	0.097	8.53	<,001
Size	-0.319	0.019	-0.214	-17.075	<,001
Leverage	-2.426	0.119	-0.232	-20.393	<,001
Beta	0.253	0.043	0.06	5.848	<,001

Table 15. Regression Analysis GOV Score - Price to Book Value per Share, 1-year lagged

References

Bibliography

1. Agudelo, M. A. L., Jóhannsdóttir, L., & Davídsdóttir, B. (2019*). A literature review of the history and evolution of corporate social responsibility. International Journal of Corporate Social Responsibility*, 4(1), 1-23.s
2. Barnett, M. L., & Salomon, R. M. (2012). Does it pay to be really good? Addressing the shape of the relationship between social and financial performance. *Strategic Management Journal*, *33*(11), 1304-1320.
3. Berg, F., Koelbel, J. F., & Rigobon, R. (2019). *Aggregate confusion: The divergence of ESG ratings*. MIT Sloan School of Management.
4. Bloomberg Intelligence. (2021). *ESG assets may hit $53 trillion by 2025, a third of global AUM.*
5. Bowen, H. R. (1953). *Responsibility of the businessman.*
6. Bowman, E. H., & Haire, M. (1975). *A strategic posture toward corporate social responsibility.* California management review, 18(2), 49-58.
7. Carroll, A. B. (1979). *A three-dimensional conceptual model of corporate performance. Academy of management review*, 4(4), 497-505.
8. Carroll, A. B. (2008). *A history of corporate social responsibility: Concepts and practices*. The Oxford handbook of corporate social responsibility, 1.
9. Carroll, A. B., & Shabana, K. M. (2010). *The business case for corporate social responsibility: A review of concepts, research and practice*. International journal of management reviews, 12(1), 85-105.
10. Chandler, D. (2016). *Strategic corporate social responsibility: sustainable value creation*. United States of America: SAGE Publications.
11. Chandler, D., & Werther, W. B. (2013). *Strategic corporate social responsibility: stakeholders, globalization, and sustainable value creation* (3rd ed.). United States of America: SAGE Publications.
12. Choi, J., & Wang, H. (2009). Stakeholder relations and the persistence of corporate financial performance. *Strategic management journal*, *30*(8), 895-907.

13. Cochran, P. L. (2007). The evolution of corporate social responsibility. *Business horizons*, *50*(6), 449-454.
14. Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Academic press.
15. Committee for Economic Development (CED). 1971. *Social Responsibilities of Business Corporations*. New York: CED.
16. Davis, K. (1960). *Can business afford to ignore social responsibilities?*. California management review, 2(3), 70-76.
17. Directive 2014/95/EU
18. Elkington, J. (1994) *Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development*. California Management Review, 36, 90-100.
19. *Environmental, Social and Governance (ESG) Scores from Refinitiv. Refinitiv* (2021).
20. *Environmental, Social and Governance (ESG) Scores from Refinitiv*. Refinitiv (2021).
21. *ESG Assessment Methodology*. Vigeo Eiris (2020)
22. Fischer, T. M., & Sawczyn, A. A. (2013). The relationship between corporate social performance and corporate financial performance and the role of innovation: Evidence from German listed firms. *Journal of management control*, *24*(1), 27-52.
23. Fischer, T.M. and Sawczyn, A.A. (2013), "The relationship between corporate social performance and corporate financial performance and the role of innovation. Evidence from German listed firms", Journal of Management Control, Vol. 24 No. 2, pp. 27-52.
24. Frederick, W. C. (1960). *The growing concern over business responsibility*. California management review, 2(4), 54-61.
25. Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. (2010). Stakeholder theory: The state of the art.
26. Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, *5*(4), 210-233.

27. Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, *5*(4), 210-233.
28. Friedman, M. (1962). *Capitalism and freedom*. University of Chicago press.
29. Greening, D. W., & Turban, D. B. (2000). Corporate social performance as a competitive advantage in attracting a quality workforce. *Business & society*, *39*(3), 254-280.
30. Heal, G. (2005). Corporate social responsibility: An economic and financial framework. *The Geneva papers on risk and insurance-Issues and practice*, *30*(3), 387-409.
31. Holmes, S. L. (1976). *Executive perceptions of corporate social responsibility*. Business horizons, 19(3), 34-40.
32. Huber, B. M., Comstock, M., Polk, D., & LLP, W. (2017). ESG reports and ratings: What they are, why they matter. In *Harvard Law School Forum on Corporate Governance and Financial Regulation* (Vol. 44).
33. Jones, T. M. (1980). *Corporate social responsibility revisited, redefined*. California management review, 22(3), 59-67.
34. JPMorgan Chase & Co. (2020). *Why COVID-19 Could Prove to Be a Major Turning Point for ESG Investing*.
35. KPMG (2019). *Impact of ESG Disclosure: Embracing the Future*
36. KPMG (2020). *The time has come. The KPMG Survey of Sustainability Reporting 2020.*
37. Li, F., & Polychronopoulos, A. (2020). *What a difference an ESG ratings provider makes. Research Affiliates.*
38. Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. (2007). Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. *Ann Arbor*, *1001*(48109-1234), 1-68.
39. Mittal, R. K., Sinha, N., & Singh, A. (2008). An analysis of linkage between economic value added and corporate social responsibility. *Management Decision*.
40. *MSCI ESG Rating Methodology*. MSCI ESG Research (2020)
41. Muirhead, S. A. (1999). *Corporate contributions: The view from 50 years*. Conference Board.

42. Murphy, P. E. (1978). *An evolution: Corporate social responsiveness*. University of Michigan Business Review, 6(30), 19-25.
43. Nollet, J., Filis, G., & Mitrokostas, E. (2016). Corporate social responsibility and financial performance: A non-linear and disaggregated approach. *Economic Modelling*, *52*, 400-407.
44. Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization studies*, *24*(3), 403-441.
45. Plonsky, L., & Oswald, F. L. (2014). How big is "big"? Interpreting effect sizes in L2 research. *Language learning*, *64*(4), 878-912.
46. Porter, M. E., & Kramer, M. R. (2006). *Strategy & Society*. Harvard Business Review, 84.
47. Porter, M. E., & Kramer, M. R. (2011). *Creating shared value*. Harvard Business Review (January-February).
48. *Rate the Raters 2019: Expert Survey Results*. Sustainability (2019)
49. Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector
50. Regulation (EU) 2020/852 (Taxonomy)
51. Reinhardt, F. L., Stavins, R. N., & Vietor, R. H. (2008). Corporate social responsibility through an economic lens.
52. Standard & Poor's. (2020). *Understanding the "E" in ESG*
53. Standard & Poor's. (2020). *What is the "S" in ESG?*
54. Standard & Poor's. (2021). *State of Green Business 2021 - The Big Picture*.
55. *Thomson Reuters ESG Scores*. Thomson Reuters (2017)
56. Tuzzolino, F., & Armandi, B. R. (1981). *A need-hierarchy framework for assessing corporate social responsibility*. Academy of management review, 6(1), 21-28.
57. Walton, C. C. (1967). *Corporate social responsibilities*. Wadsworth Publishing Company.
58. Werther Jr, W. B., & Chandler, D. (2005). *Strategic corporate social responsibility as global brand insurance*. Business Horizons, 48(4), 317-324.

59. World Commission on Environment and Development. (1987). *Our common future*. Oxford: Oxford University Press.
60. World Economic Forum. (2020). *Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation*
61. Wu, M. L. (2006). Corporate social performance, corporate financial performance, and firm size: A meta-analysis. *Journal of American Academy of Business*, *8*(1), 163-171.

Sitography

1. Bloomberg.com
2. cdp.net
3. issgovernance.com
4. spglobal.com

Synthesis

The increasing focus on environmental, social and governance (ESG) practices, for both managers and investors, has been the basis of this paper in which the relationship between ESG scores and corporate financial performance has been explored.

