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"The relation between ESG rating divergence and a firm's financial performance"

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Abstract

Considering raising concerns about climate change and our future, the importance of sustainability is being emphasized more and more for companies and investors. Both investors and companies are attempting to be more responsible in their investment and operations in accordance with sustainability. ESG rating providers are one of the key elements in sustainability that investors and corporations are rely on their assessment and evaluation. Alongside their widespread adoption, ESG ratings are being condemned for their inconsistency. Although previous research has extensively explored the influence of ESG rates on financial performance, few studies have attempted to demonstrate the impact of heterogeneity on corporate financial performance. Thus, this study examines how divergence in environment, social and governance (ESG) rating impact on financial performance, both accounting and market base. The study is conducted on firms with more than 500 employee located in the Europe and North America during the period of 2014-2020. The data used in this thesis is based on the most prominent rating providers KLD and Refinitiv (Asset4). This study first investigates the variation in individual ESG pillars. We found that there is a significant difference between providers, both cross-sectional and over time. We revealed that the convergence of Refinitiv and KLD in the environmental dimension is greater than in the social and governance dimensions. Our findings reveal that divergence scores have a considerable influence on market-based financial performance (Tobin's Q), implying that the market is primarily interested in these measuring methods for decision making.

Keywords: ESG rating, Divergence, Financial Performance, CSR, Signaling Theory

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Chapter 1

CORPORATE SUSTAINABILITY - A PROLIFERATION OF DEFINITIONS

1.1 Introduction

There has been a considerable increase of attention among scholars and practitioners regarding to corporate sustainability (CS) and sustainable initiatives during the last few decades, and it has become an integral element for directors through many sectors. According to a widely publicized study of managers, 90% consider corporate sustainability as a vital priority to their companies (Kiron et al., 2017).

Corporate leaders have begun to manage investment flows in a way that maximizes future growth opportunities by combining economic goals with environmental and social goals. Corporate sustainability is a strategy with a broad and long-term perspective combining sustainability activities such as environmental, social and governance to improve the relation of businesses with all the stakeholders. It can help companies reduce risk, find opportunities, and develop long-term development strategies to enhance both financial performance and sustainability. As a consequence, whenever companies want to progress towards the macro-economic dynamics of sustained superior financial success, they must match their corporate and sustainable development strategies (Gallardo-Vázquez et al.2021). However, although there is a general understanding of what CS is, both scholars and practitioners provide several definitions under different labels (for example, corporate social responsibility, triple-bottom line, sustainable development goals). Research highlights that these definitions impair a clear understanding of the effects of sustainability actions on firm performances.

This first chapter of this thesis provides a relevant background of the several definitions of CS and the reasons why it is important to investigate CS, given its important role for firm performance, sustainability improvements and other strategic aspects. In particular, this chapter consists of seven sections. The first section provides similar terms of CS which has been used in literature. The second chapter presents the definition of CSR and various perspectives about the relation of CSR and financial performance. The third section discusses the role of SDGs in CSR. In the fourth section, we will focus on TBL and how it can be linked with CS. The Sixth section

describes the CS definitions in literature, key concepts, elements and how it changed over time. The last section describes the conclusion.

1.2 Review of definitions of corporate sustainability

In the literature, sustainability-related concepts are defined in a variety of ways such as triple bottom line, business ethics, social responsiveness, sustainable development, corporate citizenship, eco-efficiency, green firms and etc. Moreover, sometimes the terms "corporate sustainability" and "corporate social responsibility" have been used interchangeably (Van Marrewijk, 2003), at different occasions have been used non-identical. For instance, CSR solely includes social and environmental elements, while CS includes economic, social, and environmental aspects (Bansal and Song, 2017). The consequent variety of definitions has created ambiguity complexity and disagreement about corporate sustainability.

1.2.1 Review of CSR definitions

Over the decades, Corporate Social Responsibility (CSR) has become increasingly important in the academic area and on the public agenda. However, it has been conceived and described in a variety of ways. In the following, some examples on how CSR has been defined from both academics and organizations.

Among international organizations, the European Commission defines CSR as "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (COM, 2001). The International Organization for Standardization (ISO) presented the most detailed definition of corporate social responsibility as "the responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behavior that contributes to sustainable development" (ISO 26000:2010).

In the academic literature, one of the earliest definitions of CSR refers to Bowen (1953, P.6) who defined it as: "*the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society*". Moreover, Carroll (1991) argued that CSR is a framework with four linked dimensions,

including economic, legal, ethical, and philanthropic, and corporates should aim to maintain this framework. The economic aspect highlights corporations' obligations to stakeholders, mainly owners and shareholders, to provide a return on investment, to create employment for individuals in society, and to produce products and services for profit (Visser, 2008). The legal component of CSR discusses corporations' obligation to ensure the integrity of their commercial activities and that their output is in line with government and non-profit organizations' legislation and policies (Carroll and Shabana, 2010; Mullerat and Brennan, 2005). Carroll and Shabana (2010) defined the ethical elements as the corporation's volunteer programs to support and achieve social objectives that go beyond their legal obligations. Ethical obligations include societal moral boundaries and environmental protection policies. Finally, the philanthropic CSR component encompasses the organization's conduct in response to general societal expectations that it be a good citizen; this includes the firm's participation in activities that promote a commitment to human wellbeing. Finally, McWilliams and Siegel (2001) provided a remarkable description, defining CSR as "actions that appear to further some social good, beyond the interests of the firm and that which is required by law" (p, 117). This approach emphasizes that the core of CSR is action that extends further than the boundaries of the law and is not focused exclusively and directly at creating advantages for the corporation.

More recently, Tai and Chuang (2014) defined CSR as the accountability and obligation to defend, support, improve, and maximize the benefit of stakeholders and social people. In addition, according to Belas et al. (2020) CSR is a strategic instrument of improving business management for the betterment of society as a whole.

Until now, there has not been universally accepted definition of the term CSR; however, it is commonly represented in terms of multidimensional concepts (Rowley and Berman, 2000) and can be concluded that CSR provides a framework for all businesses to take into consideration the environmental and social impacts of their activities, and a company should assume corporate behavior consistent with norms, values and benefits of its stakeholders.

CSR and performance

CSR has been regarded as a critical factor in achieving economic objectives and generating wealth (Garriga & Mele, 2004). As a result, several studies have attempted to establish a global connection between corporate social responsibility and firm success. CSR, according to academics, can act as a key option that results in better firm performance because it decreases the

expense of committing resources to the organization by concentrating on stakeholders other than shareholders (Hillman and Keim, 2001), acts as advertising and goodwill (Knauer, 1994), mitigates risk premiums (Cornell and Shapiro, 1987) and improves corporate credibility (Schnietz and Epstein, 2005).). Moreover, According to Bénabou and Tirole (2010), corporate social responsibility (CSR) rules encourage enterprises to take a longer-term view by limiting short-term opportunistic behavior, which increases firms' long-term value. Peloza (2009) considered 128 reports and found 59% a positive, 27% mixed or neutral, and 14% a negative relationship between CSR and corporate financial performance.

The different results of the impact of CSR on firm performance, according to academics, are due to the absence of consistency in the CSR dimension and the use of different firm performance dimensions (Margolis & Walsh, 2003). In general, there are three types of studies on the impact of CSR practices on financial performance: those that argue for a negative, neutral and positive correlation.

According to Hillman and Keim (2001), CSR practices build stakeholder trust and leads to value-enhancing interactions among a corporation and its stakeholders, ultimately leading to higher shareholder value. Lev et al. (2010) proved that philanthropic contributions have a beneficial effect on sales growth, particularly in firms that put a premium emphasis on customer impressions. Louis W et al. (1982) propose companies that invest in CSR would allocate less on advertisement. This aids in cost reduction and the creation of a corporate culture, establishing the firm's brand or establishing the firm's credibility. Margolis et al. (2007), for instance, performed a thorough conceptual of 192 interactions from 167 previously published studies and discovered a moderate positive statistical link between CSR and corporate financial performance. Servaes and Tamayo (2013) investigate the impact of CSR on firm value, focusing on the consumer awareness process. They discovered that companies with a higher level of consumer awareness profit more from CSR. Dimson et al. (2015) investigate better engagements in CSR activities are linked to higher long-term average abnormal returns and improved operating performance. Other studies investigate this connection by examining the mechanisms through which CSR can influence corporate financial performance.

CSR, according to Friedman (1970), involves expenses, either implicitly or explicitly. Despite the fact that CSR has few visible economic advantages, the various costs that outweigh would reduce profit and decrease shareholder wealth (Waddock and Graves, 1997). Henderson (2001) argues that social responsibility is a terrible idea. He believes that the idea of CSR has

been seriously harmed. Cost inflation and negative performances are more likely if CSR is implemented. Regarding his investigation, if managers implement CSR, they will be burdened by broad objectives, time-consuming discussions with outside stakeholders, and the need for new accounting, auditing, and monitoring systems. All of this could mitigate the CSR benefits. Furthermore, it can be argued that CSR involvement represents an agency problem among shareholders and managers, based on agency theory (Jensen and Meckling, 1976); insiders may have an interest in overinvesting in CSR to gain private benefits by building their image as good citizen, probably at the expense of shareholders. (Barnea and Rubin, 2010; Brown et al., 2006).
McWilliams and Siegel (2001) highlighted a demand and supply model for corporate social responsibility. Based on this model, they hypothesized that a firm's degree of CSR is influenced by its size, level of diversifying, advertisement, R&D, government revenue, customer preferences, labor market conditions, and stage in the firm life cycle. They came to the conclusion that there is an optimal amount of CSR that managers can evaluate by cost-benefit analysis. They formed a relationship between CSR and financial performance that was neither positive nor negative.

According to Husted and Allen (2007), while CEOs and government leaders claim in public that CSR projects add value to the business, they confess implicitly that they do not know whether CSR works. Mackey and Barney (2011 suggested a theoretical framework in which the supply and demand for socially responsible investment opportunities decide whether these activities increase, decrease, or have no effect on a company’s market value. Managers of listed companies can finance CSR programs which do not maximize the present value of their firm's future cash flows, but do maximize the firm's market value, according to their theory. Financial restriction, according to Hong et al. (2012), is a possible missing factor in the association between CSR and corporate financial performance. To address the indignity problem, better-performing companies have more resources to invest in CSR.

1.2.2 Review of SDGs definition

A recent stream of literature on CSR deals with its relationship with Sustainable Development Goals (SDGs). The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs)

(see Table1.1), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests

Table 1.1 The 17 UN's Sustainable Development Goals (SDGs).

Goals	Definitions
Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable, and modern energy for all
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities and human settlements inclusive, safe, resilient, and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
Goal 15	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification; halt and reverse land degradation; and halt biodiversity loss
Goal 16	Promote peaceful and inclusive societies for sustainable development; provide access to justice for all; and build effective, accountable, and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development

Most multinational corporations are informed of the Sustainable Development Goals (SDGs) and try to match themselves with them. According to a study by PWC (2015), 92 percent of the corporate sector is informed of the SDGs, with 71 percent preparing how to adapt to them. According to 49% of business leaders, the government bears primary actions to achieve the SDGs.

Hart (2007) argues considering that businesses play such an important role in promoting sustainability, novel and useful approaches to quantify and monitor how businesses deal with their CSR goals and the effects these activities have on the SDGs are needed. With CSR as a means to guarantee and measure the sustainable development on a corporate strategy, companies are being increasingly responsible for their behavior rather than the scope of economic aspects (Hanafin et al. 2017). If the theory of CSR grows, it's important to consider how the SDGs and, more generally, sustainability are influencing corporate strategy and CSR objectives. Moreover, strategic CSR management faces the task of maintaining a flexible balance, combining short-term gains with a long-term goal of sustainable goals (Yelkikalan, N, 2012). The Sustainable Development Goals have changed CSR discourse from a reactive response to stakeholders' mandates to a pragmatic one that enables businesses to influence sustainable development dynamics (ElAlfy, A ,2019). Schönherr et al. (2017) investigated how the SDGs, as a globalist stage, can act as a guidance tool for businesses looking to improve their CSR commitment in ways that lead to long-term sustainability. Martinuzzi and Krumay (2013) have related the principle of sustainable development to CSR, describing it as a corporation's responsibility to behave in line towards society's overall goal.

Martinuzzi et al. (2017) also propose three aspects in which the SDGs may be useful as an essential mechanism for CSR. Firstly, the SDGs provide 17 accepted sustainable development goals that are each divided into objectives, some of which are applicable to companies. Furthermore, governments, companies, and society have all adopted these internationally recognized targets, creating a shared vision around which all stakeholders can converge. Lastly, the Sustainable Development Goals completely recognize the scope, trade-offs, and structural existence of sustainability challenges.

It is also reasonable to assume that, in addition to their importance, CSR and SDGs would share certain similarities and efficiencies. Given the fact that they came through diverse conceptual

backgrounds, Bansal and Song (2016) argue that CSR and sustainability could be complementary.

In the last five years, a growing number of studies dedicated to the SDGs have developed. Identifying relevant limitations (Saner et al., 2019; Swain, 2018; Weber, 2017) or monitoring and evaluation challenges are the subject of most research (Salvia et al., 2019) instead of a critical assessment of the emerging research environment, there is currently no framework that discusses and categorizes all related research types, gaps, and conflicts in depth. Indeed, various measurement challenges and complexities exist, with little coverage in the literature, necessitating further study.

