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The impact of ESG on corporate financial performance a study on Italian Utilities: Telecom S.p.A. and ENEL S.p.A.

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Academic Year 2018/2019

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1 Sustainability within the ESG Concept

1.1 Foreword

The Environmental, Social and Governance (ESG) concept is nowadays a crucial aspect for corporations and its positive link to corporate financial performance is of great interest from both an academic and practical perspective.

The term, coined in 2005, refers to a field that has been studied since the early 70's[1], and has represented the focus of over 2000 published academic papers. The most recent studies have argued that a well-defined corporate governance process, coupled with outstanding financial performance achieved through clear organizational processes, can increase investor trust hence facilitating the acquisition of the necessary funds.

Originally Governance matters were not included in ESG discussions therefore, it is necessary to discuss their origins separately.

From a practical standpoint the relevance of ESG for corporations can be measured from an investment perspective, especially considering the Asset under Management (AuM) in Socially Responsible Investments or also Social and Responsible Investments (SRI). The greatest markets for SRIs are the Europe and the US. In the US SRIs almost doubled[1] during the 2012-2014 financial crisis, growing from 2.8 TN $ to 5.5 TN $, whilst in Europe there has been a compounded average growth rate (CAGR) of 52% over the last decade, reaching more than 14 TN $ in 2018[2].

An overview of SRI market volume worldwide is presented in the chart. Values are converted and expressed in BN $.

The following chapter will define different aspects of the ESG concept, with greater focus on governance aspects.

We will start with the historical background relevant to key topic such as sustainability, environmental and social aspects, Corporate Governance and Socially responsible Investments. We will then define the different governance concepts and models that have been adopted across Europe, analyzing in detail the ones that emerged in the UK, Germany and Italy. We will conclude by exploring the convergence of the three factors unified under the concept of ESG.

SRI Market Volume	**2016**		**2018**	
Europe	$	12.040	$	14.075
United States	$	8.723	$	11.995
Japan	$	474	$	2.180
Canada	$	1.086	$	1.699
Australia/New Zealand	$	516	$	734
Total	**$**	**22.839**	**$**	**30.683**

Table 1.

[1] G. Friede, T. Busch & A. Bassen, *ESG and financial performance: aggregated evidence from more than 2000 empirical studies* (2015)

[2] Eurosif, *2018 SRI Study* (2018)

1.2 History and development

1.2.1 Sustainability, Environmental and Social aspects

The origins of the ESG concept, as a unitarian ethical code for corporate behavior, are closely related to the ones of sustainability, which has a far more general and omni-comprehensive character.

Generally speaking, a milestone for environmental issues was the seminal book *The Silent Spring,* written by Rachel Carson in 1962. This book, in Townsend opinion, “gave birth to modern environmental movements” [3]and increased awareness by creating linkages between pollution, water, air plants, animals and people.

“The first definition of sustainability is to be attributed to Mrs. Brundtland who was chairwoman of the World commission on Environment and Development (WCED) in 1987.”[4]

The Report, entitled Our Common Future, also known as Brundtland report, outlines three dimensions of sustainability, which can be identified in the economic, environmental and social dimensions. According to the report “Sustainable development is development that meets the needs [economic, social and environmental] of the present without compromising the ability of future generations to meet their own needs.”[5] This statement has provided an overarching definition of what sustainability implies.

A similar definition and more importantly an ESG reporting framework, for businesses to integrate sustainability within their line of reasoning, was given by John Elkington in 1995 who defines *the Triple bottom line* concept based on 3 P’s: Planet, People and Profit. These concepts, despite one speaking of environmental aspects whilst the other of Planet, both address the environmental impact of firms and the need of preserving quantity and reproduction capabilities of natural resources.

The term social, as the one of People, characterizes social aspects, hence supporting the concept of equality in relation to safety, health and education amongst citizens. Economic aspects and Profit are intended to support the importance of economic viability, guaranteeing earnings and employment for current and future generations. From the author’s perspective the firms able to operate within these three dimensions can have “livable, fair and feasible growth.”[6]

Regarding social aspects of firm behavior and practices, a pioneer of the topic has been Milton Moskowitz, a writer and journalist of the New York Times, who in 1972 compiled and published on *Business&Society* a record of socially responsible listed firms. Moskowitz provided different criteria to rank corporations, such as wages and benefits but also fewer tangible factors such as a company’s vision and opinions about the fair treatment of employees.

On the New York Times Moskowitz wrote: “I do harbor the suspicion that a socially insensitive management will eventually make enough mistakes to play havoc with the bottom line.”[7]

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[3] B. Townsend, *From SRI to ESG The Origins of Socially Responsible and Sustainable Investing,* (2017)

[4] R. Barkemeyer, D. Holt, L. Preuss, Tsang, *What Happened to the ‘Development in Sustainable Development? Business Guidelines Two Decades After Brundtland,* (2014)

[5] World Commission on Environment and Development, *Our Common Future,* (1987)

[6] Sostenibilità e paradigmi service-based: possibilità e criticità per l’economia d’impresa, in “Sviluppo & Organizzazione – Gennaio/Febbraio 2013”, Este, Milano – pag. 46-49

[7] M. Moskowitz, *Why ‘Good Guy’ Funds have Flopped*, New York Times Sunday, (1973)

Another definition that embraces both environmental and social aspect of a firm's ethical behavior, is Corporate Social Responsibility (CSR). Carroll in 1979 describes CSR as follows: "the social responsibility of business encompasses the economic, legal, ethical, discretionary (philanthropic) expectations that society has of organizations at a given point in time."[8]This definition is the foundation of Carroll's pyramid of CSR, which uses a 4-part conceptualization based on the idea that a company has obligations towards society. The economic and legal aspects are coupled with philanthropic obligations, which include ethical and discretionary features. "CSR has been studied for more than four decades. "More than 37 different characterizations of the term have been identified "[9]and the notion of CSR itself is constantly developing. Garriga and Melé (2004) have suggested a classification of the different "approaches into four theoretical categories: instrumental theories, political theories, integrative theories and ethical theories."[10]

Efforts to introduce social and environmental issues within corporate accounting frameworks have been firstly addressed by Joan Bavaria, following the Exxon Valdez oil spill in Prudhoe Bay, Alaska, in 1989. Bavaria formed an alliance with leading environmentalists under the name "Coalition for Environmentally Responsible Economies" (C.E.R.E.S.) and by the fall of the same year Ceres published a set of 10 voluntary principles, commonly referred to as "Valdez Principles". These principles include concerns about the environment, risk mitigation, energy consumption and waste reduction and dismissal, also focusing on the corporation side, addressing the management's commitment, audit and reporting. The Ceres set of principles combined with Elkington's work, paved the ground for establishing the Global Reporting Initiative (GRI) in 1997, which represented a crucial step for Sustainability and ESG, as it provided a fundamental measurement tool. As it is commonly known, "What gets measured, gets managed."[11]The first version of the Sustainability Reporting Guidelines was released in 2000.

A further step for the integration of ESG within corporations was taken the same year as the United Nations released the Global Compact, a non-binding set of ten organizational principles for multinational corporations regarding environmental and social aspects, such as human rights, child labor and corruption. These principles have been adopted by over 10,000 corporations in more than 160 countries. Corporate sustainability starts with a company's value system and a principled approach to doing business. "This means operating in ways that, at a minimum, meet fundamental responsibilities in the areas of human rights, labor, environment and anti-corruption.[…] By incorporating the Global Compact principles into strategies, policies and procedures, and establishing a culture of integrity, companies are not only upholding their basic responsibilities to people and planet, but also setting the stage for long-term success."[12]

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[8] A.B.Carroll, A. Archie, *Three-Dimensional Conceptual Model of Corporate Performance*, (1979)
[9]A. Dalhsrud, *How corporate social responsibility is defined: an analysis of 37*, (2007)
[10] E. Garriga, D. Mele, *Corporate social responsibility theories: Mapping the territory*, (2013)
[11] P. Drucker, *The Practice of Management*, (1954)
[12] United Nations Global compact, *Guide to corporate sustainability* (2014)

1.2.2 Corporate Governance

A common feature of the previous definitions is omitting governance from their frameworks. This concept has progressively been integrated within the ESG analysis by several scholars and nowadays is considered to be the most influential aspect of Corporate Financial Performance. This highlights the need for a separate analysis of the origins of the governance debate.

The first trace of corporate governance [13]can be found as early as in the XVIII book written by A. Smith *The Wealth of Nations*, in which he outlines the divergent interest in managers of operations and owners, stating that being "the managers of other people's money rather than their own would inevitably be lacking of same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company."[14]

Later in history, in the early XIX century, works of Brandeis, Lippmann and Veblen, could also be considered ground-breaking, but scholars typically suggest the publication of 1932 by Adolf A. Berle and Gardiner Means *The Modern Corporation and Private Property* represented the milestone for corporate governance studies.

The research, in which the authors carry out a study on the structure of the share ownership in three of the most important US corporations, brought to two major findings; firstly that the major shareholder owned less than 1% of the shares and that the corporations were tending towards less concentrated ownership structures; secondly and most importantly it highlighted the loss of relation between ownership and control.

The second finding enhances Agency Relation and linked Agency Costs[15]. Agency relation it is intended as the relationship between a Principal and an Agent, with the second that has to perform services on behalf of the first. Maximizing the agent's benefit does not necessarily imply the principal's benefit, hence the starting point of Corporate Governance debates.

With the establishment in the US legislation of limited liability companies (LLC) in XIX century, which sensibly reduced the risk of investing in corporate equity, together with the listing of companies on stock markets, which enabled greater liquidity of investments, caused greater investors interest in equity markets in the early XX century, turning corporations in public companies with broad shareholder base. These mutations exacerbate agency problems and emphasized the crucial role of corporate governance, since the relationship between the maximization of the manager's or entrepreneur's profit and the overall shareholder benefit fails, stressing the need of mechanisms and processes to rule out corporate decision-making.

Corporate Governance assumes a critical role in the American corporate environment starting from the 70's, when the Federal Security and Exchange Commission (SEC), in the role of investor supervisor,

[13] H. Wells, *The Birth of Corporate Governance* (2010)
[14] A. Smith, *The Wealth of Nations* (1776)
[15] M. C. Jensen and W.H. Meckling *Theory of the Firm: Managerial Behavior,Agency Costs and Ownership Structure* (1976)

included the topic in its reform agenda, with the term officially appearing in the Federal Register in 1976. Despite the pressure exerted by frequent accounting frauds perpetrated by entrepreneurs and top management members, the regulation of corporate governance issues such as board composition and fiduciary duties didn't emerge due to the neo-liberal government orientation under the Nixon presidency. In the 80's, sometimes referred to as the "Deal decade", innovative financial and legal techniques increased take-over bids for the control of corporations and the acknowledgment that the role of shareholders, including institutional investors, was not pivotal for corporate decision-making became clear. This issue has been expressed by law Professor Donald Schwartz in his 1983 work, where he states that "shareholder participation is not capable of working well because of its impracticability and because of the rational indifference of shareholders to participation in corporate affairs."[16]

As an economic downturn approached and as the US debt market ferment faded, the merger wave came to an end, allowing the deployment of takeover defenses, mainly through in-court rulings. This determined the legal orientation in common law countries, entrenching external directors' key role as governance players[17], since shareholders started using litigation to stop take-over bids if outside directors' judgment endorsed their opinion.

These rulings determined a first shareholder-oriented governance infrastructure.

Governance discussions in the 90's, where many privatizations took place, became an increasingly central topic at international level. This was caused by financial market integration, more frequent cross-border takeovers, and as Institutional investors gained greater relevance.

Institutional Investors began to exert pressure on companies to change executive pay arrangements in order to replace the traditional biased scheme that replaced "pay-for-size" in favor of "pay-for-performance"[18]scheme. This shift was backed by numerous academics and pension funds lobbied for the simplification of rules that hindered shareholder intervention in corporate affairs, leading to a S.E.C amendment to its regulation allowing them to intervene without previous and onerous filings.

In 1991 the London Stock Exchange, which rules the accounting standards in the UK, established a committee on Financial aspects of Corporate Governance which is also known as the Cadbury Committee, led by Sir Adrian Cadbury from 1992.

The 1992 Cadbury Report marked a turning point for the development of corporate governance and started rapidly spreading across the globe[19]. This code of best practices for good corporate governance was added to the appendix of the Stock exchange listing rules and obliged listed companies to comply with the code's provisions.

Following the code's ruling, Corporate governance is defined as "The system by which companies are directed and controlled. Boards of directors are responsible for the governance of their companies. The

[16] D. E. Schwartz, *Federalism and Corporate Governance* (1983)
[17] J. N. Gordon, *The Rise of Independent directors in the United States,1950-2005: Of Shareholder Value and Stock market Price* (2007)
[18] F. Dobbin and D. Zorn, *Corporate Malfeasance and the Myth of Shareholder Value* (2005)
[19] B. R. Cheffins, *The history of Corporate Governance* (2012)

shareholder's role in governance is to appoint the directors and the auditors and to satisfy themselves that an appropriate governance structure is in place. The responsibilities of the board include setting the company's strategic aims, providing the leadership to put them into effect, supervising the management of the business and reporting to shareholders on their stewardship. The board's actions are subject to laws, regulations and the shareholders in general meeting."[20]

The Cadbury Report identifies three themes to strengthen the unitary board system, firstly the structure and responsibilities of the board of director, secondly the role of auditors and recommendations to the accountancy profession, and thirdly the rights and responsibilities of shareholders.