This paper is ideally divided into two parts. The first part, corresponding to the first two chapters, was aimed at framing the theme of ESG with reference to its conceptual and regulatory framework as well as providing an overview of the main ESG rating providers and financial performance measurement tools. In the second part, the analysis was developed.

At a conceptual level, ESG, i.e., the set of evaluation elements that allow to reach an assessment of the sustainability of a company that goes beyond economic results, is deeply linked to the theme of Corporate Social Responsibility (CSR) defined as the general belief that companies have a responsibility to society that goes beyond that of their shareholders or investors.

Leaving aside for the moment the concept of ESG in favour of CSR, it is worth specifying how, according to Carroll (2008), this is an American product of the 20th century, especially of the last 60 to 70 years. In fact, in the 1950s - and Bowen's *Responsibility of the Businessman* (1953) is a clear example - the theme began to be formalized and was further developed in the following decade by authors such as Keith Davis (1960), William C. Frederick (1960) and Clarence C. Walton (1967).

At the turn of the 1960s and 1970s, as suggested by Carroll and Shabana (2010), the severe economic and social crisis led to an acceleration of the diffusion of CSR in government, business and academic circles leading to an emphasis on the need to favour a managerial approach to CSR as authors such as Bowman and Haire (1975) and Holmes (1976) observed.

During the 1980s, despite de-regulatory policies, different social groups started to exert increasing pressure on organizations regarding societal issues that were taking on an international dimension. In those years, academic contributions were oriented towards the operationalization of CSR, driven by Thomas M. Jones (1980).

In the following decade, in terms of academic contributions, the concept of the ‘Triple Bottom Line’ was introduced by Elkington (1994) who suggested a model in which

companies could balance economic, environmental and social sustainability. However, it is important to emphasize that, for the first time, the issue of CSR acquired an effective global dimension dictated by the establishment of various international bodies and agreements that, indirectly, began to influence the corporate behaviour of those companies which, because of the globalization process, now had a global dimension.

In the early 2000s, the process resulted in a great deal of attention being paid to CSR and its strategic implications. CSR was accompanied by the concept of SCSR (Chandler 2005, 2016) and the concept of shared value creation (Porter and Kramer, 2006).

Leaving aside the theoretical contributions of the last decade, the signing of the Paris Agreement, the launch of the 2030 Agenda for Sustainable Development and the adoption of the seventeen Sustainable Development Goals (SDGs) - although not representing a direct commitment for the private sector - will mark the ways of approaching CSR for the next 10 years leaving room for further development in terms of its conceptualization and implementation.

Even though the conceptualization of CSR is functional for a better framing of the concept of ESG, it is fundamental to bear in mind that the two terms, although connected, are in no way interchangeable and that ESG, as a quantitative tool, allows us to overcome the practical limitations of CSR. In other words, unlike CSR, which is purely conceptual, ESG allows us to quantify the impact of corporate practices in relation to its three dimensions. The first of these dimensions is environmental and relates to the environmental impact of business operations, including issues such as use of natural resources, waste management, environmental disclosure and carbon emissions reduction both directly and indirectly at supply chain level. The second dimension, social, includes all relations between the company and the rest of society, encompassing both individuals and institutions. Finally, the governance concerns corporate governance and corporate behaviour, i.e., respectively, the composition and functioning of the management and the way it looks after the interests of the various stakeholders.

Regarding the regulatory frame, a path towards standardization of ESG-related disclosure and measurement has been undertaken by the European Union. This process started in the summer of 2020 with the signing of the EU Taxonomy regulation by the European Council and Parliament (Regulation (EU) 2020/852). This new regime essentially applies to environmental considerations only introducing social and governance factors later, by

the end of 2021. The aim of the Taxonomy is to define a single classification system for activities that can be defined as sustainable, which will have to meet minimum criteria - related to ESG - to be defined in a Delegated Act by the end of 2022. The standardization process also includes the Non-Financial Reporting Directive (Directive 2014/95/EU), which imposes non-financial reporting requirements on almost 11,700 listed companies, banks, insurance companies and other public interest companies with more than 500 employees, and the Sustainable Finance Disclosure Regulation (SFDR), which imposes ESG reporting requirements on investment companies.