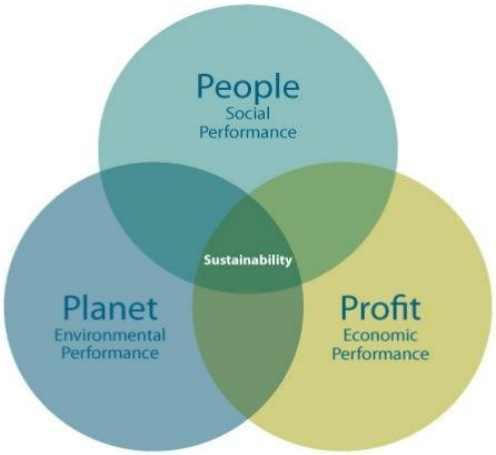
The SDGs must take a comprehensive approach to resolve all of the important and significant global issues that threaten the future, including poverty, injustice, global warming, ecological pollution, stability, and equality. Various researches have looked at the SDGs' threats and opportunities (Singh. z, 2016). Due to the complexity of the relevant factors, some academics and practitioners have reported that these aims are difficult to accomplish (Horton, R., 2014). Several findings have emphasized the impact of including interrelationships between the targets (Griggs, D et al. 2017), adopting a nexus approach (Le Blanc, 2015), and improving governance and structures (Sachs, J.D., 2012) in order to achieve these goals.

Additionally, some researches investigate the barriers to the implementation of the sustainable development goals. Leal Filho, (2020) categorized seven barriers such as: vague goals (Some of the objectives are not clearly defined, providing for subjective definition and, as a result, poor understanding), collective action (It is hard to verify that all actors collaborate to achieve the desired outcomes.), trade-offs (A need to identify trade-offs, such as compromising parts of one target to obtain the others when achieving both is unlikely), accountability (It will guarantee that the involved parties meet their priorities and objectives within the specified time frame), financial constraints (Numerous nations have little resources required to finance the projects necessary to achieve the SDGs), capacity building (This necessitates that all individuals associated with development projects obtain all of the necessary expertise, resources, and training to carry out projects and achieve objectives), technology and data (Any project's considered an essential part of big data analysis and trend tracking, this procedure necessitates the use of current technology, which is not always accessible) and culture (Humans in certain cultures are not enabled to be accessible to new ideas or progress).

1.2.3 Review of Triple bottom line definition

The ideas of triple-bottom line (economic, environmental, and social) and the three Ps (profit, planet and people) (see Figure1) have become more relevant to corporate sustainability. The triple bottom line (TBL) assessment of economic viability, environmental and social responsibility has been the most frequently accepted concept of sustainability over time (Yu & Zhao, 2015).

Figure1.1 Triple-bottom line 3P formulation



According to Elkington (1998) the triple bottom line approach argues that a corporation's and its environment's long-term effectiveness necessitates a concentrate across all three dimensions of sustainability, which include economic, environmental, and social, instead of a single, short-term focus on economic sustainability. Short-term success can be achieved by focusing solely on economic sustainability; however, in the long run, all three components must be met simultaneously (Dyllick & Hockerts, 2002). Elkington (2004) further claims that the three aspects of sustainability are interconnected and influence each other in a variety of ways. As a result, a company's economic sustainability is inextricably linked to its environmental and social sustainability.

1.3 Review of corporate sustainability definition

The definition of sustainability development in 1987 by Brundtland report's is one of the most conceptual definitions for CS where the term "sustainable development" was defined as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs"(WCED, 1987, P .43). At the corporate level, various studies have utilized the World Commission on Environment and Development (WCED) definition to consider corporate sustainability.

Dyllick and Hockerts (2002) argue that CS is a framework for dealing with the broad range of sustainability issues, fulfilling the interests of a company's direct and indirect stakeholders without endangering the corporation's ability to fulfill the requirements of future stakeholders. Corporate sustainability refers to an organizational technique intended at striking a balance between short- and long-term organizational goals, as well as social responsibility (Pearce et al., 2013). Strand (2014) defined CS as the combination of economic, environmental, and social factors developed by corporations. One of the most recent definitions of CS is proposed by Taticchi and Demartini (2020) who define CS as the way of doing business that focuses on creating shared value over time, collaborating with stakeholders, and incorporating environmental, social, and governance (ESG) issues into decision-making.

Wilson (2003) introduced a detailed framework for corporate sustainability, claiming that CS takes components from corporate social responsibility, sustainable development, corporate accountability theory and stakeholder theory. Based on this model, corporate social responsibility defines the ethical reasons for why firms should engage toward sustainability. The scope of corporate sustainability identifies sustainable development as a common societal goal. The ethical concerns for why firms should report on sustainability performance are addressed in corporate accountability theory. Finally, the business justifications for why firms should working toward sustainable goals are shaped by stakeholder theory.

Amini and Bienstock (2014) proposed that CS can be described using a framework that includes the following elements: (a) the relationship between corporate strategy, innovations, regulatory requirements, and long-term sustainability; (b) integrating the importance of corporate communications in terms of sustainability; (c) in order to establish effective sustainability

initiatives, it is critical to reach out to supply chain partners; (d) stressing the need of achieving a balance between the three components of sustainability (economic, social, and environmental).

Montiel and Delgado-Ceballos (2014) examined a research on corporate sustainability and related issues such as corporate social responsibility, corporate social performance, environmental performance and environmental strategies published in the top academic and practitioner management journals from 1995 to 2013. They concluded that the different approaches, theorize and studies (including phenomena driven studies, studies using traditional organizational theories (e.g., stakeholder theory, institutional theory and resource based view) and studies suggesting new theoretical frameworks for CS), have been used in definition of corporate sustainability. They argued that the bulk of early definitions of corporate sustainability focused on the businesses' environmental issues, and that the social and environmental pillars are more often highlighted than the economic pillars in sustainability scholars and practitioners.

Meuer et al. (2019) contributed to better understanding of the different component of corporate sustainability definition. They undertook a comprehensive literature study through the most influential journals and discovered 33 original definitions of corporate sustainability among 1,870 publications between 1983 and 2018. They conducted a three-step systematic review to find definitions of corporate sustainability: identifying the boundaries of the literature, choosing key articles, and evaluating publications for novel definitions of corporate sustainability. Their research proposes three key characteristics that distinguish various shades of corporate sustainability: (1) the level of ambition, (2) the level of integration and (3) the specificity of sustainable development. The first component, degree of ambitions, implies that the degrees of performance required for corporates to be considered sustainable vary according on definition. The second factor, level of integration, indicates that the degree of integration of corporate and sustainability elements distinctively conceptualized in definitions of corporate sustainability. Finally, the third component, specificity of sustainable development, means most definitions of sustainable development rely on the triple bottom line or Brundtland's definition of sustainable development in economic, social, ecological, and intergenerational dimensions to comprehend the concept of sustainability. Definitions of sustainable development differ in terms of mentioning each of these four dimensions in literature. Therefore, they defined corporate sustainability as: “a bundle of activities fully integrated into a firm’s overall strategy that contributes effectively to the welfare of current and future generations through protecting

and enhancing the resilience of the biosphere, social equity and cohesion, and economic prosperity" or lenient definitions "a firm attempt to respond to environmental and social issues" (Meuer et al., 2019, p. 12).

Conclusion

Generally, lack of standardized definition of corporate sustainability (Montiel and Delgado-Ceballos, 2014) or even absence of widely accepted definition of corporate sustainability is significant, because the different ways in which the term has been defined undoubtedly have an impact on the field of CS and also it raises the issue of measurement in this field. In addition, this ambiguity is challenging for managers, since it leads to confusion when determining how to successfully implement sustainable practices into their activities.

CHAPTER 2

MEASURING CORPORATE SUSTAINABILITY – THE ROLE OF ESG RATINGS

2.1 Introduction

Company sustainability performance measurement (CSPM) is designed to improve corporate sustainability by making it more intelligible, relevant, and quantifiable; in addition CSPM is the concept of evaluating the reliability and efficiency of business sustainability actions. However, finding a standardized technique for valuing CS is one of the most critical difficulties in the CS sector. Due to the differences in CS definitions outlined in the previous chapter, various assessment models for sustainability performance have been established and utilized as measures for sustainability performance. Since the purpose of this study is to investigate the relationship between ESG divergence and financial performance, we will focus on ESG rating agencies.

ESG rating agencies are one of the prominent instruments for evaluating corporate sustainability. ESG rating agencies examine corporations and evaluate them in terms of social, environmental, and corporate governance by employing their own conceptual framework by using variety of sources such as financial and non-financial statements of companies, media, NGOs and other stakeholders; consequently, an absence of consistency between rating agencies is reasonable.

This chapter begins by discussing the CSPM and why it is important to evaluate CS. Then, we present several detailed rating tools on the market that aim to evaluate corporate ESG performance. Additionally, we go deeply through the problem of heterogeneity of rating agencies based on literature review, and eventually we state our main research questions.

2.2 Corporate sustainability measurement

Even though there has been development in adopting corporate sustainability principles into businesses (Schaltegger and Burritt, 2010), some relevant topic of CS such as corporate sustainability performance measurement (CSPM), remains underdeveloped (Chelli and Gendron, 2013; Maas and Reniers, 2014), and few attempts have been made to give insight into how to

assess sustainability performance (Krajnc and Glavic, 2005; Labuschangne et al., 2005; Searcy and Elkhawas, 2012).

The evaluation of a corporate's sustainability is significant for a variety of reasons, both for enterprises aspiring towards sustainable business activity and for a variety of stakeholders concerned in a corporate's sustainability. The primary motivations for corporations to release a sustainability report (SR) are to inform stakeholders about non-financial topics, to maintain or improve credibility, legitimacy, corporate reputation, and to encourage employees to cope with sustainability issues and benchmarking (Frost et al., 2005). In addition, firms can make sustainable strategic actions (Wicher et al., 2019) and attract investors and customers by showing their sustainability performance. Companies that address corporate sustainability in both internal and external processes reduce expenses, innovate more, improve financial performance, improve human resources, and boost employee loyalty (Küçükbay & Sürücü, 2019).

Measuring corporate sustainability entails determining how much economic, environmental, social, and governance issues are included into a company's operations, as well as the consequences of those activities on the environment. (Artiach et al, 2010, Labuschagne et al., 2005). According to Searcy (2012), the significance of sustainability performance measures underlying a system of measurement formed by "a system of indicators that provides a corporation with information needed to help in the short and long-term management, controlling, planning, and performance of the corporation's economic, environmental, and social activities" (p. 240).

Despite the fact that corporate sustainability assessments have been highlighted as a procedure that may assist firms in moving to sustainability, the sector remains highly diverse. Different types of evaluation have been used in the literature to assess sustainability performance and finding a common approach for evaluating corporate sustainability is one of the most significant issues in this field. There are various recommendations and standards available to aid in the development, measurement, and disclosure of sustainability.

2.3 Ratings and indices

ESG indexes are added-value products created by ESG rating organizations. ESG rating and information providers (also known as CSR, SRI and sustainability rating agencies) are created in response to socially responsible investors' needs for social and environmental information on firms in order to invest in more sustainable corporates. Typically, environmental, social, and economic performance of firms can be analyzed in a systematic, regular manner with the help of CS ratings. A number of organizations conduct ESG rates and indexes such as FTSE4Good index, ASSET4, Trucost, Innovest, KLD (MSCI ESG STATS), Dow Jones Sustainability Index (DJSI), MSCI ESG indices, Sustainalytics, Bloomberg, SAM, EIRIS, Asian Sustainability Rating (ASR) and Calvert social index. These indexes are presented in details in the following sections.

2.3.1 FTSE4Good index

The FTSE4Good Index Series is intended to assess the performance of firms in FTSE All-World Developed Index (over 3,100 companies in 47 countries starting in 1986) and FTSE All-Share indices (641 companies traded on the London Stock Exchange) that exhibit strong Environmental, Social, and Governance (ESG) policies. Transparent management and well-defined ESG criteria make the FTSE4Good indexes ideal instruments for a wide range of market players to utilize when developing or evaluating sustainable investment products. FTSE4Good Index Series covers over 300 indicators in the model with 14 Theme such as: Biodiversity, Climate Change, Pollution and Resources, Supply Chain, Water Security, Customer Responsibility, Health and Safety, Human Rights and Community, Labor Standards, Supply Chain, Anti-corruption, Corporate Governance, Risk Management and Tax Transparency in three main pillars (Environmental, Social and Governance).

The FTSE4Good indices can be utilized in four different ways:

1-Financial products: as a factor in the process of index-tracking investments, financial instruments, or fund products concentrating on sustainable investment.

2-Research: to discover firms those are ecologically and socially sustainable.

3-Reference: as transparent and developing global ESG standards for which corporations may measure their success and development.

4-Benchmarking: as a benchmark index for tracking the success of long-term investment portfolios.

The FTSE4Good Index Series selects firms for inclusion based on the overall score from FTSE Russell's ESG Ratings (FTSE Russell will assess the company's responses and verify a final ESG grade ranging from 0 to 5) and data model. Firms should have a total ESG Rating of 3.3 out of 5 in order to be included in the FTSE4Good Index Series. This guarantees that only firms who have demonstrated effective ESG risk management is featured (FTSE, 2011).

2.3.2 ASSET4

Thomson Reuters announced the acquisition of ASSET4, the premier source of environmental, social, and corporate governance (ESG) data, on November 30, 2009. ASSET4 enables individual investors and corporate executives' accessibility to the world's biggest collection of ESG data, as well as the research tools they need to incorporate that data into their daily decisions. The ASSET4 ESG framework allows firms to be rated and compared against over 700 unique data points typically from sources include stock exchange filings, CSRs, annual reports, non-governmental organization websites, and news sources, which are aggregated into over 400 key performance indicators (KPIs). These KPI scores are collected into a framework of 10 categories (Resource use, Emissions, Innovation, Work force, Human right, Community, Product responsibility, Management, Shareholders and CSR strategy) consisting of three dimensions (Environmental, Social, Governance) and combined into a single total score. Indicators, Categories, Pillars and Overall Score are calculated by equally weighting and z-scoring all underlying data points and comparing them against all companies in the ASSET4 universe. The resulting percentage is therefore a relative z-scored and normalized measure of performance, to better distinguish values and position the score between 0 and 100% (Asset4, 2011).