Facing numerous international accounting scandals and frauds the acknowledgment that such could have been prevented through the improvement of governance processes arose. Scandals such as the Enron case in 2000, the one of WorldCom in 2002 and others at national level, such as the Italian scandal of Parmalat in 2003.

The European Union and the US started governance-oriented rulings, like the Sarbanes-Oxley Act of 2002, which focused on the increase of the disclosure requirements for companies towards their stakeholders, and the 2003 corporate law reform in Italy.

1.2.3 Socially Responsible Investments

A definition of what Socially Responsible Investments (SRI) are has been given by EUROSIF in the last available Report of 2018:

"Sustainable and Responsible Investment is a long-term oriented investment approach, which integrates ESG factors in the research, analysis and selection process of securities within an investment portfolio. It combines fundamental analysis and engagement with an evaluation of ESG factors in order to better capture long term returns for investors, and to benefit society by influencing the behavior of companies."[21]

Considering the history of SRIs it started in the 70's and gained relevance in the USA during the 80's and 90's, but the set of values it reflects in the allocation of assets has various roots, ancient and modern, ranging from the religious doctrine at the very beginning of modern human history, to modern and current social topics, such as social justice, racial equality, women's right, and climate change concerns.

At its beginning, SRIs were firmly opposed by the conventional wisdom academics and industrialists. Milton Friedman, one of the most famous economists of that time, wrote an article on the New York Times in 1970 where he claimed that "the social responsibility of business is to increase profits, to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud"[22], since restricting the stock selection was antithetical to Markowitz's "Modern Portfolio theory" and not

[20] Cadbury Report (1992)
[21] Eurosif, *2018 SRI Study* (2018)
[22] M. Friedman, *The Social Responsibility of Business is to Increase Its Profits*, New York Times 13.11.1970

compatible with the neo-liberal aggressive financial practices. McGeorge Bundy, Kennedy's administration advisor for national security and future Ford foundation president, wrote in 1972 that he wouldn't believe that only the virtuous would make money.

Nevertheless, SRIs started, by tackling an open wound of the time, the Vietnam conflict and the use of Agent Orange, a toxin used by the US Army during that war. The use of this controversial weapon shed light on the horrors of the Vietnam war and the increasing dissent emerging from these episodes forced religious investors to avoid profiting from the war.

In 1971 the Pax World Balanced Fund was established to address this issue and to deliver an alternative investment opportunity for large investors, preventing them from financing the Agent Orange supply chain.

Soon new similar funds appeared on the market. Two renowned funds that embraced the pillars of socially responsible investment are The First Spectrum Fund in 1971, that committed to invest in companies only after having analyzed their environmental and social performance, and the Dreyfus Third Century Fund in 1972, that was funded with 25 million dollars raised from investors such as the Rockefeller foundation and the president of Princeton University. The Fund's prospectus stated that they would only invest in companies which "show evidence in the conduct of their business, relative to other companies in the same industry or industries, of contributing to the enhancement of quality of life in America".

The prospectus suggests an innovative method to be used when analyzing stocks labelled "Best in Class", that rates companies, comparing them with their competitors and not in overall terms. This allows to determine virtuous corporations in industries that have higher environmental or social impact.

In the 80's SRIs standardized their approach, adopting what is commonly known as "negative" or "avoidance screening", building portfolios that resembled the broader market indices whilst avoiding industries such as the ones of alcohol, tobacco, pornography, weapons, gambling and nuclear energy. The approach used today by most SRI investors combines two features, "Best in Class" and "avoidance screening". The negative screening process, which focuses on both entire sectors or specific products, sets an avoidance threshold of typically 5-10% of revenues gained from non-sustainable investments. Any investment that exceeds this threshold is excluded from the investment scenario.

The first capitalization weighted index fund, Domini 400's, based on the S&P 500, was launched in 1990. This funds' performance created a crucial record for the development of SRI, since it could be compared to the performance of the S&P 500's.

A decisive aspect necessary for further development of SRI and the integration of the ESG analysis is represented by the dilemma on whether including ESG valuations in allocation decisions conflicts with fiduciary duties of institutional investors.

To answer this question, the United Nations Environmental Program (UNEP) in 2005 appointed a London based law firm to research if "the integration of environmental, social and governance issues into investment policy (including asset allocation, portfolio construction and stock-picking or bond-picking) is voluntarily permitted, legally required or hampered by law and regulation; primarily as regards public and private pension funds, secondarily as regards insurance company reserves and mutual funds."[23]

Investigating the laws regarding fiduciary duties in seven major developed markets, like the USA, Germany, France and the UK, the Report concluded that including such criteria in the allocation process was coherent with the fiduciary duties. Furthermore, it assessed that not considering ESG analysis would be an underestimation of long-term risks which could result in a breach of the duty itself.

That same year, 2005, Principles for Responsible Investment (PRI) were released by the United Nations at the New York Stock Exchange, aiming to create a network of investors integrating ESG analysis within their allocation process. Hereafter the list of the six principles set out by the PRI:

1. We will incorporate ESG issues into investment analysis and decision-making processes.
2. We will be active owners and incorporate ESG issues into our ownership policies and practices.
3. We will seek appropriate disclosure on ESG issues by the entities in which we invest.
4. We will promote acceptance and implementation of the Principles within the investment industry.
5. We will work together to enhance our effectiveness in implementing the Principles.
6. We will each report on our activities and progress towards implementing the Principles.

Up to date 1,600 asset owners with an AuM of 63 trillion $ became signatories of the PRI principles.

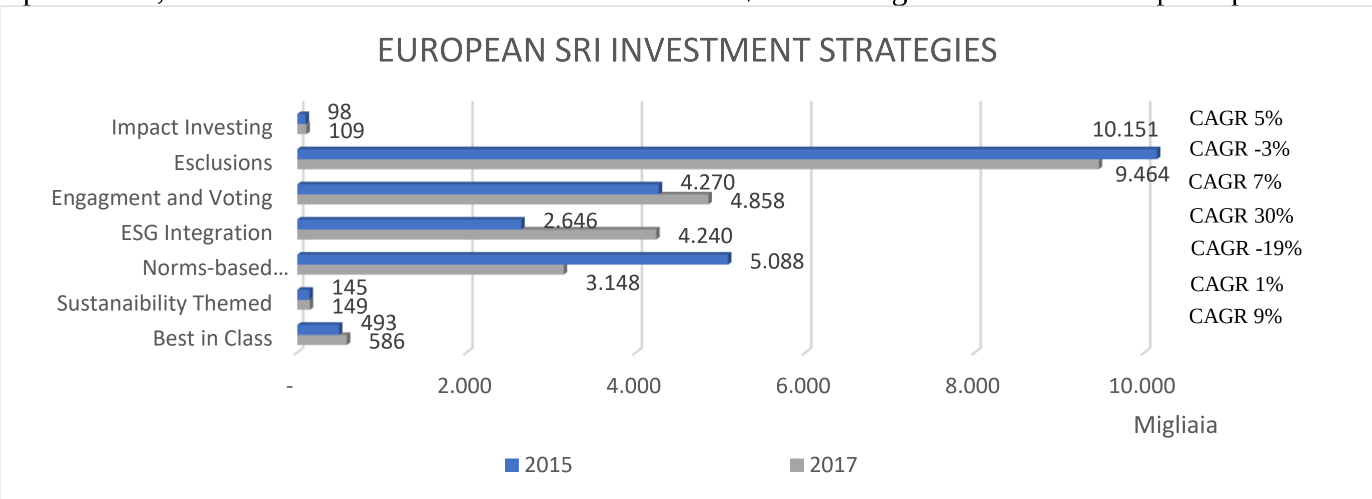

Table 2.

Analyzing the different investment strategies used by SRI investors in Europe allows us to notice that the "Negative Screening" is the most commonly used approach for the allocation of assets, followed by "Norms-based Screening" and "ESG-Integration". Furthermore, by observing the compounded annual growth rates we observe that "ESG-Integration" strategies are the fastest growing Investment strategies.

[23] Unep, Freshfield, Bruckhaus, Drucker, *A legal Framework for the integration of environmental, social and governance into institutional investment* (2005)

1.3 The different Governance concepts and models

Corporate Governance is defined by the Cadbury Code as *"The system by which companies are directed and controlled"*[24], but it is clear that this can't be seen neither as a universal governing system, nor as a single unifying theory.

Idiosyncratic features in corporations and country's corporate environment create fundamental matters that Corporate Governance needs to address promptly according to the system it applied to.

In order to define the first issue, given different ownership structures, a suitable example can be found in the origins of the corporate governance debate, the separation of ownership and control and the resultant Agency relations.

Ownership concentration	**Widely held**	**Family controlled**	**Pyramid control**	**median largest voting block**
France	**60%**	**20%**	**15%**	**20%**
Germany	**50%**	**10%**	**20%**	**57%**
Italy	**20%**	**15%**	**20%**	**55%**
United Kingdom	**100%**	**0%**	**0%**	**10%**
United States	**80%**	**20%**	**0%**	**7%**

Table 3.

This issue, originally studied by Berle and Means in major US corporations, and further theorized by Meckling and Jensen, arises from the disperse ownership structure that US and UK corporations typically present, resulting in all-powerful management, the Agent, operating in conflict with uninformed shareholders, the Principals. In such frameworks the board should control and inform shareholders in order to reduce agency costs and incentivize shareholder participation.

Besides the agency problem between agent and principal, a further problem of corporations in continental Europe and in most of the world is the agency relation between Principals. Here the typical firm listed in the stock exchange has a dominant shareholder. Frequently this will be represented by the entrepreneur himself or his family, controlling the majority of the votes, with quotas that exceed 20% of the equity. Often the controlling shareholder exercises control without owning a large portion of the cash flow rights by using pyramidal ownership, shareholder agreements, and dual classes of shares.

The conflict of interest arising from this situation is spread across shareholders and is known as principal-principal relation.

In this context the board's role is different because it should control the dominant shareholder in behalf of minor shareholders. In order to do so it is fundamental to focus on the structure of the board, ensuring its fairness towards minor shareholders. To avoid bias the board should be composed of numerous independent directors without ties neither to the major shareholder nor to the management.

[24] Cadbury Report (1992)

The second issue has been observed by academics. The Journal of *Corporate Governance an international Review* (CGIR) presents a wide range of theoretical perspectives covering agency theory, institutional theory, stakeholder theory, shareholder value, management hegemony, path dependency and resource dependency, showing that corporate governance is not characterized by a single unifying theory. This demonstrates the holistic perspective that academic researchers have adopted when formulating research questions, the field and specific context in which corporate governance is set.
Scholars have summarized two main streams of corporate governance characterized by the stakeholders taken in account. The first stream often referred to as 'narrow' view dominant in Anglo-Saxon environments refers to shareholder as the only stakeholders in corporations and confers to the board of directors all means to rule out corporate decision-making and monitoring. The second stream considers a broader range of stakeholders, represented by employees, local communities, political actors, or the interest of society as a whole. The 'broader' view considers as governance mechanisms a broader range of internal and external factors, such as the board of directors, compensation schemes for executives, internal and external controls, as well as macroeconomic, political and legislative factors that are crucial for the governance and monitoring of the firm.
The counterpart of these different notions is represented by the different aspects of corporate law, for example the regulation regarding the composition and election of the board and its directors, the publicity of societal documents, the regulation concerning mergers and takeovers, and the legal framework of capital markets.
The adopted Corporate governance approach is closely related to different institutional factors. Therefore, the role of financial markets is crucial for shareholder protection mechanisms.
In Anglo-Saxon environments, where the market has a far more influential role, the control of management operations occurs primarily through market mechanism and secondarily through the board of directors.
These are feasible disciplining tools and lead to more efficient management, given active markets for corporate control and frequent takeovers that require management to perform at its best. This prevents Corporations from being targeted and preserves the manager's role.
In the majority of European countries, the mechanisms for shareholder protection are fewer and financial markets are less efficient. Managers are rarely driven by market mechanisms given the absence of markets for corporate control and fewer takeovers.
In these markets, corporation financing occurs mainly through banking credit and they are often represented in the board of directors. This results in close ties between banks and corporations that prevent them from functioning as a shareholder protection mechanism.
We are now going to discuss three different governance models developed in Europe, analyzing the differences and peculiarities of each one of them.

1.3.1 The United Kingdom Model, One-tier system

The United Kingdom's Corporate Governance system, contrarily to the "tick-box system" contained in the Cadbury Code, is traditionally focused on the Board of Directors and is nowadays governed mainly through the Combined Code. The code provides a list of principles and a brief set of rules to be applied to publicly traded companies. Furthermore, it requires companies to annually disclose if and to what extend they have applied the principles commanded by the code.