The focus solely on the regulatory situation in the European Union is not accidental and is indeed indicative of the great fragmentation at international level that affects the regulation of the ESG issue. In fact, the European Union is unique when compared to other areas, such as the United States, where there is still no willingness to embark on such a path. For this reason, the White Paper *Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation*, published by the World Economic Forum (WEF) in Davos 2020, put forward proposals for the introduction of shared ESG metrics, based on existing standards, to speed up the process of international harmonization of ESG measurement and disclosure.

The fragmentary nature of ESG reporting is also reflected in the dynamic and numerosity of the ESG industry, which has over 600 ESG rating providers that, for simplicity's sake, can be divided into fundamental, comprehensive and specialist (Li, F., & Polychronopoulos, A. 2020). Fundamental providers (including Thomson Reuters and Bloomberg) collect and aggregate publicly available data from company documents and websites and non-governmental organizations, disseminating it to end users in a systematic way. Comprehensive providers (including S&P, MSCI, Sustaynalitics, Vigeo Eiris and ISS) combine objective and subjective assessment elements by integrating their own methodologies with publicly available information. Finally, specialist providers (such as CDP) provide information and scores on a specific ESG pillar or issue.

ESG rating providers arrive at their assessments through different methodologies so that it is not possible to identify a single measure of ESG performance.

The divergences between the various ESG providers are essentially to be found in three sources, namely scope divergence, measurement divergence and weight divergence, which respectively refer to the type of ESG category considered, the metrics used to

measure it and the specific weight of the category in the overall ESG rating (Berg, F., Koelbel, J. F., & Rigobon, R. 2019). In addition to these three effects, there is a fourth, less obvious and less investigated effect called the rater effect, which refers to the tendency of the rating agency to consider scores previously recorded in one ESG category when calculating the others.

The lack of an objective criterion for ESG scoring should not paralyze the discussion on the topic since it is perfectly legitimate to expect subjective assessment methods that may reflect different assumptions and purposes, both on the part of raters and end users, in quantifying and interpreting companies' ESG performance. This was further confirmed by the *Rate the Raters* report in which the various ESG providers were ranked on the basis of subjectivity. It emerged how the various respondents expressed a preference for one rater over another, based on different attributes and purposes of their methodologies.

Having established the situation and the necessary reflections regarding the measurement of ESG performance, in the path of approaching the main body of the work, financial performance indicators were taken into consideration, i.e., information of a quantitative nature that allows to trace and plan the economic well-being of a business as well as to carry out time-trends and peer analysis. These were divided into liquidity, financial leverage, turnover, profitability and market value ratios.

The main body of the work, i.e., the analytical part aimed at verifying the type of relationship between the ESG score and corporate financial performance, moved from a literature review that made it possible to develop the hypotheses that were subsequently tested.

Purely theoretical discussions on the link between the social performance (CSP) and financial performance (CFP) of companies have traditionally been polarized around two theories: agency theory and stakeholder theory. The former is inclined to consider profit maximization as the sole purpose of business activity, considering environmental, social and governance practices negatively in terms of company performance, as they are accused of bringing only a reputational benefit to the management that implements them and a consequent economic damage to shareholders. Stakeholder theory, on the other hand, considering the sustainability of a business also on the basis of how it manages the interests of the company's stakeholders, is inclined to admit the financial benefits of ESG practices as they are able to act on risk and reputation management, better access to

finance, human resources management, cost reduction through efficiency and sanctions avoidance (Reinhardt et al. (2008); Cochran (2007); Heal (2005); Greening and Turban (2000), among others).