2.3.3 Trucost

Trucost is a unit of S&P Global, a leading global in carbon and environmental data and risk analysis. Trucost evaluates risks associated with climate change, natural resource limitations, and wider environmental, social, and governance concerns. Trucost Environmental data evaluates the environmental effect of over 15,000 businesses along important parameters. Trucost

Environmental data may be used for ESG data integration, portfolio climate performance reporting, and exclusionary screening, as well as assessing portfolio overall risk to climate change.

This data collection contains:

1-Carbon, Emissions of greenhouse gases (GHGs).

2-Land, water, pollution in the air, and waste disposal

3-Use of natural resources and water

4-Each sector of a company's activities generates revenue.

5-Reserves of fossil fuels, electricity generation capacity, and carbon metrics.

Trucost uses publicly disclosed environmental data to evaluate company performance for each impact metric whenever possible. Trucost draws on any relevant data that's available, such as the EPA Toxics Release Inventory, firms' financial or sustainability reports and the Carbon Disclosure Project. It uses a proprietary economic input-output model to calculate direct-company and supply-chain impacts in cases where data is unavailable. Any outside data that Trucost draws in is first scrutinized to ensure it is of good quality, and then standardized before being used.

Trucost first evaluates overall environmental effects as a percentage of total economic output. Then it calculates the percentage of a company's revenue that comes from each industry in which it operates. Once a company's particular impacts have been quantified, Trucost quantifies the cost of environmental damage using standardized costs per quantity of each environmental input or output developed by Trucost from valuation studies and other academic literature. The cost of each metric is summed to produce a dollar estimate of the company's total environmental impact. Finally, this figure is normalized by the company's annual revenue (allowing companies of all sizes to be compared) and included as 90 percent of the company's raw Environmental Impact Score (EIS), (Trucost, 2013).

2.3.4 Innovest

Innovest is a global SRI agency that has been analyzing non-financial risk and shareholder value determinants for over 2,680 large businesses worldwide on a monthly basis since 1999. Innovest's Intangible Value Assessment (IVA) ratings system takes into account a variety of social, environmental, and strategic governance performance factors to measure the long-term value of firms across industries by focusing on five key elements: 1- Energy and Climate Change, 2- Water, Waste and Resource Use, 3- Regulation, Government and Stakeholder Engagement, 4- Sustainable Planning and Development and 5- Healthy Design. Innovest offers IVA, a worldwide score (with seven levels ranging from AAA to CCC) that is divided into two primary sub-scores that account for environmental and social factors. These ratings were generated by combining numerous scores (grades 1–10) that were classified into eight distinct blocks of factors, totaling 29 different sub-scores.

AAA is awarded to a firm that has low, well-identified environmental/social risks and responsibilities, as well as a solid ability to cover any losses that may occur. AA indicates a firm with well-defined environmental/social risks and liabilities, for which it would be able to cover the majority of potential losses. A rating implies that the firm has significant but well-identified environmental/social risks and responsibilities, as well as the financial and management strength to absorb all but extreme risks. BBB is given to a company with strong managerial capability, but where environmental/social risks and liabilities are a potential source of loss, though not on any material scale. BB is attached to a firm with strong management capabilities, but where environmental/social risks and liabilities provide a significant risk of material loss. B denotes that the firm has environmental/social risks and obligations, the kind and size of which generate a high probability of substantial losses in both profitability and competitive position. CCC, the lowest of the grades, is assigned to a firm when there are considerable questions about management's capacity to manage its environmental/social risks and liabilities, and these risks and liabilities are likely to result in a large loss (Corporate Knights, 2011).

2.3.5 KLD (MSCI ESG STATS)

Kinder, Lydenberg, Domini Research and Analytics created the KLD database in May 1990. KLD joined the Morgan Stanley Capital International (MSCI) RiskMetrics Group in the late 2000s, and its methodologies for measuring businesses' ESG performance continue to impact investing decisions. MSCI KLD collects strength and concern ratings (positive and negative indicators) in seven key areas: community, Governance, Diversity, Employee Relations, Environment, Human Rights and Products, using approximately 80 indicators. In addition to the seven sub-dimensions, KLD gathers controversial business concerns for firms, such as alcoholism, gambling, tobacco, firearms, military, and nuclear power KLD STATS presents a binary summary of positive and negative ESG ratings. In each case, if KLD STATS assigned a rating in a particular issue (either positive or negative), this is indicated with a 1 in the corresponding cell. If the company did not have a strength or concern in that issue, this is indicated with a 0. If data is unavailable for a given category, KLD STATS indicates this with "NR", meaning "Not Rated." In the case that the index membership was not covered, KLD STATS indicates this with "NA", meaning "Not Available.". KLD uses data from sustainability report of companies, financial statements, surveys, academic journals, and government reports to measure performance across the seven primary areas. Such data gathering techniques ensure that there are no choice biases, as businesses with poor sustainability performance may not freely submit their sustainability issues (Rezaei, 2015).

2.3.6 Dow Jones Sustainability Index (DJSI)

The Dow Jones Sustainability World Index (DJSI World) was launched in September 1999 to keep track of the world's major corporations that are leaders in corporate sustainability. RobecoSAM evaluates these companies using the yearly Corporate Sustainability Assessment (CSA). Organizations are assessed using a set of financially relevant sustainability principles that include economic, environmental, and social dimensions in 13 criteria (Corporate Governance, Risk & Crisis Management, Codes of Conduct/Compliance/Corruption & Bribery, Industry Specific Criteria, Environmental Performance(Eco-Efficiency), Environmental Reporting, Industry Specific Criteria, Human Capital Development, Talent Attraction & Retention, Labor Practice Indicators, Corporate Citizenship/Philanthropy, Social Reporting and Industry Specific)

and approximately 80 sub-criteria. The weights of the questionnaire's economic, environmental, and social dimensions differ across industry. The sum of all inquiry scores determines a company's total sustainability score at the highest aggregated level. Each business is assigned an overall sustainability score between 0 and 100. Companies within the same industry are assessed alongside their peers after the total scores have been determined to decide which companies are eligible and acceptable in the DJSI World (DJSI, 2011).

2.3.7 MSCI ESG indices

The MSCI ESG Indexes are intended to promote standard approaches to environmental, social, and governance (ESG) investing, as well as to assist institutional investors in more efficiently benchmarking to ESG investment performance and managing, measuring, and reporting on ESG requirements. MSCI ESG consists of three main pillars (Environmental, Social and Governance) and 10 themes (Climate Change, Natural Capital, Pollution & Waste, Environmental Opportunities, Human Capital, Product Liability, Stakeholder Opposition, Social Opportunities, Corporate Governance, and Corporate Behavior) and 35 ESG key issues. MSCI ESG Ratings employs a rules-based method for assessing a company's resilience to sustainability, industry-relevant environmental, social, and governance (ESG) risks. MSCI ESG rates companies on a 'AAA' to 'CCC' scale based on their disclosure to industry-material ESG risk factors and their capacity to manage those risks in comparison to peer group, using Artificial Intelligence (AI), machine learning, and natural language processing. MSCI ESG classified the rating in three main categories as follow: (1) Laggard ('CCC'and 'B') which means a company is falling behind its industry due to its excessive exposure and failure to handle substantial ESG risks. (2) Average ('BB', 'BBB'and 'A') states that by comparison to industry peers, a firm has a mixed or unexceptional track record of addressing the most major ESG risks and opportunities. (3) Leader ('AA' and 'AAA') states that a firm that is at the forefront of its industry in terms of handling the most important ESG risks and opportunities (MSCI, 2011).

2.3.8 Sustainalytics

Sustainalytic supplies institutional investors and corporations with analytical environmental, social, and governance (ESG) research, high-quality, data and ratings. Sustainalytics has a global footprint and covers over 6,500 firms in 42 industries. The collecting of data begins with the collection of corporate data through disclosure, media, and NGO reporting. Each company is awarded a sustainability score ranging from 0 to 100. It contains around 70 indicators in each industry and divides them into three major dimensions: preparedness, disclosure, and qualitative and quantitative performance. Preparedness includes "the assessment of management systems and politics in place to help manage ESG risks." Disclosure indicates whether "company reporting meets international best practice standards and is transparent in relation to ESG issues." Quantitative performance is "based on quantitative metrics such as carbon intensity." Qualitative performance is "based on analysis of controversial incidents that the company may be involved in" (Sustainalytics Research Methodology, 2017).

2.3.9 Bloomberg ESG disclosure scores

In 2009 Bloomberg acquired New Energy Finance, which provides information regarding renewable energy and the carbon market, and subsequently launched Bloomberg ESG Data Service. Bloomberg collects ESG data for over 11,500 companies across over 70 countries. ESG data is integrated into Bloomberg Equities and Intelligence Services. Bloomberg evaluates original data from business-produced materials such as sustainability and corporate social responsibility reports, website content, regulatory filings, and corporate presentations. Bloomberg does not contact companies asking information; it is completely the obligation of the corporation to supply such information. Bloomberg ESG data covers 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. Bloomberg ESG rating will penalize companies for "missing data." Bloomberg rates firms based on the completeness of their ESG disclosure, with scores ranging from 0.1 for companies that publish the minimum required of ESG data to 100 for those who publish every

data point gathered by Bloomberg. Rating organizations customize their ratings to certain business sectors and only assess firms based on factors that are relevant to that industry sector (Suzuki, 2010).

2.3.10 RobecoSAM

The SAM Corporate Sustainability Assessment (CSA), issued by S&P Global, allows businesses to assess their performance toward a broad range of industry-specific economic, environmental, and social factors that are important to an increasing number of sustainability-focused investors and financially essential to corporate success. It enables enterprises to access the unique expertise, proprietary methodology, and database underlying the world's most known sustainability indices, the Dow Jones Sustainability Indices (DJSI), for internal and external activities. The index committee assigns a number between 0 and 100 to a firm's sustainability performance, taking into account both favorable and unfavorable media coverage of the company. The DJSI World Index is comprised of the top 250 performing firms across all industries (UNEP, 2011).

2.3.11 EIRIS

Vigeo Eiris operates EIRIS, a global rating and research organization in the provision of environmental, social, and governance (ESG). EIRIS was formed through the merger of two companies and is based in Europe. EIRIS assesses how well organizations integrate social, environmental, and governance aspects into their strategy, activities, and management – with an emphasis on boosting economic success, responsible investment, and long-term value creation. It offers over 500 data points each organization. Organizations are evaluated using an ESG framework comprised of six domains (Corporate Governance, Business Behavior, Environment, Human Rights, Human Resources, and Community Involvement) and up to 38 ESG factors and companies are assigned numerical scores ranging from 0 to 100, as well as ratings (relative performance metrics) (EIRIS, 2011).

2.3.12 Asian Sustainability Rating (ASR)

The Asian Sustainability Rating (ASR), launched in 2009, is a measurement instrument for environment, social, and governance (ESG) established by Responsible Research and CSR Asia. ASR evaluates publicly accessible information from the top listed firms in 10 Asian nations and gives investors, companies, and other stakeholders with an assessment of these companies' strategic sustainability. The ASR process is based on percentage from 0 to 100 with a collection of 100 unique sustainability indicators, which are divided into four ASR classifications: general (19 indicators), environment (21 indicators), social (32 indicators), and governance (26 indicators), which covers reporting on the main areas of ESG risk (Kothari, 2004).

2.3.13 Calvert social index

The Calvert social index is one of the most well-known indicators of businesses that are socially and ecologically acceptable. Calvert looks for companies that "are good corporate citizens today" and "will remain leaders tomorrow". If these businesses fulfill specified screening requirements, they are then evaluated for inclusion. Calvert's assessment criteria include the following: governance and ethics, workplace, environment, product safety and impact, international operations and human rights, indigenous peoples' rights, and community relations. Calvert focuses on more particular problems of concern within each of these categories. Calvert has created a thorough social screening method to assess if businesses fulfill the required social requirements. Calvert's social research section collects information about the businesses in their universe through a number of publications, both general and industry specific. Calvert researchers supplemented this material with direct interactions and interviews with business management, data from environmental and social regulatory bodies, and contacts with activist groups. The data obtained from all of these sources are utilized to assess whether or not the companies satisfy the social requirements (Doh, 2010).