In this Governance system the Board of Directors has "universal powers" [25], as it has both management and control functions within the board. Given both management and control functions to the board, a pivotal role is attributed to independent directors. These are members of the board, parallel to directors and executives of the firms, who are though excluded from day-to-day management of the business. All directors have the same powers and duties, being able to take initiative in strategic management decisions and underlying severe fiduciary duties. The code recommends the board to be composed of at least half independent directors excluding the chairman and it also recommends 'CEO duality', which implies the chairman of the board to be an independent director and different from the company's CEO.

The result of this imposed framework creates a strong division between the two functions embodied by the Board, the management function attributed to executives of the firm, while the monitoring function to independent directors' lead by the chairman.

To further improve director's effectiveness with regard to certain crucial purposes, committees separate from Board level should be formed to gain further independence.

Committees typically manage different matters such as the corporate strategy, which is determined by the executive committee. The audit committee is responsible for the financial reporting process while the nomination committee appoints Board members and can support the search of a new CEO. Finally, the remuneration committee is in charge of formulating proposals that are presented to the board for the managing directors emoluments. The code recommends the nomination committee to be composed of a majority of independent directors, whereas the audit and remuneration committees to be entirely formed by independent directors.

1.3.2 The German Model, Two-tier system

The German Corporate Governance system relies on two distinctive and firmly rooted features. The first characteristic is provided by statutory rules requiring mandatory two-tier board systems for all public corporations, formed by a Management Board (Vorstand), responsible of running the business, and a peculiar Supervisory Board (Aufsichtsrat). The second characteristic, so called 'Co-Determination' (Mitbestimmung), is about stakeholder interest, particularly those of employees, who are required to participate in the management of the company, bearing the rights to the appointment of the Supervisory Board members.

[25] K. J. Hopt, P. C. Leyens, *Recent Developments of Internal Corporate Governance Structures in Germany, the United Kingdom, France, and Italy*, (2004)

The tasks of the Supervisory board can be divided into two main groups, its legal functions and important 'soft functions'. The legal functions include appointing and removing members of the Management Board, advising on major corporate decisions[11], and supervising them. The 'soft functions' require members to network with stakeholders and business partners regarding Supervisory board specific topics. Furthermore, the Supervisory Board is responsible for carrying out actions of the company against the management board and its members.

Regarding Board Composition in Germany membership in the Aufsichtsrat is incompatible with coincident membership in the Vorstand, and individuals are not allowed to take up more than ten supervisory board mandates at the time. The *Deutscher Corporate Governance Kodex* requires at least 30% of the Board to be women and to guarantee diversity. Independence is not positively defined by the code, instead a negative definition is given, as not independent members are considered to be "those who have personal or business ties to the corporation, its bodies, a controlling shareholder or an associated enterprise."[26] The disclosure of information regarding affiliated members of the Supervisory Board to the general meeting is recommended but not mandatory and the number of independent board members is not defined, but the amount is required to be appropriate for the ownership structure.

The 'Co-determination' principle, the *Mitbestimmungsgesetz*, is prescribed by law and requires companies with more than 2000 employees to have half of the supervisory board members appointed by employee representatives. Companies with less than 2000 employees (but more than 500) are required to have one third of their board elected by employees. Shareholders are given slightly greater influence through the casting vote of the chairman, which doubles his voting power. Regarding internal controls, the functioning of the German two-tier system is burdened by the exclusion of the supervisory board from day-to-day business decision and by limiting the right of members to obtain information directly from executives, making their judgments on the company's financial performance difficult to develop. The main function of internal committees is the coordination of control and revision by the auditors. External auditors are elected by the general shareholder meeting and serve as a control body for shareholders. These deliver the auditing report directly to the Supervisory Board, triggering an important information flow. Rules regarding the appointment of the auditors are partly deriving from codes, such as the recommendation for the auditor to deliver a statement regarding independence to serve as a basis for the appointment decision, and partly from the law. Examples are provided by the exclusion of auditors that have earned more than 30% of their total revenues in the last five years from the company and by the auditors' mandatory rotation on a ten-year basis.

[26] German Corporate Governance Code (2019)

1.3.3 The Italian Model, the Traditional model

Corporate Governance in Italy has been coded and deeply revised by the Testo Unico della Finanza in 1998[27] and subsequently by the corporate law reform in 2003[28]. The model firstly proposed by the law, referred to as traditional model, is composed of two mandatory boards, the Consiglio di amministrazione (Board of Directors) and a mandatory second Board, the Collegio Sindacale. The Corporate law reform introduced then the option to choose between the Italian model (tradizionale), a one-tier (monistico) or a two-tier (dualistico) Board model.

Within the traditional board model, considered to be the default option, if not specified in the company's statute, the tasks of the consiglio di amministrazione are those of running the day-by-day business and of defining the firm's long-term strategy. The tasks of the Collegio Sindacale are similar to the ones of the German Supervisory Board.

Specifically, the Collegio Sindacale serves as an internal audit device, supervising compliance with laws and regulation of the organizational structure and the accounting framework.

As in the UK the Italian governance system efficiency heavily relies upon the role of independent Directors, that are defined as directors but cannot be simultaneously members in both Boards. The number of independent Directors, as required following the 1998 reform, needed to be adequate to the ownership structure. This requirement was then changed in order to have at least one third of independent members for the Consiglio di amministrazione and the Collegio sindacale to be entirely composed of independent directors, in the corporate law reform.

Governance model	# Corporations	%
Traditional	217	97%
1-tier	2	1%
2-tier	4	2%
Total	223	100%

Table 4.

As shown by the figures in table 2 the number of firms that have adopted board models different from the traditional ones are meager, pointing out the fact that Italian firms seem reluctant to change their governance model.

1.4 Integrated Reporting in Europe

Disclosure of non-financial information regarding social and environmental matters in Europe has been enhanced by the release of the *EU Directive 2014/95/EU,* which has regulated disclosure standards for non-financial information aiming at standardizing Integrated Reporting (IR) across Europe. Next to EU

[27] D.lgs24.02.1998 n.58
[28] D.lg. 17.01.2003 n.5 and D.lgs. 17.01.2003 n.6

other organizations developed reporting standards for non-financial information at a global level, such as the International Integrated Reporting Council (IIRC).

IR is described from the IIRC as "[...]information about an organization's strategy, governance, performance and prospects in a way that reflects the commercial, social and environmental context within which it operates. It provides a clear and concise representation of how an organization demonstrates stewardship and how it creates and sustains value."[29]

The goal of this organization is to provide a framework within which corporations can operate to produce integrated reports indicating most material social, environmental and economic actions, outcomes, risks and opportunities. The ultimate concept of IR is to represent the capital that an organization uses and affects, as well as the value creation over time. This value is embodied in the capitals, also defined as resources and relationship affected by the firm's behavior and processes. The assessment of an organization's ability to create value depends on an understanding of the connectivity between a wide range of internal and external factors in its business model.

The IR Framework organizations depend on six different categories of capitals, which are stores of value that, in one form or another, become inputs to an organization's business model. These are the following: financial, manufactured, intellectual, human, social and relationship, and natural. Value is created or destroyed through the capitals within a company's business, which embodies the chosen system of inputs, business activities and outcomes aiming at creating value over the short, medium, and long term. Since these capitals and their value change over time as they are increased, decreased, or transformed through the activities and outputs of the organization, it is important to understand how these affect the outcomes, which represent the ultimate results of the outputs.

An integrated report is developed around seven elements that define its substance and correspond to the organization's unique value-creation story: organizational overview and external environment, governance, risks and opportunities, strategy and resource allocation, business model, performance, and future outlook. By connecting contents across these elements, an integrated report illustrates the value-creation story from an essential description of the business model through the external factors impacting the business, including management's strategy for dealing with them and developing the business. This offers a basis from which to discuss the performance, prospects, and governance of the business in a way that focuses on its crucial aspects.

Since the intention is to offer a suitable balance between flexibility and prescription, the IR Structure is principle-based rather than rule-based. The idea is to distinguish the wide variation in individual circumstances of different institutes yet enabling a sufficient degree of comparability across organizations to meet the significant information needs. For this reason, the IR Framework doesn't focus on rules for measurement, disclosure of individual matters, or even on the identification of specific key performance indicators (KPIs). Rather, the Framework is driven by Integrated Thinking, which will lead to integrated decision making and execution toward the creation of value. The rationale of this approach is to stimulate

[29] IIRC, *Towards Integrated Reporting, Communicating Value in the 21th Century* (2011)

the active consideration by organizations of the relationships between their various operating and functional units and the kinds of capital that they use and influence. Through the Integrated Thinking promoted by the IR Framework, business organizations are stimulated to focus on the connectivity and interdependencies among a range of factors that have a material effect on their ability to create value over time.

1.5 The convergence of the factors towards a unitary definition of ESG

The concept ESG, as depicted in the previous chapters, has been split in two separated parts. The Governance (G) is referred to how an organization operates and conducts its affairs so that it is best to deliver results, while the Environmental (E) and Social (S) to how the outcomes or impacts it desires into the business environment in which it operates.

These three factors can be merged into a holistic strategic management tool, *"*each offering a different yet complementary perspective on the activities of an organization*."*[30]

The process of consolidating these three concepts within one definition has been mainly influenced by two factors.

Firstly, following numerous accounting frauds and environmental disasters, there has been an increased regulatory pressure for corporate governance and social and environmental businesses. Secondly there has been a growing demand for Socially Responsible Investments (SRI).

Governance is seen as a tool to integrate social and environmental aspects within business strategies and decision-making processes. This is done considering not only shareholder benefits but focusing on a broader range of stakeholders, as demonstrated by Money and Schepers directors "consider a direct link between responsibility and performance and they believe in the fact that a firm cannot achieve enduring shareholder value without creating stakeholder value.*"*[31]

Lastly, using ESG as a strategic management tool serves as a long-term performance driver and offers an efficient risk Management tool that allows executives and boards to maintain and improve reputation, avoiding corporate scandals, as ESG is highly regarded by investors.

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[30] I. Rosam R. Peddle, *Implementing Effective Corporate Social Responsibility and Corporate Governance* (2004)
[31] K. Money, H. Schepers, *Are CSR and corporate governance converging* (2007)

2 The relationship between ESG and Corporate Financial Performance

2.1 Foreword

To better understand the impact of ESG factors on Corporate Financial Performance (CFP) it is appropriate to better define and analyze it.

Generally speaking, performance refers to "how successful or how well something is done."[32] In Corporate milieu it is more complicated to define performance as it can have many facets. Amongst other CFP depends as much from internal factors as from external factors, fact which could generate an overall negative performance despite efforts and actions that would have produced positive CFP otherwise. Time horizon considered by different stakeholders may bias CFP as well, as it can vary from short-term to long-term, achieving positive performance in one horizon and negative in the other.

CFP is defined by Weber as "a composite of an organization's financial health, its ability and willingness to meet its long-term financial obligations and its commitment to provide services in a foreseeable future."[33]

The measurement of a firms' financial performance is mainly based on its financial statements, composed of Balance Sheet, Income statement and Cash Flow Statement, released on a yearly basis.

These documents contain most data needed to determine financial performance. The Balance Sheet depicts the firms' Assets and Liabilities, providing a representation of the firm's financial position at a given point in time. The Income Statements confronts the Revenues with the linked Expenses over a period of time, the bottom line of the Income Statement, called Net Income measures the profitability of the firm. In the Cash Flow Statements overall cash in- and out-flows are presented. This work will take in account the CFP based on the shareholders interest, so considering mainly the share price, determined using following methods

2.2 Corporate Financial Performance

2.2.1 Financial Ratios

Financial Ratio analysis is one of the commonly CFP analysis performed by investors and managers. These are proportions between accounting or market variables, expressed in percentage or comprised between 0 and 1, that compared to a benchmark or to previous measurements, reveal the performance of the company. Financial Ratios are divided in 3 categories upon the set of activities they were generated from, as operating activities, investment activities and financial activities.

According to Fiori, Di Donato and Izzo analyst focus on "five main areas to assess Firms' performance which are: Profitability, Liquidity, Solvency, Financial Efficiency and Repayment Capacity"[34], basing their analysis on the information contained in the Financial Statements and on diverse Market data.