Even though recent developments seem to have accepted stakeholder theory, there is a great deal of fragmentation at the level of empirical contributions where positive, negative, null and even mixed links between CSP and CFP have been identified. Only recently has there been a fragile consensus that, based on a study including more than 2,000 empirical studies on the subject since the 1970s, identified a non-negative relationship in 90% of the studies analyzed and a positive relationship in most of them. It also observed that the linear positive relationship does not only affect the aggregate ESG score but also the individual environmental, social and governance pillars (Friede, Busch and Bassen, 2015). Based on this, four hypotheses were developed:

i. Hypothesis 1 → Linear and positive relationship between ESG Score and Corporate Financial Performance
ii. Hypothesis 2 → Linear and positive relationship between Environmental Score and Corporate Financial Performance
iii. Hypothesis 3 → Linear and positive relationship between Social Score and Corporate Financial Performance
iv. Hypothesis 4 → Linear and positive relationship between Governance Score and Corporate Financial Performance

For analytical purposes, data were collected through the Refinitiv Workspace platform and subsequently analyzed through the SPSS statistical software.

The companies in the sample used are part of the MSCI World Index which, comprising 1563 mid and large cap companies, covers 85% % of the free float-adjusted market capitalization in 23 developed countries. The index was not used as a whole since it was filtered to omit financial companies, which are characterized by different capital structure, accounting and regulatory frameworks. In addition, financial variables were subjected to a 10% winsorization that restricted the final sample to a total of 1,255 firms and 91,030 statistical observations.

The variables used can be divided into independent (ESG Score, Environmental Pillar Score, Social Pillar Score and Governance Pillar Score), dependent (ROE, ROA, Price to Book Value per Share) and control (Size, Leverage, Beta). Data were collected for the period 2011-2018 for both independent and control variables. To avoid endogeneity issues, a 1-year lagged approach was preferred for the dependent variables for which data were collected for the period 2012-2019.

A statistical analysis, which also includes a multivariate regression analysis of the type:

$$CFP = \alpha + \beta_1 ESGP + \beta_2 SIZE + \beta_3 LEVERAGE + \beta_4 BETA + \varepsilon$$

was carried out to verify the relationship between the ESG Score and the three financial variables, and between the latter and the individual environmental, social and governance pillars.

The results of the analysis were grouped into descriptive statistics, correlation analysis and regression analysis. The results of the correlation analysis showed a positive and statistically significant relationship between the dependent and independent variables. The regression analysis completed the picture, allowing us to understand the intensity of this relationship. In detail, a greater positive impact of the ESG score on profitability (ROA, ROA) than on market value (Price to Book Value per Share) was identified. The analysis went further by looking for the same link using the individual environmental, social and governance pillars as predictors. In this case, the analysis was carried out separately to eliminate any multicollinearity problems. Once again, the link between individual ESG dimensions and financial performance was verified. However, it was observed that environmental sustainability practices have less impact on corporate performance than social and governance ones. In all the regression models considered, the statistical significance of the results allowed to fully accept the hypotheses, placing the results of this study perfectly in line with the dominant approach in the literature.

The evidence suggested by this work can be taken into consideration by managers and investors as well as by policy makers. In detail, since the positive link between ESG score and financial performance has been verified, managers and investors can allocate resources by preferring investments that, consistent with my results, prefer the social and governance dimensions over the environmental one. Similarly, having demonstrated that

ESG practices are not uneconomic, policymakers should introduce stronger regulatory frameworks to encourage the implementation of such practices.

However, this paper is not without limitations. These are strictly related to the type of sample used which, being heterogeneous in terms of industries and countries, does not allow generalizing the results to specific national or sectoral contexts. Moreover, no investigation was carried out into the longer-term effects of ESG performance, as only a 1-year lagged approach was favored. Furthermore, the use of one rating provider rather than another may lead to variability in results. For these reasons, several research avenues can be drawn from this work with the aim of investigating the ESG-CFP nexus in specific sectoral and country contexts (including emerging countries) or in relation to different time horizons. Furthermore, the replicability and reliability of the results found here could be tested by resorting to ESG scores provided by other rating providers.