Table 2.1 the summary of different ratings and indices

	ESG RATERS	history	coverage	Number of indicators	scale	Country of origin
1	**FTSE4Good index**	launched in 2001 by the FTSE Group	over 7,200 securities in 47 Developed and Emerging markets.	3 pillars 14 themes Over 300 indicators	0 to 5	United Kingdom
2	**ASSET4**	history going back to 2002	over 6,000 companies globally	3 pillars 10 categories 178 indicators	0 to 100 or D- to A+	Canada
3	**Trucost**	Founded in 2000	covers more than 4,500 companies on international markets (including emerging markets)	20 environmental and social impact methodologies	0 to 100	United Kingdom
4	**Innovest**	Founded in 1992	-	5 strategic areas	AAA to CCC	United States of America
5	**KLD (MSCI ESG STATS)**	Founded in 1988	over 8,500 companies	7 key areas 80 indicators	0 or 1	United States of America
6	**Dow Jones Sustainability Index (DJSI)**	Launched in 1999	largest 2500 companies across 60 industries in the S&P Global BMI	13 criteria Approximately 80 sub-criteria	0 to 100	United States of America
7	**MSCI ESG indices**	Dating back to 1999	over 8,500 companies	3 pillars 10 categories 35 indicators	AAA to CCC	United State of America
8	**Sustainalytics**	Founded in 1992	cover 4,500 companies	70 indicators	0 to 100	Netherland
9	**Bloomberg**	Launched in 2008	More than 11,500 companies globally	3 pillars 18 categories 120 indicators	0 to 100	United State of America
10	**SAM**	Founded in 1995	nearly 2,000 companies	74 criteria	0 to 100	Switzerland
11	**EIRIS**	Founded in 1983	covers around 4,800	38 criteria	0 to 100	France
12	**Asian Sustainability Rating (ASR)**	Launched in 2009	universe of 3,000 publicly listed companies in Asia	4 categories 100 indicators	0 to 100 percent	Singapore
13	**Calvert social index**	Established in 1976	-	16 criteria	0 to 5	United States of America

2.4 Literature highlights the problem of the heterogeneity of measures

Previous studies have revealed a lack of solidarity between the three aspects when measuring or reporting CS. Lozano and Huisingh (2011) pointed out the insufficient integration of sustainability factors in reports due to the separate analysis of each component. Antolin et al. (2016) in their comparative analysis of the most widely used corporate sustainability performance measurement tools (KLD, DJSI, UNGC, GRI, ISO 26000 and B-Corp) in the period from 1995 to 2014 highlighted that CSPM tools do not comprehensively integrate the three aspects of sustainability, as most ratings include only a modest number of economic elements compared to the environmental and social dimensions. For example, only the DJSI provides a more comprehensive set of economic indices. They also concluded that there is divergence in the categorization of the three dimensions of CS, particularly in the social and economic dimensions. While there seems to be agreement on what constitutes environmental aspects, the boundaries between social and economic aspects are sometimes confused. For example, concerns such as preventing corruption and bribery could be classified as social and/or economic. There are also differences in how variables are described and quantified. For example, when assessing an element CS, most instruments continue to use absolute indicators (such as the number of tons of recycled materials used) rather than relative indicators (such as the percentage of recycled materials used). Finally, they observed that several important elements of CS, such as poverty alleviation in the social dimension and biodiversity in the environmental dimension, are rarely recognized as sub-dimensions in most CSPM instruments.

Gibson et al. (2019) methodologically examined the degree of disagreement among ESG rating providers (Thomson Reuters, MSCI, Sustainalytics, KLD, Bloomberg, FTSE and Inrate) for S&P 500 companies between 2010 and 2017 in their study of the relationship between different ESG ratings and stock returns. They calculated the standard deviation of available ESG ratings from these seven data providers for a given company at a given point in time to calculate the discrepancy of ESG ratings. They calculate the discrepancy measures for the overall ESG rating as well as for the E, S and G pillars individually. They note that the overall correlation for ESG ratings is 0.45. They also measure the average correlation between providers for the E, S, and G, which are 0.46, 0.33, and 0.16, respectively. Remarkably, the average correlation is lowest for governance and highest for environmental rating because of less consensus among providers about the most essential issues which are important in the social and governance dimensions, and

a poor understanding of how to measure these issues. They argue that larger firms as a result of complexity and firms without credit ratings due to less transparent information tend to have more inconsistencies, while more profitable companies have better convergence in their ESG ratings because they have greater resources to develop and report their ESG strategies.

The wide range of results puts into question the use of ESG methodologies and ratings. Berg et al. (2019) methodically evaluated the assessment of 709 indicators by six different ESG rating agencies (KLD (MSCI Stats), Sustainalytics, Vigeo Eiris (Moody's), RobecoSAM (SP Global), Asset4 (Refinitiv), and MSCI IVA). They discovered that the average correlation between scores is 0.54, with values ranging from 0.38 to 0.71. This means that the information provided by ESG rating agencies to decision-makers is generally inconsistent and the following are three significant outcomes: First, ratings are frequently based on what companies are willing to reveal, depending on insufficient and often contradictory data. As a result, the appropriate assignment of ESG ratings in the market is challenging or even unattainable. Second, it is difficult for companies to improve their reputation and sustainability, as one ESG rating may show that the company is among the best, while another ESG rating may say something completely different. Finally, differential scoring creates a problem for empirical research because the selection of one rater against another can influence the data and conclusions of a study.

In sum, their study identifies three sources on the divergence of ESG ratings:

1- Different scope of categories (a condition in which ratings are based on many sets of an attribute, for example, the majority of rating agencies take into account companies water consumption but only some include lobbying activities).

2- Different measurement of categories which is the major cause of rating divergence (means a situation in which rating agencies use various indicators to measure the same attribute, for example, the proportion of women on the board or the gender pay gap in the workforce might be used to quantify the attribute of gender equality).

3- Different weights of categories (occurs when rating agencies disagree on the relative value of attributes, for instance, If a rating agency worries more about GHG Emissions than Electromagnetic Fields, it will give different weights to both).

Chatterji et al. (2016) investigated the convergence reliability of CSR ratings from KLD, ASSET4, Innovest, DJSI, Calver and FTSE4Good and found that the CSR scores of these six raters are not consistent, which is due to the lack of similar theorization and proportionality in the ESG domain. According to Chatterji et al. (2016), users of these ratings should exercise caution when evaluating the CSR performance of organizations based on these data. They conclude that because of these differences "SRI ratings will have a limited impact on driving rated firms toward any particular shared behaviors". Furthermore, doubts are expressed about the reliability of ESG scores, resulting in valuations with low validity.

Due to the lack of a uniform definition, reporting requirements and similar characteristics between ESG components and between rating providers, ESG measurement is somehow ambiguous. ESG ratings are generated from different and challenging definitions. As a result, there is no single definition of ESG, making a company's sustainability difficult to measure. These findings highlight the need to increase the consistency and quality of ESG metrics through improved data quality and openness in the underlying screening processes in order to increase their relevance for the investment decisions of financial analysts. Reliance on low-quality and inaccurate ESG performance data can weaken internal accountability by limiting managers' ability to track progress. It will also exacerbate information asymmetry by sending inaccurate and incomplete signals to outsiders.

2.5 Research question

Corporate sustainability reporting tools play an important role in informing stakeholders such as investors, business academics, executives and governments about company financial performance as well as guiding them when selecting corporations based on their sustainability performance. Assessing and releasing information regarding business sustainability is critical for progress toward global sustainable development goals. Companies should coordinate their strategy, as well as monitor and manage their contributions to these objectives (SDG Compass, 2015). In the European context, significant recent efforts toward transparency about business sustainability issues have been taken. The European Parliament's Regulation 2014/95/EU, commonly known as the non-financial reporting directive, establishes the standards for larger firms' disclosure of non-financial and variety of information (European Parliament, 2014). The Directive allows

businesses a plenty of flexibility when it comes to disclosing this information. As a result, businesses may consider utilizing one or more reporting frameworks from a wide range of options, including national frameworks.

The variety of corporate sustainability reporting instruments, as well as the discrepancies in assessment, adds uncertainty and complexity to academics and practitioners' understanding of how to assess CS. We still do not know which elements or sub-dimensions should be taken into consideration when calculating the economic, social, and environmental dimensions of CS. This means that managers are still deprived of practical information about how to report for their CS impacts and evaluate the outcomes of the CS activities they have implemented. Nevertheless, managers are expected to analyze and evaluate all their total CS performance (Schaltegger and Burritt, 2005), and to do so, they require sufficient instruments that give them with an integrated perspective of CS to support strategic planning toward their sustainability goals.

Therefore, this thesis aims at responding to two questions:

- Is there consistency among different compound measures of corporate sustainability proposed by the most used secondary databases in academic researching (such as ESG Scores Thomson Reuters Eikon, Sustainability, Trucost, among other)?
- How does (in) consistency affect financial performance?

Conclusion

To summarize, ESG rating providers are the most commonly applied methods for internal and external users to monitor firms' CS actions. Each provider employs their own approach and criteria. As a result, it raises two key questions that will direct our research and lead to the development of hypotheses.

CHAPTER 3

ESG RATINGS AND FINANCIAL PERFORMANCE

3.1 Introduction

Stakeholder theory is a prominent concept in study on social, environmental, and sustainability management (Montiel & Delgado-Ceballos, 2014), and an aggregate of diverse perspectives (Gilbert and Rasche 2008) that has arisen from many perceptions and implications ranging from corporate social responsibility and business ethics to strategic management, corporate governance, and finance. The link between ESG ratings and financial performance can be addressed using stakeholder theory. For exploring the compatibility of stakeholder theory and sustainable management, the key concepts of stakeholder theory must be addressed. As a first phase, a concise definition of the term stakeholder is required.

This chapter will explain stakeholder theory and classification, as well as its importance to corporate financial performance. Then we will explore the signaling and screening theory. Lastly, based on these theories we will develop our primary hypothesizes.

3.2 stakeholder theory definition and classification

The great majority of studies employs Freeman's (1984) definition that “stakeholders are any group or individual who can affect or are affected by the achievement of the organization's objectives"(Freeman, 1984, p. 46). Furthermore, stakeholder theory states that meeting the needs of all the stakeholders such as customers, suppliers, investors, creditors, employees, government, communities and others who have a stake in the organization, apart from shareholders, is the optimal way for a company to succeed (Freeman, 1984). Stakeholders are defined by Clarkson (1995) as a group with a stake, ownership, or interest in an organization’s activities. Stakeholder theory can be interpreted in a variety of ways, and the term “stakeholder” might represent various groups. Donaldson and Preston (1995) label these varieties as the descriptive (it describes the organization's stakeholder management procedures); the instrumental (it highlights how stakeholder engagement may help a business achieve its goals); and the normative (it establishes guidelines for how firms should behave, particularly in terms of moral values). Stakeholder theory, according to Smallman (2004), is an augmentation of the agency theory perspective since

corporate boards' duties have expanded from safeguarding merely shareholders' needs to preserving all other stakeholders' needs. Meaning that, the restricted agency theory emphasis on shareholders has shifted significantly, and now it supports the wellbeing of other engaged stakeholders who are involved in sustainability challenges and CSR (Freeman, 1984).

The stakeholder concept is used to evaluate the groups for whom a company should be accountable and which stakeholders consider to be the most important. Multiple stakeholder groups engage with a corporation, as mentioned by Mitchell et al. (1997) that the Freeman (1984) s' definition is so wide that it gives a plethora of stakeholders group. As a result, there is a need to set a classification on stakeholders.

Managers are unable to respond to an infinite number of stakeholders. As a result, a corporation will adapt to those stakeholders who are considered to be more essential. To do that, organizations can apply a stakeholder classification to evaluate and analyze significant stakeholders' interests, positions, and usefulness. This enables managers to communicate more productively with vital stakeholders and ensure the organization's outcomes. Freeman and Reed (1983) distinguished between narrow and wide stakeholder definitions. The narrow definitions emphasize groups that are critical to the organization's survival and successes including customer, employees, certain suppliers, key government agencies, shareowners, certain financial institutions, as well as others are all stakeholders in the narrow sense of the term. Any group or individual who can affect or is affected by the corporation is included in the wide definition such as public interest groups, protest groups, government agencies, trade associations, competitors, unions, as well as employees, customer segments, shareowners, and others are stakeholders, in this sense. Additionally, stakeholders can be labeled as active and passive types. The term "passive" refers to a group "whose stake does not depend on their being positively and voluntarily involved in the company's activities, but only on their interests or rights not being harmed by the company's activities", while active stakeholders are" those parties who are positively and voluntarily involved in the company and are committed to it in some way, whether as investors, customers, suppliers or employees, and whose interests are to be identified as relating to some sort of reciprocity with the company and some return to them on the part of the company for what they do in regard to the company" (Mahoney 1994, p. 217).

According to Clarkson (1995), these groups can be split into primary and secondary groups. "A primary stakeholder group is one without whose continuing participation the corporation

cannot survive as a going concern. Primary stakeholder groups typically are comprised of shareholders and investors, employees, customers, and suppliers, together with what is defined as the public stakeholder group: the governments and communities that provide infrastructures and markets, whose laws and regulations must be obeyed, and to whom taxes and other obligations may be due" (Clarkson,1995, p. 106). "Secondary stakeholder groups are defined as those who influence or affect, or are influenced or affected by, the corporation, but they are not engaged in transactions with the corporation and are not essential for its survival. The media and a wide range of special interest groups are considered as secondary stakeholders under this definition" (Clarkson, 1995, p. 107).

One of the highly cited stakeholders' classifications refers to Mitchell et al. (1997) who classify the stakeholder base on three key attributes: power, legitimacy and urgency. Power states, the extent to which the stakeholders have or can gain access to coercive, utilitarian, or normative means to impose their will; legitimacy means "a desirable social good, that is larger and more shared than merely self-perception and that may be defined and negotiated differently at various level of social organizations"; urgency implies "the degree to which stakeholder claims call for immediate attention". Based on 27 definition of stakeholders Mitchell et al. (1997) classified stakeholders as dormant stakeholders (they have the power to force their goals, but they lack legitimacy and urgency), discretionary stakeholders (they have legitimacy, but not the power to impact the organization, and their needs are not viewed as urgent), demanding stakeholders (they have urgency needs, but they lack power and legitimacy), dominant stakeholders (they have power and legitimacy, and they have an influence on the entity, also their needs are not considered as urgent), dependent stakeholders (they have a sense of urgency and legitimacy, but they lack power), dangerous stakeholders (they have power and a sense of urgency, but they lack legitimacy. They are classified as dangerous since they have the ability to exert pressure), definitive stakeholders (They have all the attributes) and non-stakeholders (they have none of the attributes).