[32] Collins dictionary definition of performance
[33] E. Weber, *A short history of derivative security markets* (2008)
[34] G. Fiori, F. Di Donato and M. F. Izzo, *Corporate Social Responsibility and Firms Performance - An Analysis on Italian Listed Companies* (2007)

We will now discuss commonly used financial ratios for the assessment of financial performance in key areas.
Profitability Ratios are derived from Financial Statement data and represent the ability of a firm to sell their Products at a higher price than the cost of production. Four mainly used Profitability Ratios are so called Gross Margin, Operating Margin, EBIT Margin and Net Profit Margin, differences among them consist in the variables used as proxy for proceeds and costs.
These Ratios depict the efficiency of a firm considering different variables but some of them, as the EBIT and the Net Profit Margin, embed also differences in corporate strategy and financial structure, biasing the comparison among firms.
Liquidity Ratios use Balance Sheet factors to assess the short-term financial solvency of a firm, comparing different classes of assets to current liabilities. Three versions of Liquidity Ratios are the Current Ratio, the Quick Ratio and the Cash Ratio. The Current Ratio compares current assets to current liabilities. The Quick Ratio compares current liabilities to more liquid assets, not considering Inventories among Current Assets. Lastly the Cash Ratio considers as mean to repay current liabilities only Cash and Cash equivalents, as this is the most liquid sort of assets.
Solvency Ratios evaluate long-term solvency of a Firm, confronting total debt obligations, defined as short- and long-term Debts, to Cash Flows or to Total Assets. Furthermore, to assess long-term solvency of a firm Interest Coverage Ratios are often taken in account, as these analyze the ability of a Firm to generate Means, in term of EBIT or EBITDA, to cover interest expenses.
Leverage Ratios express the extent to which Firms' rely upon debt to finance their activities. Leverage Ratios are of three kinds Debt-to-Capital Ratio, Debt-to-Enterprise Value and so-called Equity multiplier. The first compares Total Debt to Capital, as sum of Debt and Equity, the second compares Total Debt to the Enterprise Value the while the third compares Total Assets to the Book or Market value of Equity. The Enterprise Value is computed as sum of Market value of Equity and Net Debt. The Debt-to-Capital Ratio and the Equity Multiplier can be expressed considering Book or Market Values of Equity, as the first is often computed as difference between Assets and Debts, this could result negative not being significant. The Equity Multiplier computed referring to the Book values of Equity is compared to Total Assets which is again a value found in the Balance sheet, while the market version of this Ratio compares the Enterprise value to the Market value of Equity. This value is computed as sum of outstanding shares multiplied by the value of one share.

Profitability Ratios

Gross Margin [28%, 42%, 65%]	$\frac{\text{Gross Profit}}{\text{Sales}}$
Operating Margin [7%, 13%, 22%]	$\frac{\text{Operating Income}}{\text{Sales}}$
EBIT Margin [6%, 12%, 20%]	$\frac{\text{EBIT}}{\text{Sales}}$
Net Profit Margin [2%, 7%, 14%]	$\frac{\text{Net Income}}{\text{Sales}}$

Liquidity Ratios

Current Ratio [1.2x, 1.8x, 2.9x]	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
Quick Ratio [0.7x, 1.2x, 2.0x]	$\frac{\text{Cash \& Short-term Investments} + \text{Accounts Receivable}}{\text{Current Liabilities}}$
Cash Ratio [0.1x, 0.4x, 0.8x]	$\frac{\text{Cash}}{\text{Current Liabilities}}$

Working Capital Ratios

Accounts Receivable Days [32, 49, 67]	$\frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$
Accounts Payable Days [25, 42, 62]	$\frac{\text{Accounts Payable}}{\text{Average Daily Cost of Sales}}$
Inventory Days [24, 54, 92]	$\frac{\text{Inventory}}{\text{Average Daily Cost of Sales}}$

Interest Coverage Ratios

EBIT/Interest Coverage [2.9x, 6.7x, 15.8x]	$\frac{\text{EBIT}}{\text{Interest Expense}}$
EBITDA/Interest Coverage [5.2x, 9.8x, 20.2x]	$\frac{\text{EBITDA}}{\text{Interest Expense}}$

Leverage Ratios

Debt-Equity Ratio (book) [21%, 60%, 121%]	$\frac{\text{Total Debt}}{\text{Book Value of Equity}}$
Debt-Equity Ratio (market) [6%, 21%, 51%]	$\frac{\text{Total Debt}}{\text{Market Value of Equity}}$

Leverage Ratios (continued)

Debt-to-Capital Ratio [18%, 38%, 56%]	$\frac{\text{Total Debt}}{\text{Total Equity} + \text{Total Debt}}$
Debt-to-Enterprise Value Ratio [–4%, 9%, 25%]	$\frac{\text{Net Debt}}{\text{Enterprise Value}}$
Equity Multiplier (book) [1.7x, 2.5x, 4.0x]	$\frac{\text{Total Assets}}{\text{Book Value of Equity}}$
Equity Multiplier (market) [1.0x, 1.1x, 1.5x]	$\frac{\text{Enterprise Value}}{\text{Market Value of Equity}}$

Valuation Ratios

Market-to-Book Ratio [1.6x, 2.9x, 5.5x]	$\frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$
Price-Earnings Ratio [15.7x, 21.6x, 32.6x]	$\frac{\text{Share Price}}{\text{Earnings per Share}}$
Enterprise Value to Sales [1.3x, 2.4x, 4.3x]	$\frac{\text{Enterprise Value}}{\text{Sales}}$
Enterprise Value to EBIT [11.9x, 15.7x, 22.2x]	$\frac{\text{Enterprise Value}}{\text{EBIT}}$
Enterprise Value to EBITDA [8.8x, 11.5x, 15.4x]	$\frac{\text{Enterprise Value}}{\text{EBITDA}}$

Operating Returns

Asset Turnover [0.3x, 0.6x, 1.1x]	$\frac{\text{Sales}}{\text{Total Assets}}$
Return on Equity (ROE) [4%, 11%, 19%]	$\frac{\text{Net Income}}{\text{Book Value of Equity}}$
Return on Assets (ROA) [–1%, 3%, 8%]	$\frac{\text{Net Income} + \text{Interest Expense}}{\text{Book Value of Assets}}$
Return on Invested Capital (ROIC) [7%, 12%, 21%]	$\frac{\text{EBIT } (1 - \text{Tax Rate})}{\text{Book Value of Equity} + \text{Net Deb}}$

Table 5.

2.2.2 Operating Returns Ratios

The main operating return Ratio are the Return on Equity (ROE) and the Return on Invested Capital (ROIC). The ROE measures the return on venture capital or on equity. It therefore offers a measure of the value to consider solely the perspective of ownership or the return that shareholders can obtain for every euro of equity invested in the company.

It is therefore calculated as the ratio of net profit for the year to the amount of equity or risk capital. However, it should be pointed out that the profitability analysis cannot be exhausted once a positive indicator is found, as it will have to 'congruently' remunerate the capital invested by the shareholders. Therefore, a value which is not in line with that of the best alternative investments, i.e. the opportunity cost of capital, is not representative of good business profitability. To better understand and interpret the ROE a decomposition of the ratio is possible. The basic DuPont scheme enables the decomposition of the ratio in different ratios representing different aspects of the firm’s performance, by multiplying and dividing the ROE by Sales and Total Assets. This calculation doesn’t alter the original ratio but represent the Profit Margin, the Asset Turnover and the Equity Multiplier, giving insight about the descent of the ROE.

$$ROE = \frac{Net\ Profit}{Sales} * \frac{Sales}{Total\ Assets} * \frac{Total\ Assets}{Equity}$$

$$ROE = Profit\ Margin * Asset\ Turnover * Equity\ Multiplier$$

The second Ratio, the ROIC, represents the operating profitability measured by the ratio between the result of recurring operations and the amount of capital invested. It provides a measure of the company's ability to generate, through its operational management, hence reflecting its core business activities, higher results than the resources allocated in the process of realization.

Depending on the business, industry or services for example, the EBITDA, instead of EBIT can be used, as it is a result gross of the so-called non-monetary costs such as depreciation, amortization, provisions and write-downs. This neutralizes the effect of the company's capital intensity and depreciation policies and therefore returns with greater accuracy and reliability the ability of industrial management to release resources and thus ultimately the operating performance of the company.

2.2.3 Other Valuation Techniques

Amongst the price and valuation techniques three are the most commonly applied by analysts, which are the Economic Value Added, the Valuation Multiples and the DCF. The EVA indicator represents the company's ability to generate value through the creation of a positive differential between the results produced by the company's operations and the cost occurred to provide itself with the resources to generate those results. A good performance is defined every time the company manages to generate a

return on invested capital greater than the cost of capital incurred or more simply when the return on invested resources is greater than the cost incurred to equip itself with them.
This method of measuring the company's overall performance has been cited several times as a measure of the company's economic value because, once the positive differential flows expected to be achieved over a certain time horizon have been calculated and discounted back to the time of valuation, it is possible to estimate the company's overall economic value with a good approximation. Valuation Multiples are a relative valuation method, that takes advantage of the law of one price, and considers the price and performance of comparable companies to calculate the price of the target company relating it to the target's performance and the ratio of the comparable. The steps to be done to perform this analysis, that usually is used as price range within the price of the company should range, are the selection of the comparables, the calculation of the multiples for the comparable companies and the application of the multiples to the target company. The Market-to-Book Ratio (M/B Ratio) compares the Market Value, calculated as number of shares outstanding multiplied by price per shares, of a company to its Book value of Equity. This ratio indicates the appreciation of investors for the company hence the willingness to pay for the Equity of the target firm. Similarly, to the Market-to-Book Ratio, SimpleTobin's Q, has been used since the early '90s in corporate finance as a proxy of CFP. Originally proposed by James Tobin and William C. Brainard in 1968, as the "the market valuation of equities, relative to the replacement cost of the physical assets they represent, is the major determinant of investment"[35], this method has later been adapted to a commonly used proxy of firm value by researchers an academics, such as Kaplan and Zingales[36], who have proposed the simple version calculated as follows:

$$Q = \frac{Total\ Assets + Market\ Value\ of\ Equity - Book\ Value\ of\ Equity - Deferred\ Taxes}{Total\ Asset}$$

The most commonly used Valuation multiple is the Price/Earnings Ratio (P/E Ratio), which compares the share price to the earnings per share of a company, hence depicting the willingness of investors to pay for the earnings of a company. Other valuation multiples are based on the Enterprise value confronted to different figures, like Sales, EBIT and EBITDA. The most reliable and ultimate model to valuate a firm's value is the Discounted Cash Flow model (DCF). This method is generally the most widespread in the evaluation field and therefore the most common indicator of company performance.
It starts from the assumption that in order to generate value a company must generate cash flows that are higher than the cost incurred for their generation. Cost which is identified in the interest rate used for their discounting back which is generally identified in the WACC, i.e. the weighted average cost of the

[35] J. Tobin, W.C. Brainard, *Asset Markets and the Cost of Capital*. (1977)
[36] S. Kaplan, L. Zingales, *Do investment-cash flow sensitivities provideuseful measures of financing constraints?* (1997)

invested capital, i.e. the financing rate that weighs the incidence of the cost of the internal (equity) and external (debt) sources to the company.

In essence, the DFC method is based on the determination of the present value of the expected cash flows from a specific asset or investment.

2.3 Literature Review

This part will summarize the literature regarding the link between ESG and Corporate Financial Performance. It will start outlining the overall relation and will then focus on the relation between the single factors, Environment, Social and Governance and CFP.

2.3.1 ESG and Corporate Financial Performance

In the past two decades the overall relationship between ESG and CFP has been widely studied. The outcomes of their work are ambiguous and do not unanimously agree upon the positive effects of ESG, even if "roughly 90% of studies find a nonnegative ESG–CFP relation"[37], "outcomes are mostly statistically insignificant."[38]

Starting to examine the theoretical approaches, The Neoclassical theory focuses on the determination of goods, outputs, the distribution of income in markets through supply and demand and the maximization of utility and profits.

"The key actor in this theory is the shareholder, playing two crucial roles for the firm operations. On the one hand these are the ultimate residual claimants on the other providers of the necessary financial resources for the firm's operations."[39]

Within this theory ESG is often seen as an additional cost[40] to company's Profit and Loss (P&L), hence burdening the companies market competitiveness by reducing its Profits[41]. This mechanism is incoherent with the behavior of rational agents preached in the shareholder theory of Milton Friedman, who has strongly opposed ESG and influenced decades of academics. A central lack and criticism to this approach is due to the fact that it essentially "neglects multi-generational economic transfers"[42], concept which is nowadays gaining relevance and is often emphasized as pivotal for the success and the sustainability of businesses.

As there are theories that do not consider ESG positively, there are others that do. These base the value of such efforts in the value of reputation the enhancement and safeguard of it, as this has intangible positive economic value. The economic value is derived from the fact that positive reputation is linked to better quality. Furthermore, the relevance of reputation can be observed in "the relationship with external and

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[37] G. Friede, T. Busch, A. Bassen, *ESG and financial performance: aggregated evidence from more than 2000 empirical studies* (2015)
[38] M. Orlitzky, F. L. Schmidt, S.L. Rynes, *Corporate Social and Financial Performance: A Meta-Analysis. Organization Studies* (2003)
[39] M. C. Jensen and W.H. Meckling, *Theory of the Firm: Managerial Behavior,Agency Costs and Ownership Structure* (1976)
[40] K. Palmer, W.E. Oates, P.R. Portey, *Tightening environmental standards: the benefit-cost or the no-cost paradigm*? (1995)
[41] W. Baumol, *Perfect Markets and Easy Virtue: Business Ethics and the Invisible Hand* (1991)
[42] J. Mariathasan, *ESG's challenge to economic theory* (2019)

internal stakeholders.'[43] Those will be more positively oriented towards the corporation effect which will lead to an increase in capital and resources for the firm. Amongst other internal stakeholders' social efforts will improve employee satisfaction which following Edams findings demonstrate "positive alfas' positively affecting CFP."[44]

Further empirical studies have been conducted by Horváthová, regarding the relationship to CSR, Bebchuk, Cohen and Wang, studying Corporate Governance, and by Eccles, Ioannou, and Serafeim to Sustainability.

The first study suggests an inverted 'U-Shaped' relation between CSR and CFP, stressing out the fact that investing in CSR is profitable as long as the value of the company isn't yet maximized. This relation implies that corporations with high or low CSR efforts perform better than the ones in the central region.