Following to Mitchell et al (1997)'s approach, Mainardes et al. (2012) present a model of stakeholder classification as well as a framework that defines the organization's interaction with key stakeholders. They established a categorization of stakeholder including: regulator, controller, partner, passive, dependent, and non-stakeholder. They employed empirical data and factor analysis to determine whether stakeholders are 'only influenced,' 'influence and influenced,'

'do not influence,' and 'are not influenced.' Regulatory stakeholder states that the stakeholder has influence on the organization, while the organization has none or very little influence. The term "controller stakeholder" means that both the organization and the stakeholder are influenced by each other; but, the stakeholder's influence on the organization is greater. Partner stakeholder refers to the fact that the organization and the stakeholder are both influenced in the same way. Passive stakeholder implies that the organization and the stakeholder have an influence on each other; while the organization's influence on the stakeholder is greater. The term "dependent stakeholder" leads to a condition in which the organization has influence over the stakeholder but the stakeholder has none or very little influence. Non-stakeholder results in a situation when the organization and the stakeholder do not have any mutual influence.

In summary, various approaches for categorizing stakeholders based on their relative importance are presented in the literature (an overview of the different classification is given in Table3.1) however, little agreement has yet developed in the academia or even amongst experts who have adopted and implemented stakeholder theory.

Table3.1 Overview of the different classification

source	**stakeholders classification**	**Criteria for classification**
Freeman and Reed (1983)	Narrow and Wide	Stakeholders position
Mahoney (1994)	Active and Passive	Based on stakeholders involvement
Clarkson (1995)	Primary and Secondary	Stakeholders' presence or lack of contractual agreement with the organization
Mitchell et al. (1997)	Dormant, Discretionary, Demanding, Dominant, Dependent, Dangerous, Definitive and Non-stakeholders	Based on three key attributes: power, legitimacy and urgency
Mainardes et al. (2012)	Regulator, Controller, Partner, passive, Dependent and Non-stakeholders	Based on Mitchell et al. (1997) model

3.3 Stakeholders and financial performance

Stakeholder theory has long been used as the foundation for research into the impact of corporate social performance (CSP) on financial performance and company value. This linkage is addressed by looking at how changes in CSP affect financial performance as mentioned in the first chapter of this thesis. This part of the study will describe in detail how stakeholders affect financial performance by considering stakeholder theory.

According to the notion of stakeholder theory, a corporation should provide value for all members of stakeholders, not just shareholders, and all stakeholders benefit from a corporation with a corporate strategy that addresses environmental, social, and governance factors. In the literature on stakeholder theory, it is widely accepted that, meeting stakeholders' interests (Donaldson and Preston, 1995; Freeman, 1984) and maintaining a good relationship with all types of stakeholders (Barnett and Salomon, 2012; Orlitzky et al., 2003; Roman et al., 1999) improve the firm's financial and economic success as well it boosts a company's reputation (Castro et al., 2016; Lin et al., 2016; Perez and Bosque, 2015). In addition, through effectively focusing on stakeholders' requirements, firms obtain a competitive advantage by creating additional, complementary capabilities that rivals find extremely difficult to replicate (Russo and Fouts, 1997). Furthermore, a lack of stakeholder orientation has a detrimental impact on the firm's success (Frooman, 1997).

An important component of stakeholder theory is instrumental stakeholder theory, which emphasizes that proper management of interactions with key stakeholders may help organizations enhance their economic performance by forming, improving, or preserving relationships that provide considerable resources (Donaldson and Preston, 1995).

Frooman (1997) proposes a model for how stakeholders utilize resources to affect corporate decision-making mechanisms in businesses. Primary stakeholders directly affect business strategies by preventing or restricting these enterprises' access to resources, whereas secondary stakeholders indirectly impact firm strategies by establishing alliances with other influential actors who can actively impact enterprises.

Hillman and Keim (2001) look at how stakeholder management affects shareholder value. They claim that improving relationships with primary stakeholders improves shareholder value. In their study based on resource-based view (RBV) of the firm, they identified stakeholders as

valuable, unique, inimitable, and non-substitutable resources that help the firms achieve and maintain a competitive advantage. Improving relation leads to customers will boost their desire for the firm's products or pay a premium for products (Brown and Dacin, 1997); employees will put in more effort to improve the firm's efficiency (Dutton, Dukerich, and Harquail, 1994); Suppliers will become more ready to collaborate with the company on knowledge transfer (Dyer and Singh, 1998); and finally builds a good corporate reputation. It is well established in the literature that a firm's reputation is a critical factor in enhancing financial success (e.g., Aguilera et al., 2007). In reality, customers who associate with a favorable brand reputation develop loyalty, which leads to value creation over time (Roberts and Dowling, 2002).

By contrast, stakeholders' negative perceptions of the organization can result in a variety of outcomes, including lawsuits, revenue losses, greater financial risk, and an increase in the cost of debt (Lange and Washburn, 2012). For instance, stakeholders may choose to pursue legal action against the corporation. Customers may cease buying the company's products, suppliers may stop supplying them, governments may impose financial penalties, and shareholders may sell their shares as a result of the loss of trust.

3.4 ESG rating as a signal for stakeholders

A firm with a high ESG score is less risky and generates more profits. In other word, engaging in ESG actions that match stakeholder perspectives will improve a company's image and increase its value. Especially, having a higher ESG rating contributes to greater financial performance through lower agency costs, which is mediated by stronger stakeholder relation (Clark et al, 2015). Additionally, internal management practices that improve as a result of ESG disclosure can lead to better connections with a variety of stakeholders who do business with such organizations (Dhaliwal et al., 2011; Vilanova et al., 2009).

Despite stakeholders demand evidence on a firm's sustainability performance, it is an implicit idea that cannot be immediately evaluated by stakeholders. (Hawn and Ioannou, 2016; King et al., 2005). As a result, stakeholders must depend on accessible but imprecise signals to decide whether to support a particular business. ESG rating providers are one of those signals where stakeholders can estimate a company's level of sustainability performance.

Moreover, because of quantity and quality of data varies, stakeholders find it challenging to assess the firm's environmental performance. As a result, many stakeholders are dependent on ESG rating agencies to get a vital knowledge of how corporations implement ESG into their activities. Nowadays, an entire sector of ESG rating providers that produce these scores has evolved, and stakeholders such as investors and managers are rapidly incorporating these assessments into their decision-making measures, presuming the measurements are accurate (Dorfleitner et al., 2015). ESG rating providers use their own research methodology to evaluate businesses and measure corporate sustainability performance.

On one hand, stakeholders expect higher transparency from firms on their environmental activities and when incorporating ESG ratings into an investing assessment, it is vital that the obtained information is reliable in order for it to create value, but on the other hand, as mentioned in the section 2.4(the problem of the heterogeneity of measures)due to the lack of a uniform definition, reporting requirements and similar characteristics between ESG components and between rating providers, ESG measurement is somehow ambiguous. ESG ratings are generated from different and conflicting definitions. As a result, there is no single definition of ESG, making a company's sustainability difficult to measure. If there is a considerable discrepancy in the information collection procedure and the quality of the information, it might lead to costly decisions on the part of stakeholders.

3.5 Signaling and Screening theory

According to signaling theory, if there is an information asymmetry between two parties, one of the parties' attempts to alleviate the information asymmetry by communicating trustworthy information to the other side (Spence, 1978). Connelly et al. (2011) defined signaling theory as "useful for describing behavior when two parties (individuals or organizations) have access to different information. Typically, one party, the sender, must choose whether and how to communicate (or signal) that information, and the other party, the receiver, must choose how to interpret the signal." In accordance with a basic communication channel, signaling theory consists of four components: signaler, signals, receiver, and feedback. From the business perspective, executives, directors or managers serve as a signaler while the signals are financial and non-financial reports. Alternatively, outsiders who are unaware of the insider information are

called receivers (individuals, investors, employees). The feedback is a reflection of the signalers and receivers interactions. The signaler and receiver are the main characters in the signaling mechanism, and the signals communicate positive or negative information to optimize information asymmetry. In this study, signalers are supposed to be ESG rating agencies, whereas stakeholders are assumed to be receivers.

Screening theory is based on signaling theory and emphasizes on what receivers do after receiving a signal, such as how they look for and analyze signals to better interpret it (Connelly et al., 2011). From a screening theory approach, Gomulya and Mishina (2017) indicate that "when the credibility of the signaler is compromised, stakeholders may shift their relative reliance to signals that are less susceptible to errors and manipulations because signaler credibility affects signals differently" (p. 579). Moreover, when conventional differentiators of business quality are insufficient, Sanders and Boivie (2004) propose that investors relied on additional sources of information to screen and classify firms.

Researchers and practitioners have used signaling theory and screening theory to determine the impact of information asymmetry in a variety of academic environments. Scholars recognize and underline the important interaction of screening and signaling theory as two sides of the same coin when players engage in unclear circumstances with asymmetric information. While some scholars argue that signaling theory and screening theory are "counterpart" or even called them as "twin theories" (Riley, 2001; Weiss, 1995), others make a distinction between the two theories (Gomulya and Mishina 2017; Bergh et al. 2020).

Unlike signaling theory, which relies on senders' choices about which signals to send, screening theory is concerned with the differential significance receivers place on underlying quality filters (Berghet al., 2020, Connelly et al., 2011). Screening theory is "the mirror image of signaling theory—it differs from signaling in the assumption of which party moves first" (Sanders and Boivie 2004: 169). Meaning that, the signaler is the first mover in signaling theory, whereas the receiver is the first mover in screening theory.

According to signaling theory, managers can minimize or moderate information asymmetry between the organization and its stakeholders by sharing voluntary information through multiple channels (Spence, 1978; Connelly et al., 2011). As shown by this theory, companies are driven to provide positive information about their CS practices and sustainability reports in order to

demonstrate to stakeholders their commitment to sustainability (Wang et al., 2018); as a result, companies may affect stakeholders' perspectives, gain a competitive advantage, and improve their corporation reputation which, in turn, may have an impact on company performance.

To examine the effects of ESG disclosure on financial performance, signaling theory can be applied since ESG providers should operate as a signal of a company's sustainability-related commitment.

3.6 Hypothesis

By reviewing the literature in previous sections, two main hypotheses are proposed. In the first stage, we state the relevant research questions based on the literature review in section 2.4 of this study: Is there any divergence between ESG rating agencies? As a result, we developed the first hypothesis as it follows:

HYPOTHESIS 1: A divergence exists between ESG ratings.

We develop our second research question to shed more light on the relationship between divergence in ESG ratings and financial performance. Hence, our second research question state: is there any relationship between divergence and financial performance? To propose our second hypothesis we employ stakeholder and signaling theory which are mentioned in section 3 of this study. Therefore, we state our second hypothesis as:

HYPOTHESIS 2: Divergence between ESG ratings negatively affects financial performance.

Conclusion

Over the last few years, obligations to disclose non-financial statements (e.g., Directive 2014/95/EU) have resulted in corporate sustainability reporting tools such as ESG rating agencies playing an important role in supporting all stakeholders about the condition of enterprises. In other words, ESG rating agencies are responsible for evaluating and measuring a company's sustainable action and transferring a transparent, accurate, consistent, and high-quality signal to all stakeholders. However, due to a lack of consistency among ESG providers in terms of assessment methods, scope, and scales, rates are confusing and divergent. As a result, not only is there ambiguity about ESG activities, but there is also information asymmetry for all stakeholders.

Chapter 4

RESEARCH METHOD

4.1 Introduction

This chapter will explore the sample selection procedure, providing correlation model for determining the divergence of ESG scores and the description of variables utilized. The attention is particularly on giving the researcher with a thorough knowledge of the relevant judgments taken, assuring the transparency and credibility of our research. First, we detail the sample selection method, which resulted in the final dataset that we used. Second, we will provide different measurements to test our first hypothesis by using pairwise correlation in year 2018 and also longitude perspective from 2014 to 2018. Lastly, we will explain the findings.

4.2 Sample selection

The sample selection is based on European and North American listed companies with more than 500 employees in a 7-year period from 2014 to 2020. We chose this period because of the NFRD (Non-Financial Reporting Directive) (Directive 2014/95/EU), which necessitates large listed companies, banks, and insurance companies with more than 500 employees to publish reports on the policies they implement in relation to: environmental protection, social responsibility and employee treatment, respect for human rights, anti-corruption and bribery, and diversity on company boards (in terms of age, gender, educational and professional background). As a consequence, we have more data and information, leading in more reliable findings with better precision and strength. We use secondary data to analyses the relation since the research involves variables and statistics for major European and North American organizations that would be difficult to collect in any other ways. We rely on data from two different ESG rating providers: Refinitiv (Asset4 from Thomson Reuters ESG) and KLD (originally called as Kinder, Lydenberg, Domini & Co).

Refinitiv provides ESG data on over 9,000 listed companies including many of the primaries, global and some regional indices like MSCI World, MSCI Europe, STOXX 600, NASDAQ 100, Russell 1000, S&P 500, FTSE100, ASX 300 and MSCI Emerging Market. In addition, Refinitiv

offers takeover defense profiles on more than 11,000 public companies with more than 12,000 Poison Pill "Events". Data is manually collected and audited by ESG specialists based on publicly available sources such as company websites, annual reports and corporate social responsibility (CSR) reports. Refinitiv has in-depth coverage across 450 ESG data points back to 2002. It also provides more than 17 years of history on over 2.5 million officers and director, representing 1.9 million unique people, from 50,000 public and 150,000 private companies. Refinitiv offers standardized and comparable ESG data thus solving one of the greatest challenges in using this information. The data analysts capture the data as reported by the companies together with the link back to source and then standardize the values in common units across all companies. Full detailed transparency is provided by detailed information links to each data point. Refinitiv covers 10 main themes including Resource use, Emissions, Innovation, Work force, Human right, Community, Product responsibility, Management, Shareholders and CSR strategy. These were grouped in three dimensions (Environmental, Social, and Governance) and combined into a single total score. Kinder, Lydenberg, Domini Research and Analytics created the KLD database in May 1990. KLD joined the Morgan Stanley Capital International (MSCI) RiskMetrics Group in the late 2000s, and its methodologies for measuring businesses' ESG performance continue to impact investing decisions. MSCI KLD collects strength and concern ratings (positive and negative indicators) in seven key areas: community, Governance, Diversity, Employee Relations, Environment, Human Rights and Products, using approximately 80 indicators. In addition to the seven sub-dimensions, KLD gathers controversial business concerns for firms, such as alcoholism, gambling, tobacco, firearms, military, and nuclear power which we decided to ignore them. KLD uses data from sustainability report of companies, financial statements, surveys, academic journals, and government reports to measure performance across the seven primary areas. Such data gathering techniques ensure that there are no choice biases, as businesses with poor sustainability performance may not freely submit their sustainability issues. The KLD sample does not provide an average score, despite the fact that it is widely utilized in academic research in aggregate form. The KLD data collection only included binary indicators. We calculated an aggregate rating for KLD by summing up all strengths and deducting all weaknesses, as is done in most academic research (Lins et al. 2017). The total number of observations in the sample based on KLD which are retrieved from WRDS (Wharton Research Data Service) and Refinitiv downloaded from Thomson Eikon Reuters are 8022. Table 4.1 demonstrates the distribution of companies per year.

Table4.1 Firm sample distribution per year based on KLD and Refinitiv

Year	Freq.	Percent	Cum.
2014	1146	14.29	14.29
2015	1146	14.29	28.57
2016	1146	14.29	42.86
2017	1146	14.29	57.14
2018	1146	14.29	71.43
2019	1146	14.29	85.71
2020	1146	14.29	100.00
Total	8022	100.00	

4.3 Measurement of divergence

We exhibit the degree of disagreement among two rating agencies to test our hypotheses. At the first level of differentiation, each rater selects to split the term of ESG performance into several indicators, which are then presented in different levels. For example, Refinitiv has three dimensions (Environmental, Social, Governance), and KLD has seven (Community, Governance, Diversity, Employee Relations, Environment, Human Rights and Products). This could be the first sign of disagreement between ESG rating agencies.

Because the majority of the available data for KLD belongs to 2018, we chose the scores from this year for both raters that have the largest comparable sample. Furthermore, appropriately matching the different datasets is a significant challenge when generating a dataset from numerous sub-datasets. Because there was a difference in the company identifier between two raters, we matched common companies in the same year using two identifiers: RIC (Reuters Instrument Code) and company name. Totally, we acquired a sample of 2045 firms that were matched by both raters in 2018.

Secondly, we estimate the pairwise correlation between two raters regarding environmental factors for matched variables. Pairwise correlation evaluates the strength of the relationship between ratings by looking at each pair of variables separately and includes all observations that contain valid values for that pairs; therefore, low correlations can be attributed to high divergence. To investigate this, we carefully matched the same sub-categorize in the environmental component for both raters in the same years with the same company. To do that we first referred to the title of variable in each sub-categorize for both raters. In case several identical titles matched together, we go through each rater's variable definitions and choose the

most compatible descriptions to make a better match. Additionally, we only investigated E (environmental) pillars because there was no similarity in categorization across two others pillar, S (social) and G (governance), using KLD and Refinitiv. For instance, Bribery, Corruption and Fraud Controversies categorized in social pillars in Refinitiv, while in KLD it has been classified in governance pillars. As a result, we discovered 15 variables for both raters that had the largest overlap. Table 4.2 provides the definition of matched variables between two raters.

Table4.2 Matched variables in Refinitiv and KLD

Variable	Abbreviation	Definition in Refinitiv	Variable	Abbreviation	Definition in KLD
Eco-Design Products	EcoDePro	Does the company report on specific products which are designed for reuse, recycling or the reduction of environmental impacts? - products that have been specifically designed with the goal of being recycled, reused or which are disposed of without negatively impacting the environment - there must be some discussion of environmental concerns during the product design	Beneficial Products and Services(Environmental Opportunities – Environmental Opportunities in Clean Tech)	BenProSerKLD	This indicator is designed to assess how companies are taking advantages of opportunities in the market for environmental technologies. Companies that proactively invest in product and services that address issues of resource conservation and climate change score higher.
Waste Reduction Initiatives	WstRedInit	Does the company report on initiatives to recycle, reduce, reuse, substitute, treat or phase out total waste?	Pollution Prevention(ENV-STR-B: POLLUTION & WASTE – TOXIC EMISSIONS AND WASTE)	PolluPreveKLD	This indicator is designed to assess how companies manage their risk of incurring liabilities associated with pollution, contamination, and the emission of toxic and carcinogenic substances. Companies that have a well-defined strategy, ambitious programs and targets to reduce toxic emissions, and disclosed performance metrics score higher.
Renewable Energy Use	RnewEneUse	Does the company make use of renewable energy?	Clean Energy(ENV-STR-D: CLIMATE CHANGE - CARBON EMISSIONS)	CleanEnergyKLD	This indicator is designed to assess how companies manage the risks of increased costs linked to carbon pricing or regulatory caps. Scores are based on carbon reduction targets and mitigation programs; and carbon intensity over time and vs. peers. Management metrics include efforts to reduce exposure through comprehensive carbon policies and implementation mechanisms, including carbon reduction targets, production process improvements, installation emissions capture equipment, and/or switching to cleaner energy sources.

ISO 14000 or EMS	EMS_Cert	Does the company claim to have an ISO 14000 or EMS certification? - any of the individual site that has the ISO-14001 certification is qualified information - merely stating adherence to ISO 14000 or following ISO 14000 policies does not qualify , certification is required	Management Systems Strength(ENV-STR-G: ENVIRONMENTAL MANAGEMENT SYSTEMS)	EMSKLD	This indicator measures whether a firm has an environmental management system (EMS) in place, and whether it is certified to a third party standard, such as ISO 14001.
Land Environmental Impact Reduction	LndEnvImpRed	Does the company report on initiatives to reduce the environmental impact on land owned, leased or managed for production activities or extractive use? - relevant to companies involved in agriculture, mining & oil and gas - in scope are the information on remediation, reclamation or remediation of disturbed land by operations	Land Use & Biodiversity(ENV-STR-I: NATURAL CAPITAL - BIODIVERSITY & LAND USE)	Land_BioKLD	This indicator is designed to evaluate the extent to which companies may face lost market access or litigation, liabilities, or reclamation costs due to operations that damage fragile ecosystems. Scores are based on policies / programs regarding biodiversity, land use, and community impact. Specific metrics include efforts to reduce land or marine disturbances, increase biodiversity protection, engage community stakeholders.
Policy Water Efficiency	PoliWatEff	Does the company have a policy to improve its water efficiency? - in scope are the various forms of processes/mechanisms/procedures to improve water use in operation efficiently - system or a set of formal documented processes for efficient use of water and driving continuous improvement	Natural Capital Water Stress(ENV-STR-H: NATURAL CAPITAL - WATER STRESS)	NaturCapWatKLD	This indicator is designed to evaluate the extent to which companies may face water shortages affecting their ability to operate, lost access to markets due to stakeholder water conflicts, or higher water costs. Scores are based on water management strategy and targets; water use over time and vs. peers.
Targets Water Efficiency	TrgtWatEff	Has the company set targets or objectives to be achieved on water efficiency? - in scope, are the short-term or long-term reduction target to be achieved on efficiently using the water at business operations			
Climate Change Commercial Risks Opportunities	ClimRiOpp	Is the company aware that climate change can represent commercial risks and/or opportunities? - development of new products/services to overcome the threats of climate change to the existing business model of the company - some companies take climate change as a business opportunity and develop new products/services	Climate Change - Financing Environmental Impact(ENV-STR-K: CLIMATE CHANGE - FINANCING ENVIRONMENTAL IMPACT)	ClimChaFinEnvKLD	This indicator is designed to assess which companies may face potential credit or reputational risks resulting from indirect exposure to the environmental concerns facing borrowers. Scores are based on estimated environmental l risk financing; environmental due diligence process and “green" financing. Management metrics include building ports to mitigate credit risk through integration of ESG risk management policies into company’s overall financing and risk management structures.

4.3.1 Correlation of matched variables

In this section we describe the correlations between the matched variables for Refinitiv and KLD rating agencies. Table 4.3 shows the correlations between both ratings in the environmental dimensions. Correlations of the similar sub-categorize range between 0.11 to 0.56 with p-value of 0.00 for all of the numbers in bold which indicates the correlation between chosen variables are statistically significant. The correlation of the ISO_EMS and EMSKLD are slightly higher than the other correlations. While, we expected a higher correlation between environmental management systems (EMS) indicator among two rating agencies since those variables were among the best-matched factors with the same definition, the correlation indicates only 56% compatibility. The Land_BioKLD and LndEnvImpRed have the lowest correlations with an average of 0.11. It can be concluded, as mentioned before, the low correlations are due to the high divergence.

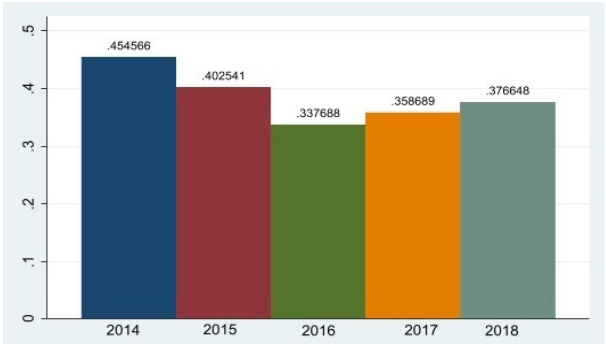
Table4.3 Pairwise correlation of matched variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) BenProSerKLD	1.000														
(2) PolluPreveKLD	0.222	1.000													
	(0.000)														
(3) CleanEnergyKLD	0.184	0.207	1.000												
	(0.000)	(0.000)													
(4) EMSKLD	0.141	0.238	0.323	1.000											
	(0.015)	(0.000)	(0.000)												
(5) Land_BioKLD	0.083	0.099	0.052	0.074	1.000										
	(0.036)	(0.013)	(0.019)	(0.063)											
(6) NaturCapWatKLD	0.264	0.095	0.290	0.189	-0.037	1.000									
	(0.000)	(0.055)	(0.000)	(0.000)	(0.262)										
(7) ClimChaFinEnvKLD			0.582			0.378	1.000								
	(.)	(.)	(0.000)	(.)	(.)	(0.000)									
(8) EcoDePro	**0.222**	0.102	0.243	0.179	0.010	0.096	0.061	1.000							
	(0.000)	(0.012)	(0.000)	(0.000)	(0.645)	(0.004)	(0.392)								
(9) WstRedInit	0.143	**0.150**	0.417	0.362	0.050	0.189	0.344	0.213	1.000						
	(0.000)	**(0.000)**	(0.000)	(0.000)	(0.027)	(0.000)	(0.000)	(0.000)							
(10) RnewEneUse	0.167	0.159	**0.475**	0.324	0.069	0.214	0.409	0.243	0.538	1.000					
	(0.000)	(0.000)	**(0.000)**	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)						
(11) EMS_Cert	0.080	0.173	0.404	**0.558**	0.057	0.129	0.311	0.265	0.440	0.398	1.000				
	(0.052)	(0.000)	(0.000)	**(0.000)**	(0.011)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
(12) LndEnvImpRed	0.125	0.079	0.052	0.045	**0.118**	0.098	-0.020	-0.032	0.186	0.145	0.112	1.000			
	(0.002)	(0.051)	(0.022)	(0.274)	**(0.000)**	(0.003)	(0.776)	(0.161)	(0.000)	(0.000)	(0.000)				
(13) PoliWatEff	0.191	0.127	0.405	0.320	0.069	**0.229**	0.275	0.227	0.580	0.480	0.407	0.260	1.000		
	(0.000)	(0.002)	(0.000)	(0.000)	(0.002)	**(0.000)**	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
(14) TrgtWatEff	0.203	0.161	0.403	0.266	0.050	**0.270**	0.351	0.238	0.304	0.344	0.274	0.080	0.438	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.027)	**(0.000)**	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
(15) ClimRiOpp	0.142	0.092	0.374	0.169	0.041	0.220	**0.409**	0.148	0.362	0.342	0.256	0.206	0.369	0.268	1.000
	(0.001)	(0.024)	(0.000)	(0.000)	(0.069)	(0.000)	**(0.000)**	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

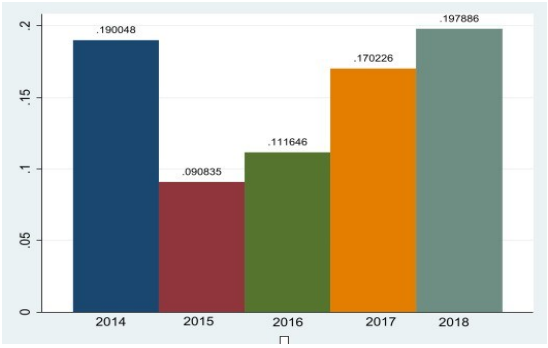
4.3.2 Divergence based on longitudinal perspective

To describe better the level of divergence for both raters in this section we employed the mean histograms of the aggregated E, S, and G scores for KLD and Refinitiv. Since KLD does not provide overall ratings for the E, S and G pillars in the same manner as Refinitiv does, the indicators must be aggregated to establish comparisons. We employed the most common way for KLD aggregated score by subtracting the sum of concerns from the sum of strengths for each of the pillars (Chatterji et al, 2009; Johnson and Greening, 1999; Ruf et al, 2001; Waddock and Graves, 1997). We then normalized the KLD variables to vary between 0 and 1. In addition, we rescaled Refinitiv E, S and G score from 0 to 1. Figure 4.1 illustrates the means of both groups, which comprise all accessible rated companies' scores from 2014 to 2018. Predictably, as discussed in earlier section, the means of the two data sets have no commonality. The E, S and G scores of Refinitiv demonstrate a uniform distribution, while the distribution of the KLD scores exhibits a non-symmetric bimodal, left skew and symmetric bimodal distribution for E, S and G scores respectively.