Bebchuk, Cohen and Wang suggest that Corporate Governance produces positive alpha's in periods of low consideration. The more attention is devoted to CG the less the benefit deriving from it, this is tested classifying firms in 2 categories high and low governance scores in different periods of high and low attention and studying the trend over time periods.

Lastly, Eccles, Ioannou, and Serafeim prove that "companies with High Sustainability significantly outperform their counterparts with Low Sustainability scores over the long-term period, in terms of stock market price and accounting performance."[45]The analysis is based upon a sample of 180 US firms classified as high and a matching group of low sustainability companies. The match is done in terms of size, capital structure, operating performance and growth opportunities.

The two graphs show the evolution of 1$ invested in the two portfolios from the beginning of 1993 to the end 2010. The first considers a value-weighted composition of the portfolio, whilst the second an equal-weighted composition.

It can be easily observed that the High Sustainability portfolios outperform the Low Sustainability portfolios, in fact having invested 1$ in High Sustainability portfolios in 1992 would have generated 22.6$ in the value-weighted portfolio and 14.3$ in the equal-weighted portfolio, whereas the Low Sustainability portfolios would have just grown to 15.4$ and 11.7$ respectively.

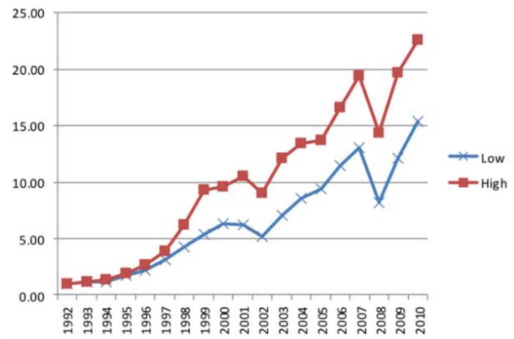

Table 6.

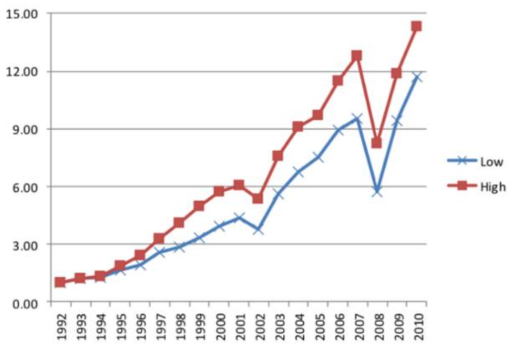

Table 7.

[43] P.C. Godfrey, C.B. Merrill, J.M. Hansen, *The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis* (2009)
[44] A. Edams, *Does the stock market fully value intangibles? Employee satisfaction and equity prices*. (2011)
[45] R. G. Eccles, I. Ioannou, and G. Serafeim, *The Impact of Corporate Sustainability on Organizational Processes and Performance* (2011)

2.3.2 The effect of every sub-factor on CFP

The overall effect of ESG performance is determined by the performance of every sub-factor, Environmental, Social and Corporate Governance, on CFP.

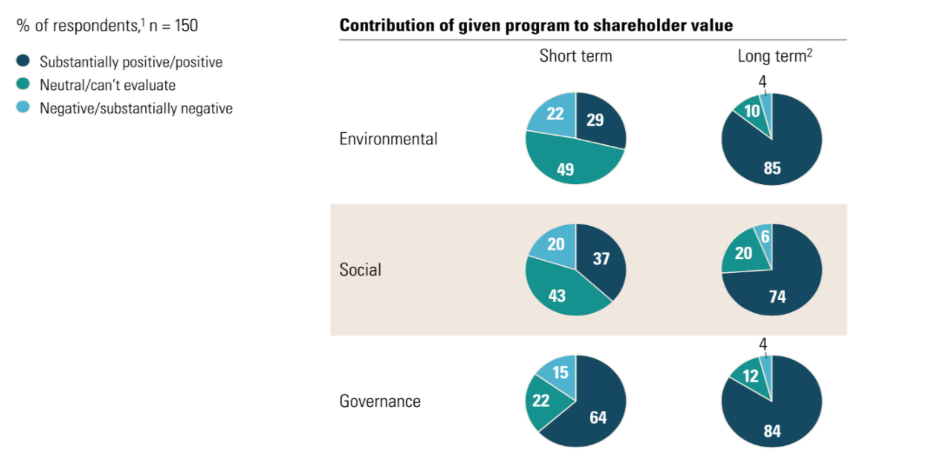

Table 8.

The figures contained in the report from McKinsey *Valuing corporate social responsibility* present the opinion of 150 investment specialists regarding the impact of the different sub-factors in the short and long term. “Respondents do largely agree that environmental and social programs will create value over the long term and that governance programs create value in both the short and long terms.”[46]

The environmental factor is “the subfactor which has the highest number of positive relations to CFP.”[47]

Amongst theories explaining negative correlation there are works from McGuire, Sundgren and Schneeweis and Daszyńska-Żygadło. One of the three arguments exposed in the 1988 article *Corporate Social Responsibility and Firm Financial Performance* by Mcguire et al. is the “view that firms face a trade-off between social responsibility and financial performance”, the other two arguments exposed explain positive correlation, as “the explicit costs of corporate social responsibility are minimal and that firms may actually benefit from socially responsible actions in terms of employee morale and productivity and that the costs of socially responsible actions are significant but are offset by a reduction in other firm.”[48]

Daszyńska-Żygadło perform a study on the relationship between environmental factors and CFP across 10 industries globally. The outcome of the study is a ‘‘statistically negative correlation amongst 8 analyzed industries.”[49]

Theories explaining positive correlation are so-called ‘Event studies’, focusing on returns following events with environmental impacts. Literature from Hamilton and Yadav, Han and Rho moved in this direction. Hamilton in his article published in 1995 *Pollution as news: media and stock market reactions to the toxics release inventory data* studied the impact of EPA results on listed firms on the US stock

[46] McKinsey, *Valuing corporate social responsibility*, (2009)
[47] G. Friede, T. Busch, A. Bassen, *ESG and financial performance: aggregated evidence from more than 2000 empirical studies* (2015)
[48] J. B. McGuire, A. Sundgren, T. Schneeweis, *Corporate Social Responsibility and Firm Financial Performance* (1988)
[49] K. Daszyńska-Żygadło, *Sustainable Value Creation-performance of European Manufacturing Companies*. (2016)

market. His findings are that “investors facing high pollution face negative abnormal returns in average of 4.1 million on the release day of the data.” [50] Yadav, Han and Rho in their 2016 work *Impact of environmental performance on firm value for sustainable investment: evidence from large US firms* presents positive evidence for the willingness of investors to pay for environmental performance.[51]
These studies have been widely criticized for their conceptual base as they are “short term oriented and the effects are limited over longer periods.”[52]
Besides ‘Event studies’ others have performed regression analysis and shown positive correlation between the two factors, for example Dowell, Hart and Yeung and Derwell, Gunster, Bauer and Koedijk for the US market and Elsayed and Paton and Kruger in Europe.
Analyzing the relationship between Social Performance and CFP the analysis of Friede et al. concludes that “studies with a social focus show 55.1% (5.1%) positive (negative) outcomes, hence the weakest relation amongst 644 studies regarding ESG factors.”[53] Studied social factors comprise organizational human resources, human resources management and diversity in processes and boards. Both organizational human resources and human resources management positively contribute to CFP, if they are “integrated in the competitive strategy of the firm.”[54] Diversity is studied by Herring and approached using three different theories which are ‘value-in-diversity’, ‘diversity as a process loss’ and the paradox theory. The first argues that diverse workforce can create better business results with respect to a homogenous one, the second theory depicts diversity negatively suspecting that diversity can harm efficiency and fluent processes, lastly the paradox theory states that diversity generates conflicts which as a result have innovative and better thought business decisions. In his empirical work the author shows that racial and gender diversity both have positive impacts. Diversity at board level has been recently studied leading in most cases to insignificant results, as many studies depict it both negatively and positively.
Governance as stated by Friede et al. is the factor with the most positive and negative relations in their meta-analysis. Approximately 64% of the studies demonstrate a positive relation and 9.2% show a negative relation. The subject has been studied from different perspective and is multifaceted, ranging from internal governance mechanisms to board independence, size and level of debt financing.
The influence of board independence has been studied among others from MacAvoy and Millstein basing their hypothesis on the fact that independent boards will be more incline to act in favor of shareholders.[55]

[50] J. T. Hamilton, *Pollution as News: Media and Stock Market Reactions to the Toxics Release Inventory Data* (1995)
[51] P. L. Yadav, S. H. Han, J. J. Rho, *Impact of Environmental Performance on Firm Value for Sustainable Investment: Evidence from Large US Firms* (2015)
[52] A. McWilliams, D. Siegel, *Event studies in management research: Theoretical and empirical issues. Academy of management journal* (1997)
[53] G. Friede, T. Busch, A. Bassen, *ESG and financial performance: aggregated evidence from more than 2000 empirical studies* (2015)
[54] J. A. Molina, R. Ortega, *Effects of employee training on the performance of North American firms* (2003)
[55] P. W. MacAvoy, I. M. Millstein, *The active board of directors and its effect on the performance of the large publicly traded corporation* (1999)

Their findings are in accordance with this hypothesis. "Excessive board size has been proven to be counterproductive to CFP in the USA and in the UK."[56]

2.4 Interviews

This section will be dedicated to the presentation of interviews conducted with managers, consultants and lawyers that have addressed in corporation's sustainability and ESG issues and topics. The reason for these interviews is to collect their valuable experiences and opinions, hence giving an insight about the perception, value and dealing with such a crucial topic.

Ingegner Francesco Caio, has been consultant at McKinsey, CEO, chairman and board member of numerous listed and private companies, such as Merloni Elettrodomestici, Omnitel, Olivetti and Poste Italiane S.p.A.. Furthermore, he has been supercommissioner of the Italian Digital Agenda.

Claudia Cattani has been for over 30 years consultant in Tax and Corporate law at Deloitte International network and for around 20 years Equity Partner of the same organization. Presently she is chairwoman of the board of directors of Rete Ferroviaria Italiana SpA (Ferrovie dello Stato Group) and chairwoman of the Statutory auditor's board of BNL-BNP Paribas group, as well as board member of quoted companies. Over the years she has been chairwomen and member of many Statutory auditors' boards.

Massimiliano Magrini has been country manager of Google Italia. He is co-founder and managing partner of the Venture capital fund United Ventures. Presently he also sits in the board of directors of OVS S.p.A., Paperlit, Pharmawizard, Faceit, Mainstreaming e Cloud4Wi. Furthermore, through his participation in the Task Force on start-ups of the Ministry of Economic Development, set up by Minister Corrado Passera, he actively contributed to the drafting of the report on venture capital that became law in the Monti Government's Growth Decree.

Livia Piermattei, is Managing and Founding Partner of Methodos Group, also known as *The Change Management Company*, where she works as a management consultant in cultural change focusing on transformation to integrate ESG factors into strategic decisions, governance and business models (Integrated Thinking and Governance). As member of the Scientific Committee of Nedcommunity, the Italian Association of Non-Executive and Independent Directors she coordinates the Reflection Group *Business and Sustainability: New Models of Leadership for Board Members* and the Italian Steering on Climate Change of the World Economic Forum (WEF). With CONSOB Studies Office she produced the Report *Non-Financial Information as a driver of Transformation-Evidence from Italy 2018* and contributed to the CONSOB Corporate Governance Report 2017. She contributed to the publishing of *The Landscape of Integrated Reporting* released by the Harvard Business School coordinated by Robert Eccles in 2010 and is scientific coordinator of *Integrated Reporting: focus on Integrated Thinking. A handbook for the Change Journey* published in 2016 by the NIBR with the premise of the IIRC - International Integrated Reporting Council.

[56] D. Yermack, *Do corporations award CEO stock options effectively?* (1995)

I hereby would like to thank each and every one of them, for their availability and their fundamental and brilliant contribution.

2.4.1 Francesco Caio

1. **According to your personal experience as CEO and board chairman of several listed companies, how do you think the approach of CEOs and boards towards sustainability issues evolved? What are the levers that in your opinion have the greatest impact on management decisions and what are the most effective internal and external mechanisms to ensure the integration of policies that enhance ESG (Environmental, Social and Governance) performance in business strategies?**

   The business community at global level has experienced in recent years a marked growth in awareness of sustainability related topics. Many factors have driven this evolution – from growing evidence of climate change, to shift in sentiment of consumers. But for listed companies in particular, it is the increasing attention that institutional investors are paying to sustainability and ESG in general that is driving Boards' and CEOs'. In 2019 Larry Fink's letter to CEOs was centered on climate change. In it Larry goes as far as stating that climate risk is investment risk. Given the pivotal role that Blackrock pays in the asset management market (Blackrock has almost 7 tn. US $ assets under management) it is fair to assume that to secure access to capital market listed companies will have to very seriously embrace ESG policies and initiatives

2. **Do you think that top management has become aware of the profitability benefits deriving from ESG investments? Over which period (Short-term, Long-Term) and in which area (relationships with suppliers, increased attractiveness of human capital, attraction and customer loyalty and investor relations) do you think that ESG can produce substantial returns and benefits?**

   The change in shareholders' attitude is very rapidly translating into a new level of attention / awareness in boards. But also growing segments of consumers – and communities –now take these aspects into account when making their choices / purchases. In this context I believe companies won't be able to generate long term returns without a well-defined, well communicated and well monitored sustainability strategy. Currently most companies focus – and report – on climate and carbon footprint reduction initiatives; but over time I expect all.