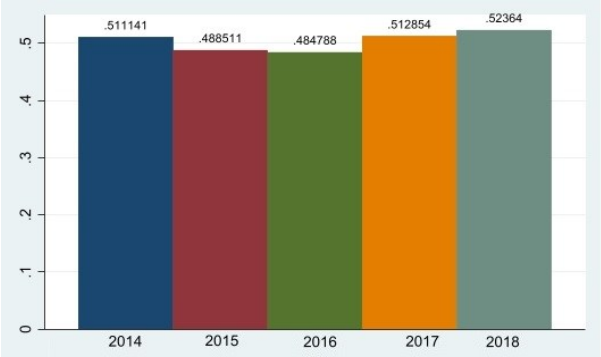
Figure4.1 Mean histogram of E, S and G for Refinitive and KLD



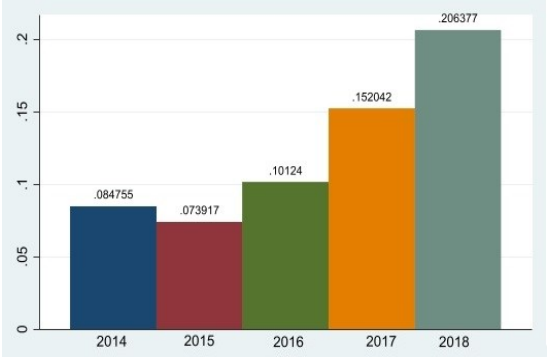
Refinitiv Environment scores



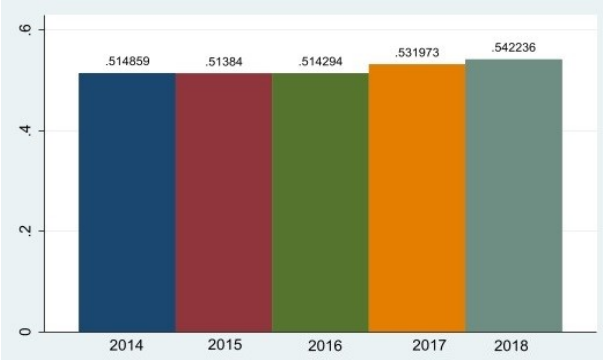
KLD Environment scores



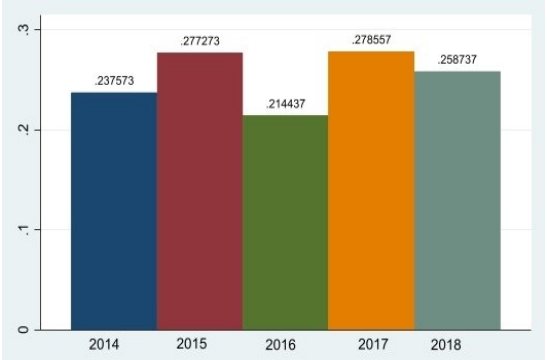
Refinitiv Social scores



KLD Social scores



Refinitive Governance scores



KLD Governance scores

4.3.3 Correlation of aggregated scores

In this section, we have provided additional evidence for better demonstrating the level of divergence between both raters in different years from 2014 to 2018 by taking into account the individually aggregated score that we calculated for KLD using the common method that we mentioned in the previous section. Tables 4.4, 4.5 and 4.6 show the pairwise correlation of aggregated score for both raters in the environmental, social, and governance domains. The correlation coefficient for the environmental pillars has the greatest consistency between the two raters, ranging from 58 percent to 67 percent, whereas the governance component has the lowest correlation and, in some circumstances, is insignificant, such as the correlation in 2014.

Table4.4 Pairwise correlation of E pillars

Variables	EnvREF2014	EnvREF2015	EnvREF2016	EnvREF2017	EnvREF2018
EnvKLD2014	0.588				
	(0.000)				
EnvKLD2015		0.609			
		(0.000)			
EnvKLD2016			0.666		
			(0.000)		
EnvKLD2017				0.656	
				(0.000)	
EnvKLD2018					0.577
					(0.000)

Abbreviations: EnvKLD is aggregated environment score for KLD
EnvREF is aggregated environment score for Refinitiv

Table4.5 Pairwise correlation of S pillars

Variables	SocREF2014	SocREF2015	SocREF2016	SocREF2017	SocREF2018
SocKLD2014	0.397				
	(0.000)				
SocKLD2015		0.407			
		(0.000)			
SocKLD2016			0.392		
			(0.000)		
SocKLD2017				0.530	
				(0.000)	
SocKLD2018					0.492
					(0.000)

Abbreviations: SocKLD is aggregated social score for KLD
SocREF is aggregated social score for Refinitiv

Table4.6 Pairwise correlation of G pillars

Variables	GovREF2014	GovREF2015	GovREF2016	GovREF2017	GovREF2018
GovKLD2014	0.076				
	(0.242)				
GovKLD2015		0.222			
		(0.003)			
GovKLD2016			0.136		
			(0.017)		
GovKLD2017				0.166	
				(0.000)	
GovKLD2018					0.128
					(0.001)

Abbreviations: GovKLD is aggregated governance score for KLD
GovREF is aggregated governance score for Refinitiv

In summary, we have presented different pieces of evidence that support our hypothesis that there is a divergence between Refinitiv and KLD. Firstly, the difference between number of dimensions for each of individual rating agencies (Refinitiv has three and KLD has seven pillars), and secondly, based on the correlation between matched variables. Our results are consistent with Semenova and Hassel (2014), who investigate environmental ratings, Chatterji et al (2015), who examine the convergence of ESG scores between 2004 and 2006, and Dorfleitner et al. (2015) stated that there is a lack of convergence of ESG measuring concepts. Thirdly, we assert the divergence by longitude perspective for both raters in section 4.3.2 which demonstrated different shape for both raters. Finally, by measuring the pairwise correlation among the E, S and G aggregated scores in last section.

4.4 Variables

4.4.1 Dependent Variables

In this study, we have employed two different dependent variables which are widely used in academic literature. These variables are Return on Assets (ROA) and Tobin's Q which are known as accounting-based measure and market-based measures respectively and both measurements cover different aspects of a company's financial performance (Orlitzky et al., 2003). Accounting-based measures such as return on asset, return on equity, operating revenue and return on sale capture historical aspects of a company's performance (McGuire et al., 1986, Scholtens, 2008). Furthermore, they are susceptible to biases due to managerial manipulation and variations in accounting methods. To address the issues of accounting-based measure we have also employed market-based measures in regression. Market-based measures such as Tobin's Q and price per share refer to investors' assessment and perception of firm performance in future rather than past (Akpinar et al., 2008). Market-based measures, on the other hand, may be skewed due to factors such as asymmetric information (Scholtens, 2008).

ROA is a measure of profitability that is frequently employed in financial research since it gives insight into how a firm is performing. It assesses a company's operational efficiency regardless of its financial performance. It illustrates how a firm's profits respond to various managerial approaches, as well as how efficient a firm is managing its assets (Selling & Stickney, 1989). The ROA is derived by dividing its net income by its total assets.

Tobin's Q is a forward-looking performance measurement that estimates whether a firm is overvalued or undervalued based on how the market perceives its operational efficiency and potential to create outstanding financial performance (Tobin, 1969). Tobin's Q is calculated by dividing market capitalization by total assets. A Tobin's Q ratio less than one imply that resources are being used inefficiently, that because the company's market value is less than what its assets should be worth (Aouadi & Marsat, 2018). A score higher than one signals that the capital market perceives the firm to have stronger financial performance than reflected by its accounting records (Hoje & Maretno, 2011).Following previous literature, we lead the variables of one year to consider the lag between publication of ratings and market reaction.

4.4.2 Independent Variables

To measure the divergence score, we created two variables: Positive environmental divergence (PED) score and Negative environmental divergence (NED) score. To measure the PED score, we used the environmental strengths of KLD and Eikon environmental pillar. KLD includes 16 items to evaluate environmental performance and rates them 0 or 1. However, when comparing with our Eikon universe we find many missing data. We sum the 11 strengths with more than 200 available observations. Then, we normalize the sum of strengths on a variable that ranges between 0 and 1. Eikon, instead, provides a unique measure for environmental performance ranging between 0 and 100. In order to allow comparability, we normalize this measure to range between 0 and 1. We finally create the PED score as the absolute value of the difference between the normalized environmental strengths score from KLD and the normalized environmental score from Eikon. NED score uses the environmental concerns of KLD and Eikon environmental controversies score. KLD includes 10 environmental concerns. Compared to the previous case, missing data is not a main issue. We therefore sum the 10 concerns and, following the same steps as described for PED, we normalize the variable to range between 0 and 1. Similarly, we rescale the EIKON environmental controversies score by dividing them by 100. We finally create the NED score as the absolute value of the difference between the normalized environmental concerns score from KLD and the normalized environmental controversies score from Eikon.

4.4.3 Control Variables

Control variables are included in this research to improve the reliability of the results. Other than the independent variable, financial performance as a dependent variable may be affected by other variables (Aras et al. 2010; Harjoto &Laksmana, 2018; McGuire et al. 1988; McWilliams and Siegel 2000; Waddock et al. 1997).

We included control variables at governance-level and firm-level such as: firm size, CEO duality, independent board members score, board size, firm slack, debt ratio (risk), independency, high-polluted industry and region. All variables are derived from the Eikon database from Refinitiv.

The size of the board of directors according to some earlier researchers (Barnhart and Rosenstein, 1998; Yermack, 1996) is a reliable predictor of corporate financial performance. Walls et al. (2012) found that the companies with larger board size performed worse in terms of the environment efficiency. Firms with smaller board size have more efficient control system that prevents firms from overspending on stakeholder management practices. Thus, board size may have an impact on board efficiency and, as a consequence, sustainability and financial performance (Benson et al., 2011). The total number of directors on the board is utilized to calculate board size in this study.

Firm size is taken into account in most studies on the issue of company financial performance (Christensen et al., 2010; Wu et al., 2009). In principle, larger companies dominate small organizations due to economies of scale, because large firms obtain higher operational efficiency, such as more purchasing power and lower expenses (Lee et al., 2013). According to McWilliams and Siegel (2001), a larger business has a larger proportion of human and financial resources. These capabilities can be used for CSR initiatives, which are clearly ample in comparison to smaller organizations. There are various methods for presenting the firm's size; however in this study we used the natural log of total net sales.

Additional factor influencing financial performance is risk (Margolis et al., 2007; McGuire et al. 1988). Waddock and Graves (1997) discovered a significant negative link among risk and business financial performance. CSR is also influenced by risk; organizations with a lower risk level are more investing in CSR initiatives (Margolis et al, 2007). To quantify the company's risk we employed the debt ratio formula which is computed by total debt divided by total asset (Nelling & Webb, 2009; Barnett & Salomon, 2012).

Furthermore, we have utilized CEO duality, firm slack following Cordeiro et al. (2021), firm independency, high-polluted industry and region. Table 4.7 summarizes all variables included in this study.

Table 4.7 Overview of the variables

Variable name	Variable category	Symbol	Definition
Return On Asset	Dependent	ROA	Net Income/Total Assets
Tobin's Q	Dependent	TOBIN	Market Capitalization / Total assets
Positive Environmental Divergence	Independent	PED	Normalized Refinitiv environmental score – Normalized KLD environmental strength
Negative Environmental Divergence	Independent	NED	Normalized Refinitiv environmental controversies – Normalized KLD environmental concerns
Firm Independency	Control	INDEPEN	Logarithm of total debt
Board size	Control	BOARD	number of directors on the board
Independent board members score	Control	INDBOARD	Independent board members score
Firm size	Control	SIZE	Logarithm of total assets
Risk (debt ratio)	Control	RISK	total debt/ total assets
CEO duality	Control	DUAL	1 if chairman also acts as CEO, 0 otherwise
Firm Slack	Control	SLACK	working capital/ sale
High-polluted industry	Control	HIGHPOLL	1 if the firm belongs to the most polluting industries, 0 otherwise
Region	Control	REGION	1 if the firm located in North America, 0 if the firm located in Europe

CHAPTER 5

Empirical results

In this chapter, we present the descriptive statistics for the data used in the regression. Then we explain the identification of the proper regression model for performing our study. Furthermore, the results are presented and interpreted in order to evaluate the hypotheses mentioned in section 3.5.

5.1 descriptive statistics

Table 5.1 provides the descriptive statistics of variables such as means, standard deviations, minimum and maximum values which used in our regression model.

Table 5.1 Descriptive statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
TOBIN	6284	1.416	12.088	0	951.195
ROA	5132	.052	.111	-1.401	5.543
PED	3540	.236	.214	0	.97
NED	3552	.516	.09	0	.75
INDEPEN	7504	20.1	2.55	4.918	27.097
HIGHPOLL	8022	.553	.497	0	1
REGION	8022	.57	.495	0	1
SIZE	6570	20.987	1.795	12.437	26.766
SLACK	6644	22.677	159.426	-537.34	11175.25
BOARD	5114	10.352	3.354	1	33
DUAL	5125	.439	.496	0	1
INDBOARD	5114	54.448	28.717	.13	99.74
RISK	7321	4.818	51.482	0	1996.816

5.2 Panel data test

We began by estimating panel data regression models of Tobin's Q and ROA as a function of PED, NED, and several control variables. We ran multiple pre-tests and made the necessary changes to our models. The Hausman (1978) test was first used to determine the final best-fit model prediction between random-effect and fixed-effect models. When the dependent variable is Tobin's Q, the findings show that a random-effects model is more appropriate than a fixed-effects model (p =0.055 for PED, p=0.124 for NED). When the dependent variable is ROA, however,

the fixed-effect methodology has been applied (p=0.000 for PED and NED). The result are provided in tables 5.2 and 5.3.

Table 5.2 Hausman specification test for Tobin's Q model

	PED	NED
	Coef.	Coef
Chi-square test value	15.222	12.65
P-value	.055	.124

Table 5.3 Hausman specification test for ROA model

	PED	NED
	Coef.	Coef
Chi-square test value	49.19	46.46
P-value	.000	.000

Second, we performed additional tests to look for serial autocorrelation and heteroscedasticity. Using Tobin's Q as the dependent variable, we checked for serial autocorrelation according to Wooldridge (2010), which demonstrates that there is no problem with first-order autocorrelation in our panel data (Prob > F =0.0505 for PED and Prob > F =0.0516 for NED). The Wooldridge test, on the other hand, reveals the problem of autocorrelation for both PED and NED (Prob > F =0.000) when the regression model employs ROA. Third, following estimate, we applied the modified Wald test for groupwise heteroscedasticity using the likelihood-ratio test. The results demonstrate that heteroskedastic difficulties occur exclusively for NED (Prob > Chi 2 = 1.000 for PED and Prob > Chi 2 = 0.000 for NED) in Tobin's Q model, whereas heteroskedasticity problems exist for PED and NED in ROA model. We conduct regressions with robust standard errors to address heteroscedasticity and autocorrelation problems in our models according to Sarzosa (2012).

5.3. Regression model

ROA and Tobin's Q were used as dependent variables in four regression models for PED and NED. The models that test the independent and control variables are shown in table 5.4 and 5.5.

Table5.4 Regression model for Positive Environmental Divergence (PED)

VARIABLES	(1) TOBIN	(2) ROA	(3) TOBIN	(4) ROA
PED			-0.441*	-0.00846
			(0.243)	(0.0109)
INDEPEN	-0.0642**	-0.000990	-0.0477	0.00176
	(0.0275)	(0.00233)	(0.0364)	(0.00242)
SIZE	-0.0939	-0.00275	-0.0631	0.00367
	(0.105)	(0.00327)	(0.0580)	(0.0109)
SLACK	-0.000661	4.21e-05	-4.23e-05	-0.000312***
	(0.000564)	(8.51e-05)	(0.000921)	(9.03e-05)
BOARD	-0.00638	0.00200	0.0467**	-0.000489
	(0.0202)	(0.00129)	(0.0228)	(0.00231)
DUALL	-0.0908	0.0156**	0.105	-0.0236
	(0.0933)	(0.00672)	(0.125)	(0.0156)
INDBOARD	0.000570	-5.65e-06	0.00175	0.000206
	(0.00158)	(0.000118)	(0.00197)	(0.000126)
RISK	-0.000165***	-0.000286	0.000184	0.00214***
	(5.30e-05)	(0.000237)	(0.000598)	(0.000284)
HIGHPOLL	-	0.0136*	0.169	-
		(0.00697)	(0.141)	
REGION	-	-0.0157**	0.208	
		(0.00695)	(0.145)	
Constant	4.696*	0.107**	2.949***	-0.0670
	(2.659)	(0.0516)	(1.007)	(0.233)
Observations	2,921	2,401	1,248	1,058
R-squared	0.006	0.012	0.027	0.081
Number of firms	672	620	545	473

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Columns (1) and (2) table 5.4 show the outcomes of the control variables in regressions with Tobin's q and ROA as dependent variables. The first model regression indicates that only INDEPEN and RISK are statistically significant and have negative impact on TOBIN at 5% and 1% level respectively. The second model shows that DUALL and HIGHPOLL are positively significantly related with ROA, and REGION has a negative impact on ROA. Columns (3) and (4) show the outcomes of the third and fourth model regressions with Tobin's q and ROA as dependent variables. The PED is employed as the independent variable in both cases. The third

model regression supports our second hypothesis that divergence in ESG ratings has a negative impact on financial performance. That is, PED has a statistically significant negative impact on the firm Tobin's q at the 10% level (p = 0.067). The fourth regression model is not statistically significant, but the relationship remains negative. In model (3) the coefficient of BOARD indicates a positive relation with TOBIN at the level of 5 % (p = 0.041). Model (4) indicates the positive relation with control variables such as SLACK and RISK at the level of 1%. We also observe that the R square in Models (3) and (4) is higher than in the models (1) and (2). This shows that the PED as an independent variable better explain the variation in the Tobin's Q and ROA in our sample.

Table5.5 Regression model for Negative Environmental Divergence (NED)

	(1)	(2)	(3)	(4)
VARIABLES	TOBIN	ROA	TOBIN	ROA
NED			0.466***	-0.00394
			(0.172)	(0.00829)
INDEPEN	-0.0642**	-0.000990	-0.0498*	0.00167
	(0.0275)	(0.00233)	(0.0279)	(0.00241)
SIZE	-0.0939	-0.00275	-0.0700	0.00309
	(0.105)	(0.00327)	(0.0602)	(0.0107)
SLACK	-0.000661	4.21e-05	-0.000114	-0.000316***
	(0.000564)	(8.51e-05)	(0.000798)	(9.01e-05)
BOARD	-0.00638	0.00200	0.0510**	-0.000549
	(0.0202)	(0.00129)	(0.0243)	(0.00229)
DUALL	-0.0908	0.0156**	0.115	-0.0234
	(0.0933)	(0.00672)	(0.149)	(0.0156)
INDBOARD	0.000570	-5.65e-06	0.00192	0.000206
	(0.00158)	(0.000118)	(0.00225)	(0.000126)
RISK	-0.000165***	-0.000286	0.000205	0.00210***
	(5.30e-05)	(0.000237)	(0.000259)	(0.000316)
HIGHPOLL	-	0.0136*	0.161	-
		(0.00697)	(0.150)	
REGION	-	-0.0157**	0.264**	-
		(0.00695)	(0.132)	
Constant	4.696*	0.107**	2.709**	-0.0520
	(2.659)	(0.0516)	(1.313)	(0.230)
Observations	2,921	2,401	1,252	1,061
R-squared	0.006	0.012	0.021	0.080
Number of firms	672	620	545	473

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The regression results in columns (1) and (2) in the table 5.5 remain constant as shown in table 5.4. Models (3) and (4) show the findings of the third and fourth model regressions, respectively, with Tobin's q and ROA as dependent variables. The NED is employed as the independent variable in both cases. The third regression model is statistically significant at the 5% level (p=0.017), and the coefficient reveals a positive relationship whereby one unit rise in NED resulting in a 0.47 increase in Tobin's q. When the ROA is a dependent variable, the coefficient of NED implies a negative relation, but the model is insignificant. INDEPEN, REGION and BOARD are statistically significant and showing a positive relation with TOBIN in the third model. Lastly, RISK and SLACK are the only significant control variables which affecting positively ROA in the model 4. The R square for models (3) and (4) are 0.021 and 0.028 which is higher than the first two models and demonstrates that the NED, as an independent variable, explains the variation in Tobin's Q and ROA in our sample better.

CHAPTER 6

6.1 Concluding discussion

We demonstrated that there is a divergence amongst ESG rating agencies using KLD and Refinitiv. This finding was proved by using the correlation between raters at various levels, such as matching comparable factors for both raters in 2018 and using the correlation between raters by examining individual pillars from 2014 to 2018. The findings revealed that the correlation between raters at both levels is lower. The environmental pillars had the most similarities, whereas the convergence for the social and governance pillars was lower. It can be concluded that there is more consensus on the concerns that are essential in the environmental aspect, and there is also greater structured legislation firm-level initiatives to measure these factors. Whereas, the consensus among providers on what the most essential concerns as well as how to assess the true implications of social and governance are less.

In addition, we assessed the impact of these disagreements on financial performance. Although the primary purpose of the measurement systems from rating agencies is to signal stakeholders about the performance of companies in terms of CS, thus affecting financial performance, our findings seem to suggest that these measurement systems do not help reducing the information asymmetries between companies and stakeholders. Our findings suggest that divergence scores significantly impact market-based financial performance (Tobin's Q), indicating that the market is mostly interested in these measurement systems to make decisions. More importantly, our findings suggest that the PED score has a negative significant effect on Tobin's Q whereas NED score has a positive significant effect.

The negative effect of PED score indicates that when rating agencies widely diverge in the way they assess CS, stakeholders are skeptical about these assessment scores, casting doubts about companies' commitment on CS, therefore negatively affecting financial performance. Conversely, the positive effect of NED score indicates that when rating agencies widely diverge in the way they assess CS, the skepticism of stakeholders about the assessment scores helps companies to avoid that scarce levels of CS are seen as a negative signal, thus improving financial performance. In addition, this might indicate that managers' capacity to create better strategies for attaining sustainability is restricted by disagreements on the environmental rating dimension , as a results it negatively affect financial performance .

Our identified positive relationship between Tobin‘s Q and board size is in line with previous researches state that, the benefit of a bigger board size is that the board will have more collective information, and so larger boards will perform better. Moreover, the board is responsible for monitoring, disciplining, and removing poor management groups in order to guarantee that managers seek the best interests of shareholders(Dalton and Dalton, 2005;Guest, 2009). Furthermore, we discovered a negative relationship between firms’ independentness and Tobin's Q, indicating that the more debt a business has, the less likely investors are to invest in enterprises due to the fear of bankruptcy and the high level of interest rate for these firms.

6.2 Contributions

Our thesis adds to CS literature by empirically investigating how the discrepancy among different compound measures affects financial performance. Our findings have significant consequences for rating agencies, investors, corporations and researchers. Rating agencies should strive to offer rates that assist to eliminate information asymmetry. In addition, the existence of solidarity in evaluation and methodology for all raters is required. Corporations should commit to transparently disclosing their CS activities to ESG raters and stakeholders. More importantly, investors should be more cautious when investing in organizations, and they should not rely on a certain rate; instead, it is preferable to examine a firm's corporate sustainability across many ESG rating providers. Researchers must also be more precise in selecting several databases to assess and identify raters, rather than relying on a single rater when attempting to determine the influence of ESG ratings on financial performance.

6.3 limitation and future research

Certainly, there are some limitations to this study that should be highlighted. The first and most important issue is the restriction on access to data. Because access to ESG databases is costly and, in certain cases, requires a subscription. As additional ratings become available, adequate replication studies can assist to demonstrate the applicability of these findings. As a result, it might be a proposal for future study to look into the relationship between divergence and financial performance using more ESG ratings. Furthermore, one limitation of this study is that we only employ environmental pillars in the analysis to explore the influence of divergence on

financial performance. Conducting the same study with all ESG pillars may thus be a topic for future research. Because we only included European and North American public corporations in our data sample, future research might benefit from expanding our study to additional geographies and employing different types of organizations.

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Appendices

APENDIX 1 Industrial Grouping used in panel data

TRBC	Freq.	Percent	Cum.
Aerospace & Defense	154	1.92	1.92
Automobiles & Auto Parts	238	2.97	4.89
Banking Services	868	10.82	15.71
Beverages	49	0.61	16.32
Biotechnology & Medical Research	154	1.92	18.24
Chemicals	259	3.23	21.47
Coal	14	0.17	21.64
Communications & Networking	84	1.05	22.69
Computers, Phones & Household Electronics	21	0.26	22.95
Construction & Engineering	189	2.36	25.31
Construction Materials	49	0.61	25.92
Consumer Goods Conglomerates	42	0.52	26.44
Containers & Packaging	84	1.05	27.49
Diversified Industrial Goods Wholesale	7	0.09	27.57
Diversified Retail	35	0.44	28.01
Electric Utilities & IPPs	231	2.88	30.89
Electronic Equipment & Parts	49	0.61	31.50
Financial Technology (Fintech) & Infrastructure	28	0.35	31.85
Food & Drug Retailing	63	0.79	32.64
Food & Tobacco	196	2.44	35.08
Freight & Logistics Services	161	2.01	37.09
Healthcare Equipment & Supplies	287	3.58	40.66
Healthcare Providers & Services	175	2.18	42.84
Homebuilding & Construction Supplies	182	2.27	45.11
Hotels & Entertainment Services	252	3.14	48.25
Household Goods	28	0.35	48.60
Insurance	378	4.71	53.32
Integrated Hardware & Software	7	0.09	53.40
Investment Banking & Investment Services	224	2.79	56.20
Investment Holding Companies	21	0.26	56.46
Leisure Products	56	0.70	57.16
Machinery, Tools, Heavy Vehicles, Trains & Ships	553	6.89	64.05
Media & Publishing	133	1.66	65.71
Metals & Mining	252	3.14	68.85
Miscellaneous Educational Service Providers	21	0.26	69.11
Multiline Utilities	91	1.13	70.24
Natural Gas Utilities	21	0.26	70.51
Office Equipment	7	0.09	70.59
Oil & Gas	224	2.79	73.39
Oil & Gas Related Equipment and Services	175	2.18	75.57
Paper & Forest Products	77	0.96	76.53
Passenger Transportation Services	77	0.96	77.49
Personal & Household Products & Services	56	0.70	78.18
Pharmaceuticals	175	2.18	80.37
Professional & Commercial Services	399	4.97	85.34
Real Estate Operations	84	1.05	86.39
Renewable Energy	21	0.26	86.65
Residential & Commercial REITs	133	1.66	88.31
Schools, Colleges & Universities	7	0.09	88.39

Semiconductors & Semiconductor Equipment	140	1.75	90.14
Software & IT Services	427	5.32	95.46
Specialty Retailers	126	1.57	97.03
Telecommunications Services	112	1.40	98.43
Textiles & Apparel	56	0.70	99.13
Transport Infrastructure	49	0.61	99.74
Water & Related Utilities	21	0.26	100.00
Total	8022	100.00	