3. **Do you think that the value of non-tangible assets such as ESG investments is understood by investors? How should the company's accounting and reporting system evolve to better**

highlight this sort of investments? Do you think that the lack of attention towards ESG issues represents an underestimation of the risks that a company faces?

Increasingly so (see answer 1). A great deal of effort is still needed though to build a robust, globally adopted reporting system for ESG investments and results. I believe this will represent a major evolution (maybe revolution?) in reporting and accounting systems, standards and procedures and might lead to a profound change in how financial resources are allocated. Watch this space!

4. **The correlation between corporate social responsibility and financial performance has been extensively researched, how do you think this relationship and the awareness towards these topics has evolved in Italy over the last decade?**

As Italians we ought to be aware – and maybe even proud – of a long-established tradition and some world class examples of 'stakeholders 'capitalism in our Country. Adriano Olivetti , Aristide Merloni (and his sons Francesco and Vittorio) , Enrico Mattei - just to name the most famous examples - have all built enterprises – each in his own way – on the belief that long term economic development cannot be sustainably pursued without investing in social development. Italian companies can build – and some are building - on this heritage. A growing number of companies have been publishing corporate social responsibility reports; and as in all other G8 Countries Boards and CEO's awareness on these topics is on the up. The real challenge is how to translate the ESG focus on effective development plans and how to fund them. In many cases in fact adoption of more demanding ESG targets will mean incur in higher costs.

2.4.2 Claudia Cattani

1. **According to your personal experience as board chairman and member of the board of statutory auditor of several listed companies, how do you think the approach of CEOs and boards towards sustainability issues evolved? What are the levers that in your opinion have the greatest impact on management decisions and what are the most effective internal and external mechanisms to ensure the integration of policies that enhance ESG performance in business strategies?**

In the light of my long experience as a business consultant within an important international network, as well as my current role as Chairwoman of Rete Ferroviaria Italiana (RFI) and member of Board of directors and statutory auditors of important public and private companies, I think that in recent years management's approach towards sustainability issues has considerably developed, *moving from a "passive" approach of mere "compliance" with regulations to an "active" approach from a strategic point of view, in order to strengthen the company's competitiveness and create shared value.*

RFI, for example, has always designed and implemented railway investments in compliance with environmental protection and the highest safety standards, guaranteeing an open and transparent comparison with relevant stakeholders. Over the last ten years, however, the company has been a key player, together with the FS Group of which it is part, in a process of acceleration towards the integration of sustainability criteria into industrial activities.

It should be pointed out that for RFI, in light of its publicity nature, the concept of sustainability associated with that of competitiveness is not so much in terms of positioning with respect to competitors, but in terms of creating value for the entire country's system by contributing to Italy's competitiveness.

In my opinion, the greatest impact on management's decisions to enhance the value of business strategies according to ESG criteria originates from: the efficiency of production processes; the improvement of the quality of products/services offered; the development of new products that include sustainability criteria; a better transparency of management and communication systems; easier access to the capital market.

Sustainability, in fact, should be understood both as a holistic and systemic approach to all company dimensions and as an input for the definition of specific environmental and social initiatives and best practices.

Sustainability is one of RFI's strategic key drivers and its mission is to increase the attractiveness and connectivity of the rail network to meet people's and logistic's mobility needs. Among the main areas of action on which the company's current industrial strategy focuses, it should be emphasized the great attention paid to the issue of local public transport where significant investments are expected to increase the capacity of the railway network and improve the quality and reliability of the service, through interventions on urban nodes, regional basins and stations.

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Numerous initiatives have been launched by RFI and Ferrovie dello Stato (FS) Group, to promote and implement the integration of sustainability into business strategies and the establishment of a real "culture of sustainability". Among the main ones, I am pleased to mention:

- in the area of Governance: a Group Sustainability Committee was set up in 2016 to direct strategic choices towards ESG objectives and to increase the effective involvement of top management;

- in the area of Stakeholder engagement: since 2013, the FS Group has been setting up Stakeholder Panel discussions with stakeholders to define proposals for improvement of the Group's social, environmental and economic responsibility.

Initially, the Panels were carried out around single-themed working groups on sector-specific actions involving specific and sector-specific stakeholders, but in the last edition, more wide-ranging stakeholders were involved to share the Group's long-term ambitions from a strategic perspective (e.g. Ministries, European Commission, etc.);

- in the Supply Chain area: in 2017 RFI launched a systematic activity to evaluate supplier performance with regard to compliance with certain sustainability principles (environmental, social, ethical, sustainable procurement), in order to enhance the value of the most virtuous business partners and support greater compatibility between environmental protection, economic growth and social justice. In its role as the country's largest investor, RFI wants to make an increasingly significant contribution to the dissemination of good infrastructure practices according to the highest standards of territorial integration and sharing with stakeholders, and wants to act as a driving force for sustainable transformation of the production logic of the many economic players directly and indirectly involved in its industrial activities: from construction to network maintenance to marketing.

Very important has been the recent decision of the Parent Company FS to require the Group to use external evaluation instruments/bodies, also on international standards, of ESG performance.

2. **Do you think that top management has become aware of the profitability benefits deriving from ESG investments? Over which period (Short-term, Long-Term) and in which area (relationships with suppliers, increased attractiveness of human capital, attraction and customer loyalty and investor relations) do you think that ESG can produce substantial returns and benefits?**

I believe that FS Group managements awareness of the benefits of ESG investments has increased significantly (and this is demonstrated by the growing volumes of sustainable investments both worldwide and in Italy). This awareness, however, does not seem to derive so much from the belief of greater profitability of ESG investments, but rather from the opportunity to attract a new type of investors more attentive to sustainability aspects and more interested in investing in the medium-long term (e.g. pension funds and institutional investors).

In 2017 and 2019 FS Holding issued two green bonds for a total value of approximately €1.3 billion to finance the purchase of new high speed and regional trains with improved energy performance for passenger transport, as well as electric locomotives and eco-efficient wagons for freight. The demand for FS Holding green bonds was very high and far exceeded the supply. It was observed that a significant part of the investors who participated in the auction were investors from the ESG investment sector; this shows how the use of these financing instruments also allows companies to attract new investors and reduce the use of more expensive forms of debt.

3. **Do you think that the value of non-tangible assets such as ESG investments is understood by investors? How should the company's accounting and reporting system evolve to better highlight this sort of investments? Do you think that the lack of attention towards ESG issues represents an underestimation of the risks and benefits that a company faces?**

As I was anticipating, the amount of assets managed according to ESG criteria is growing, which clearly reflects increasing attention of investors who understand the value of this kind of investment in these years of geopolitical and economic uncertainty marked by strong market volatility. Just consider the "letter to shareholders" sent by Blackrock's CEO in which the bank announces that it only wants to invest in companies with good sustainability performance.
I believe that companies that intend to make the most of this form of investment should considerably focus on strengthening the processes of collecting non-financial data, perfecting them so as to guarantee transparency and quality respect to financial data (although this information has less standardised collection processes and requires specific skills), processing and interpretation of the information collected, linking it more and more to the performance of the industrial KPIs, and transparency towards the outside world to guarantee a correct understanding of the information to analysts, shareholders and stakeholders.
This is a process that has been put into practice for years by the FS Group which, long before the regulatory obligations introduced by Legislative Decree 254 of 2016, chose to show its sustainability profile through a specific annual "Sustainability Report".
Overall it is a circular and virtuous process. Being "transparent" requires a strong ability to know how to tell the story, but to tell the story the company must know itself and to get to know one another, it is necessary to measure oneself.

On the other hand, management's lack of attention to sustainability issues can lead to a damaging underestimation of the ESG risks to which the company is exposed. In light of the numerous social and environmental scandals that multinational companies have had to face, it is increasingly clear how these issues, if not governed, can generate a risk for the company not only reputational

but also productive and economic. I believe, in fact, that the attention to sustainability allows companies to better guard against the risks deriving from climate change, from the incremental technological evolution, from the pressing updating of regulations on the subject (e.g. are companies with production processes based on fossil fuels equipped to manage the changes resulting from the imminent energy transition?) Consequently, I believe that the correct assessment of ESG risks is fundamental to set up a strategic planning model that has a complete vision of the company and the risks to which it is exposed.
The FS Group is also an example of good practice in this area: in fact, it has adopted an integrated Enterprise Risk Management (ERM) model, implemented by all group companies including RFI, which is being strengthened through the development of an integrated risk management framework that also includes risks related to the environmental and social sustainability of business activities.

4. **The correlation between corporate social responsibility and financial performance has been extensively researched, how do you think this relationship and the awareness towards these topics has evolved in Italy over the last decade?**

The fact that a clear correlation between financial performance and sustainability performance has not yet been found should not divert attention away from macro effects that are not immediately quantifiable from a financial point of view, but certainly refer to the ability of the company, through the integration of sustainability into the business, to ensure continuity for itself, its employees and its stakeholders over time, adapting to changes in the context.
This is certainly true for companies on the market, including listed companies. But it is even more true for RFI which guarantees services under public concession and makes investments financed by the State whose reason and "profitability" lies precisely in its ability to generate value for the community, the territory and the entire country system.

2.4.3 Massimiliano Magrini

1. **According to your personal experience how do you think the approach of CEO's, boards and investors towards sustainability issues evolved?**

According to my experience CEO's and Board's responsiveness to ESG topics has drastically increased over the last decade, shifting attention towards environmental topics, such as the carbon footprint and the reuse of raw materials. Such topics have become prevailing matters for corporation's long-term sustainability.

In the letter to Shareholder written by L. Fink, CEO of Blackrock, he claims that Blackrock will be "putting sustainability at the center of how we invest", confirming the central role of sustainability topics, for the entire financial industry and industrial network.

2. **Do you think that investors have become aware of the profitability benefits deriving from ESG investments? Over which period (Short-term, Long-Term) and in which area (relationships with suppliers, increased attractiveness of human capital, attraction and customer loyalty and investor relations) do you think that ESG can produce substantial returns and benefits?**

From a Venture Capitalist perspective, I can say that ESG is precondition when it comes to asset allocation. I believe sustainability happens whenever speaking of innovation, and I want to make an example of it, such as Google's datacenters.
These have tendentially negative carbon footprints, as the company has designed and invest in making these sustainable upfront, off-setting the high emissions through renewable energy investments. Furthermore, innovation can often be oriented towards process optimization or sustainable production, as I have seen in my Venture Capital experience.
Recently I have invested in a company XFARM aiming at digitalizing the farming process. Along with the digitalization of the process an improvement in the efficiency of the input materials, such as water and pesticides, used during the process and a rise of the output, as much as 30%, came along. This innovation directly improves the quality and sustainability of such crucial process as the one of farming, necessary for the production of food and for the world's future perspective. This is clear example in which ESG is embedded, not as a "nice-to-have" factor but as the key reason for the innovation to happen.

3. **Do you think that the value of non-tangible assets such as ESG investments is understood by investors?? What are the levers that in your opinion have the greatest impact on management decisions and what are the most effective internal and external mechanisms to ensure the integration of policies that enhance ESG (Environmental, Social and Governance) performance in business strategies? Do you think that the lack of attention towards ESG issues represents an underestimation of the risks that a company faces?**

In my opinion there are three crucial reasons sustaining the integration of ESG factors in management's decisions and in corporate strategy: a) Consumer demand; b) Regulation;
c) Access to financial markets

a) *Consumer demand: Nowadays consumers are increasingly aware of environmental topics (i.g. using recyclable and recycled textiles for clothing or biodegradable plastic for packaging), it is crucial for corporations to seize and adapt their product range in order to embrace customer needs, otherwise there is the tangible risk to lose market shares, not reaching environmental sensitive customers hence threatening their survival chances. Brands like Nike and Adidas represent brilliant examples of the responsiveness to customer desires and needs.*
b) *Regulation: Regulation represents a key driver for the introduction of sustainability within the corporate strategy of firms and the business environment, which requires mandatory reshaping of strategies ad business lines (i.g. restriction to the use of plastic and ban of diesel cars in cities). In the short-term, companies may use opportunistic behaviors, as it has happened with the white certificates for the offsetting of carbon emission in the environment, but for achieving long-term sustainability companies need to drastically change their business, supply chain and investment plans to be fully compliant to new regulation.*
c) *Access to financial markets: As said above regarding Blackrock, access to capital markets for companies not integrating ESG and sustainability issues in their business strategies will be increasingly complicated.*

Taxation can also be seen as a strong incentive to integrate ESG within businesses as this should consider externalities representing a burden or an encouragement for corporations with high social and environmental negative or positive impacts.

4. Do you think that the value of non-tangible assets such as ESG investments is understood by investors??

I will try to answer this question by slightly changing the perspective of the question itself. Rephrasing the question in terms of why the financial industry has so drastically changed its orientation from being profit-centric to caring so much about environmental issues? In my opinion the reason for this shift is to be found at the top of the financial service "food-chain", specifically looking at reassurance companies, which are the key players in the financial community. The role of reassurance companies is to insure the risks of funds and other financial service providers. These have understood, running models to include environmental risks among the observed risks, that the environmental risk represents a huge burden to be covered, which could make reassurance not sustainable in the long-term. This fact has moved from reassurance companies to funds, like Blackrock, which are now including ESG in their allocation decisions, changing their investment strategies.

5. **The correlation between ESG and financial performance has been extensively researched, how do you think this relationship and the awareness towards these topics has evolved in Italy over the last decade?**

In Italy we have gained acknowledgement of the impact of ESG related topics on the country system, but we have not implemented the economic and financial counteractions to make it effective, in order to achieve long-term sustainability.
As an example, we could consider the so-called "motor-valley", in which many suppliers of the car industry are located. The diesel-ban and the transition to Electric Vehicles will take many of the suppliers out of business if these don't adapt their investment plan, hence change their business. This will cause huge troubles to the industry and to Italy as an economic system as this branch accounts for 20% of the Italian GDP.

2.4.4 Livia Piermattei

1. **According to your personal experience as sustainability consultant, how do you think the approach of CEOs and boards towards sustainability issues evolved? What are the levers that in your opinion have the greatest impact on management decisions and what are the most effective internal and external mechanisms to ensure the integration of policies that enhance ESG performance in business strategies?**

I think that the approach of CEO's and boards are both evolving towards sustainability, even if it is not clear to them, that the real need is to learn how to integrate financial and non-financial criteria into decision making processes, behavior and actions throughout the company. In order to achieve this, I believe the best solution are structured programs that lead to the integration of sustainable strategies and business models. Therefore, the most effective initiatives (those related to culture change management that allow for this acceleration) are still not in sight of many CEO's and boards.

2. **Do you think that top management has become aware of the profitability benefits deriving from ESG investments?**

Yes, but not always. Very often if the priority assigned by Board is still short-term oriented, CEO's behave consequently and do not push towards integration. Hence it is more difficult for them to become aware of profitability or risk mitigation allowed by ESG investments.

3. **Over which period (Short-term, Long-Term) and in which area (relationships with suppliers, increased attractiveness of human capital, attraction and customer loyalty and investor relations) do you think that ESG can produce substantial returns and benefits?**

I would say medium to long term, but for some of the areas you mention (human capital for example in terms of talent attraction and retention given the existing talent war) also in the short term. Same for CX and loyalty.

4. **Do you think that the value of non-tangible assets such as ESG investments is understood by investors? How should the company's accounting and reporting system evolve to better highlight this sort of investments?**

Yes, in my opinion most investors perceive the value of ESG investments. Company's accounting and reporting system should really tend towards integrated reporting, depicting connectivity among different forms of capitals.

5. **Do you think that the lack of attention towards ESG issues represents an underestimation of the risks that a company faces?**

Yes, but mostly the lack of ability to catch additional opportunities to generate value.

6. **The correlation between corporate social responsibility and financial performance has been extensively researched, how do you think this relationship and the awareness towards these topics has evolved in Italy over the last decade?**

Very poorly. Things can accelerate also thanks to efforts like this thesis.

3 SRI Indices

3.1 Foreword

This chapter will discuss SRI stock indices, how the ESG ratings the inclusion decision is based upon and how these are built. The analysis will center around three of the most famous SRI indices. Finally, a brief comparison will be done and an assessment about the credibility of the sources, and validity will be done. SRI indices in general are stock indices, which take in account not only financial criteria such as market capitalization, value and liquidity of a stock, but also consider ESG factors when selecting stocks to be included in the index. The selection process can occur applying two methodologies previously mentioned "negative or avoidance screening" and "Best in Class". SRI indices can be used as benchmarks for the performance of ESG stocks compared to their non-ESG equivalents, as ESG indices usually have their comparable regular Index, regarding geographical, market capitalization and other financial criteria. The return of ESG indices can be useful from an investor's perspective for the valuation of ESG efforts. Furthermore, these indices can be used when evaluating the performance of pension funds or other long-term oriented investors which include sustainability criteria in their investment decisions, since these provide a parameter for the return of sustainable stocks and assets. The comparison of the performance of the two, if properly selected, will show the relative convenience of choosing one investor with respect to the SRI index, which will be less costly not being actively managed.
Nowadays there is a variety of sustainability indices providers, most of the traditional index providers offer their SRI equivalent as well. This is the case of the FTSE4Good index, provided by FTSE Russel, Dow Jones Sustainability Index based on the Dow Jones with the collaboration of the RobecoSAM for the sustainability data part, and various MSCI SRI indices, supplied by MSCI as well as other examples. Ever since the appearance of SRI investment opportunities and SRI indices the performance of sustainable investments in general has been questioned. Unlike the performance of SRI funds, the performance of SRI indices has not been subject of many studies. Hereafter a short literature review.
The first study reviewed *Is there a difference? The performance characteristics of SRI equity indices* written by Michael Schröder in 2007, studied the performance of 29 SRI indices, ranging from country to global oriented indices. At first linear regression analysis then, multiple regression has been applied, to determine the relative performance of the indices with respect to their benchmark. The outcomes of the study in terms of β (beta) and Jensen's alpha show that the performance has not been significantly better compared to the benchmark, whilst he observed that "many SRI indices have a higher risk relative to the benchmarks. The findings are robust to the use of different benchmark indices and apply to all common types of SRI screening."[57]
The second study considered is *Socially Responsible Indexes: Composition, Performance and Tracking Error* by Meir Statman in 2006. In his study Statman analyses and compares the performance of four

[57] M. Schröder, *Is there a difference? The performance characteristics of SRI equity indices* (2007)

sustainability indices the Domini 400 Social Index, the Calvert Index, the Citizens Index and the Dow Jones Sustainability Index-Us, vis-à-vis to the performance of the S&P 500. The findings of his work show that three out of the four indices have had better performance compared to the benchmark, with greater alpha's, but statistically the results do show significance[58].

Lastly, the 2016 study published by the Teachers Insurance Annuity Association (TIAA) considered five of the oldest SRI indices: Calvert U.S. Large Cap Core Responsible Index, Dow Jones Sustainability U.S. Index, FTSE4Good US Index, MSCI KLD 400 Social Index and MSCI USA IMI ESG Index, comparing them to the Russell 3000 and the S&P 500, in an interval ranging from 15 to 27 years. The outcome of the study showed no statistically significant difference neither in the returns over the long period of the two categories of funds, nor in the risk born by investors, in terms of standard deviation.[59]

3.2 *MSCI Global SRI Indices*

3.2.1 *The Company*

MSCI is an American independent finance company, founded in 1969, serving as financial service provider and advisor for institutional investors. It has more than 40 years of experience in performance and risk measurements based upon academic and hands-on collaboration with clients. Their purpose is "to strive to bring greater transparency to financial markets and to enable the investment community to make better decisions for a better world." Through their research on ESG factors, they provide views, analysis and tools to support investors which consider ESG factors. MSCI is signatory to the United Nations Principles for Responsible Investment (UN PRI). From a company ownership perspective MSCI has been owned until 2007 by only two shareholders which were Morgan Stanley and Capital Group International. In 2009 MSCI became publicly listed, characterized by broad shareholder base. Their expansion and M&A path started in 2004 with the acquisition of Barra, a provider of portfolio risk analytics tools, which allowed the company to expand their product range beyond standard market indices. In June 2010, MSCI acquired RiskMetrics Group, leading provider of risk management, governance products and services owning the Centre for Financial Research and Analysis (CFRA), Innovest Strategic value Advisors, Inc. and KLD Research and Analytics, companies which after being acquired were grouped under MSCI ESG Research.

MSCI ESG Research is Report and Analysis provider in ESG related topics. The same year Measurisk, a provider of transparency and risk measurement tools for hedge fund investors, has been acquired. With clients, as hedge fund managers, demanding increasing levels of transparency, this acquisition helped MSCI to develop an extensive platform and set standards for hedge fund risk analysis and reporting. Then, in November 2012, MSCI acquired the IPD group, which is responsible for measuring the performance of the real estate market. This acquisition helped MSCI expanding the range of investment types by facilitating the integration of private real estate investments into their models, as well as adding a

[58] M. Statman, *Socially Responsible Indexes: Composition, Performance and Tracking Error* (2006)
[59] TIAA, *Responsible Investing: Delivering Competitive Performance* (2016)

family of real estate indices to the already large family of stock indices. Finally, Governance Holdings Co. was acquired in August 2014. (GMI Ratings), a provider of corporate governance research and ratings to institutional investors, banks, insurers, auditors, regulators and corporations seeking to incorporate ESG factors into risk assessments and investment decisions. This acquisition improved the existing ESG research platform and tools, allowing MSCI to distribute a more comprehensive range of ESG products and services to its clients. Overall MSCI provides many sustainability indices, but we will consider only some indices of a series called MSCI Global SRI Indexes: these indices are made up of stocks with the highest ESG ratings usually capturing 25% of the adjusted market capitalization in each sector of the equivalent traditional MSCI index that represents the benchmark, after having excluded companies involved in alcohol, tobacco, betting, civilian firearms, military weapons, nuclear energy, adult entertainment and genetically modified organisms. The family of indices take in account also includes the famous MSCI KLD 400 Social Index, which was launched in May 1990 and was one of the first SRI indices ever created.

3.2.2 ESG Rating Methodology

The following section will focus on the ESG rating process according to the MSCI ESG Research Platform, starting from the sources used by analysts to gather information to base their ratings on. Sources are of three kinds: Macroeconomic data for a market segment or geographical area from academic research, government or non-governmental organization databases; Disclosure by the company itself to be evaluated (through 10-K reports, sustainability reports, proxy reports, results of the annual general meeting (AGM), etc.); Government databases, media, non-governmental organizations, and other third-party sources.

Furthermore, companies are monitored on a systematic and continuous basis, including daily monitoring of any disputes or events affecting their governance. With regard to the daily monitoring of any disputes affecting the evaluated company, its objective is to check whether the company in question has been involved in a dispute concerning ESG aspects from a regulatory and regulatory point of view, in the sense that it is intended to see whether the rules or international principles to which the company refers have not been violated. The company can therefore obtain four different scores, ordered from the worst to the best score, following a color scheme: red meaning that the company is involved in one or more severe disputes; Orange that the company has been involved in one or more severe structural disputes that are still ongoing; Yellow implies that the company is involved in severe to moderate disputes; Green that the company is not involved in major disputes at all. This approach covers the following five categories: Environment, Clients, Human Rights and Community, Labor Rights and Supply Chain and Governance. The new information contained in the weekly reports and any significant changes will have an impact on the company's rating. In addition, the company receives an in-depth review at least annually. The ratings of companies are computed given exposure to key ESG-type risks, based on a granular breakdown of the company's business: its core products and activities, the location of its assets or revenues, and other relevant measures such as outsourced production. Analysts then consider the extent to which the company has developed robust strategies and demonstrated a strong ability to manage its specific risk levels or opportunities. Any temporary or structural disputes within the last three years lead to a deduction from the overall management score on each factor. Risks bore by companies are assigned given six to ten ESG-type key factors where companies in a given industry sector generate relevant environmental and social externalities. corporate governance is assessed for each company, regardless of sector independently from the other factors. The weights of the partial scores are set according to the global industry classification system (GICS, Global Industry Classification System)[60] based upon the relative impact of each sector and the time horizon of each risk. Key factors and weights undergo a formal review and feedback process at the end of each calendar year. To finally obtain the the final letter expressing the rating, the weighted averages of the scores assigned to the key factors are aggregated and the total score is normalized according to the industry sector to which it belongs. After any over-rating has been taken into account, the final score adjusted for each company's industry sector corresponds to a rating ranging from a maximum of AAA (best) to a minimum of CCC (worst). These ratings are not intended to be absolute but should always be read considering the standards and performance of competitors in the same sector.

3.2.3 Index structure

The investment universe for this series of indices is made up of the stocks that make up the MSCI Global Investable Market Indexes (GIMI) series. First of all, those securities that belong to the following sectors are excluded from this investment universe:

- Alcohol: Those companies classified as "Producer" that get at least 5% of their revenue or more than $500 million from spirits or similar products are excluded.
- Gambling: Companies classified as "Operations" or "Support" that obtain at least 5% of their revenue or more than $500 million in gambling and betting products are excluded.
- Tobacco: All those companies classified as “Producer” and those companies classified as "Distributor", "Retailer" or "Supplier", who get at least 15% of their revenues from tobacco products are excluded
- Military weaponry: All companies that are classified as: directly involved in the production of "Nuclear weapons" or "Nuclear weapons components" are excluded; involved in the production of "Chemical and biological weapons" or " Components for chemical and biological weapons "; All companies involved in the production of " Cluster bombs" are excluded; All companies classified as "Mine Producers" are excluded; All companies involved in the production of “ depleted

[60] GICS is a globally valid industry classification system. It has been developed since 1999 by MSCI and S&P Global, with the aim of offering an efficient investment tool that captures the breadth, depth and evolution of industries. It is a hierarchical classification system, consisting of 11 sectors, 24 industrial groups, 68 industries and 157 sub-industries. Companies are classified quantitatively and qualitatively, and each company is assigned a sub-industry according to its main activity. In September 2016 the 11th sector, i.e. the real estate sector, was added. For more information, please consult the website www.msci.com

uranium weapons"; all companies that obtain at least 5% of their revenue or more than $500 million of revenue from the production of weapons, weapons components, and/or weapons support services and systems are excluded.

- Civilian weaponery: All companies classified as producer; All companies classified as "Reseller" or that obtain at least 5% of their revenue or more than $20 million in revenue from firearms products for civilians
- Nuclear energy: All companies classified as producer; Companies classified as involved in uranium mining are excluded; Companies classified as involved in the design of nuclear reactors are excluded; those companies classified as involved in the enrichment of nuclear reactor fuel are excluded; those companies classified as "Supplier" to the nuclear industry that obtain at least 15% of their revenues from products related to that industry are excluded; All companies with 6000 MW or more of capacity attributed to nuclear sources or 50% or more of capacity attributed to nuclear sources are excluded.
- Adult entertainment: All companies that are classified as "Producer" are excluded; All companies that obtain at least 5% of their revenues or more than 500 million dollars in proceeds from pornography
- Genetically modified organisms: Companies that obtain any income from activities such as genetically modified plants, seeds and crops, and other organisms exploited for agricultural use or human consumption are excluded; Companies that are only involved in R&D in GMOs are not excluded.

After having excluded the above securities, the indices are composed on a “best in class” basis: in particular, securities that are already part of the index must have a rating of at least B to continue to be part of it, and securities that are not yet part of the index must have a rating of at least BBB to be considered eligible. For what concerns the score related to any controversy about ESG factors, which we mentioned earlier, the titles that are already part of the index must have a score higher than 0 to remain in the index, on a scale ranging from 0 to 10, with 0 the minimum score and 10 the maximum, whilst those that are not yet part of it must have a score higher than 3 to be considered eligible for inclusion. Every index is then created with the objective of covering 25% of the market capitalization adjusted for the free float of each GICS sector of the underlying "relative" index (i.e. the sibling index of the GIMI series mentioned above): this is to contain the systematic risk introduced by the ESG factor selection process. Some examples: for MSCI Pacific SRI Index the relative index is MSCI Pacific Index, for MSCI Canada SRI Index the relative index is MSCI Canada Index, for MSCI USA SRI Index is MSCI USA Index. Analyzing the maintenance of the indexes of the series. Every year in May the indices are reviewed and possibly reconstituted, coinciding with the six-monthly review of the parent index, and any changes are implemented at the end of May. ESG ratings, dispute scores and sector exclusions available since the previous April are used for the annual review. We have said that the index is built by covering 25% of the market capitalization adjusted for the free float of each sector of the parent index. For each sector, the companies eligible to be selected to be part of the index are arranged in rankings as follows: the ESG rating, previous insertion in the index, ESG scores adjusted on a sector basis, market capitalization adjusted for free float. Once the 25% coverage is reached, the company so-called "marginal company", which is the company that allows to exceed the 25% coverage threshold, is identified. If this company is already part of the index, then it is also maintained within it a significantly higher coverage of 25% is achieved, both to ensure greater index stability and to guarantee a lower turnover. If the marginal company is not already part of the index, then it will only be included in the index if the difference (in absolute value) between the percentage of coverage achieved by including this company and 25% is less than the difference between the percentage of coverage achieved by not including this company and 25%. In any case, the minimum percentage coverage percentage for each sector of the parent index is set at 22.5%, so the marginal company will be included in the index if its non-inclusion would lead to coverage of less than 22.5% (in the event that it does not lead to coverage of 22.5%, companies related to excluded sectors that we have seen before cannot be used for inclusion).

3.3 FTSE4Good

3.3.1 *The Company*

The FTSE4Good index series is provided by FTSE Russell, founded in 1962, nowadays one of the world's leading index providers. On their website it can be read that their products are used globally by both institutional and retail investors and are built and maintained applying the highest standards and using transparent methodologies. The strengths of the company are the use of relevant information to calculate outputs using robust methodologies, their accuracy, which allows them to offer products always in line with times and with sudden changes. The development of the company begins with the launch of the FT-Actuaries All-Share Index, a precursor to the modern FTSE UK Indexes series. In 1984, another key year, Russell launched the three Russell 3000 Indexes, Russell 2000 Index and Russell 1000 Index, while FTSE launched the FTSE 100 Index. Two years later, in 1986, the forerunner of the FTSE All-World Index, then called the FT Actuaries World Index, was launched. Another important date, with a jump of almost ten years, is 1995, when a joint venture between the Financial Times and London Stock Exchange was created (hence the name FTSE), while the name of the FT Actuaries World Index became FTSE/S&P-Actuaries World Index, following the sale of Wood Mackenzie's stake in the index to S&P. In 1999, FTSE acquires the other members of the index, renaming it to FTSE World Index, and the following year it incorporated the ING Barings Emerging Markets Index into the FTSE World Index, which now also covers emerging markets, turning it into the FTSE All-World Index. The FTSE4Good Index Series, created to measure the performance of companies with high environmental, social and governance standards was launched 2001. A further crucial step for FTSE has been the merger with Russel giving birth to FTSE Russel. As far as corporate responsibility concerns, FTSE Russell is very thoughtful and the continuous and growing demand of customers for products and services that are increasingly oriented towards ESG factors, proves the strategic decision to be right. Amongst FTSE ESG Ratings, there are the FTSE Environmental Markets Series, the FTSE Developed ex Fossil Fuels Index Series and finally the FTSE4Good Index Series. This is composed of 13 indices of those companies that demonstrate excellent performance in ESG.

3.3.2 ESG Rating Methodology

The ESG ratings given to the rated companies are to be considered as the starting point for the integration within the FTSE4Good Index Series indices. As a source of information for the assessment of companies FTSE Russel uses only publicly available information, believing that this improves credibility.[61] The ratings are based upon three pillars, environmental, social and governance which are again subdivided in more than 300 indicators.

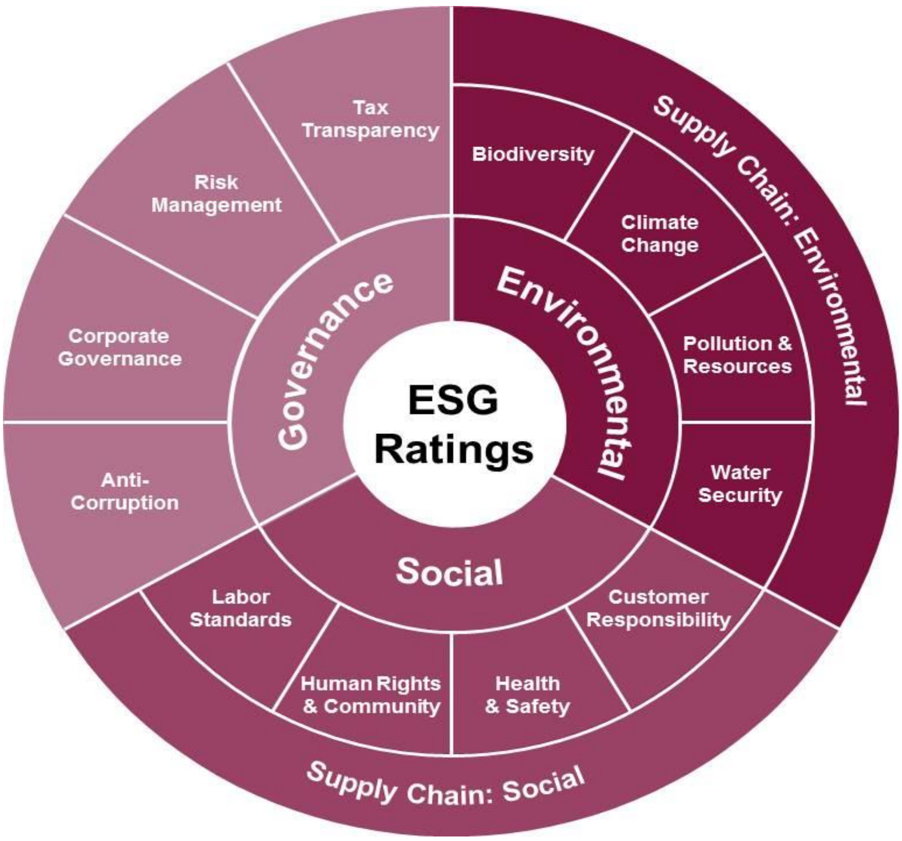


Table 9.

To every indicator a score is attributed signaling the company's exposure to that particular indicator. The exposure may have the following scores: 3 high exposure, 2 medium exposure, 1 low exposure, 0 negligible/ not determinable. In addition to the score indicating exposure, the company will then be rated with a score depicting how well it is doing in that sense, ranked from 5, signaling high attention towards that factor, to 0 indicating no disclosure and hence no possible judgment. Once introduced the general ranking methodology we will consider in depth the ranking structure and procedure of a single company. There are more than 300 indicators in total, but generally a company is evaluated on an average of 125 indicators, clearly chosen from those to which the company is actually exposed. To be able to calculate a

[61] FTSE Russell, Index Inclusion Rules for the FTSE4Good Index Series, v1.8, 2016, in www.ftserussell.com

company's exposure to certain ESG factors and risks, it is useful to build what is called the "Exposure Matrix": to do so, data is collected on the company's activity, its geographical location, any controversial incidents and possible multinational status and then used as factors. Once the matrix has been constructed for each of the 14 themes seen above, a score is assigned to each theme indicating exposure to it. The greater the exposure, the more individual indicators the company will be rated on. If the exposure to a certain theme is 0 (negligible), then the company will not be rated based on the indicators that make up that particular theme. Once the exposure has been calculated, you must calculate the score for that theme. It depends on two factors. On the one hand the percentage of score obtained by the individual indicators of that theme is relevant on the other hand the company's exposure to that topic.

3.3.3 Index structure

In order to be part of the FTSE4Good Index indices, from June 2016 a minimum rating is required depending on whether the company is part of a state classified as advanced or emerging. In particular, if the company is part of a developed country, then it must be rated at least 3.1 or higher, if it is part of an emerging market the rating must be of at least 2.0. Furthermore, if the company is already part of the index to maintain its status, if it is part of a developed country, the ranking needs to be higher than 2.5, if it is not higher than 1.8. Otherwise it will risk being eliminated from the index. Companies at risk of elimination will be given a period of 12 months during which they must increase their ESG rating, otherwise they will be removed from the index. The 12 months could be extended in peculiar cases after having consulted the Advisory Committee. In addition to having ESG ratings above a certain threshold, in order to be part of an index, companies must not be involved in the production or manufacture of products in the following sectors: tobacco, armery systems, controversial armery and armery components such as cluster munitions, anti-personnel mines, uranium depleted, chemical/biological weapons and nuclear weapons and coal. Furthermore, FTSE Russell is developing a system to monitor any disputes in which the company is involved: if the company has been identified as being involved in significant disputes, then it cannot be part of the index series. Finally, for companies that are part of a developed country, and have a score of 0 or 1 in each applicable theme to which they have a high exposure, they will be excluded from inclusion in the index series. Focusing on the way the index is done it should be noted that the indices in this series are divided into two groups: benchmark indices, and tradable indices. In the following chapter, four indices have been selected from all four: three tradable (FTSE4Good Global 100, FTSE4Good UK 50, FTSE4Good US 100) and one benchmark (FTSE4Good Japan). Before studying the rules, it needs to be clarified that they may not be followed in the exceptional case where they are not such as to allow the indices to remain in line with sudden market developments: in that case, reference should be made to the Statement of Principles summarizing the philosophy that FTSE Russell follows for the construction of the indices. These rules are supervised and managed by a specially created advisory committee, which consists of independent professional investors who are experts in ESG factors. This committee may also suggest changes to the index construction rules. As for benchmark indices, all

companies that are part of the corresponding traditional index are eligible for inclusion. For example, those that are part of the FTSE4Good Global Index can be included in the FTSE4Good Global Index; those that are already part of the FTSE Japan Index can be included in the FTSE4Good Japan Index; and so on. In turn, the companies that will then be chosen to build the benchmark indices will also be eligible for inclusion in the tradable indices (except for Japan, which has no tradable index). Each component of the sustainable indices will have the same weighting as it has in the traditional benchmark index, after the investment screening of that index. For benchmark-type indices, all stocks that are already part of the associated traditional index and that exceed the inclusion criteria seen before are automatically included in the index. As far as tradable indices are concerned, we shall proceed by way of example. The FTSE4Good UK 50 Index is composed of the 50 largest companies that make up the FTSE4Good UK Index (the benchmark) according to the full market value, the FTSE4Good Global 100 Index is composed of the 100 largest companies that make up the FTSE4Good Global Index (the benchmark) according to the full market value. In June and December, half-yearly revisions of the indices are carried out, with different rules for benchmark indices and tradable indices for benchmark indices, it is sufficient that a security that is part of the traditional associated index passes the selection criteria to become part of the benchmark index. For tradable indices, on the other hand the process is the following: ranking the components of the benchmark index for the entire market value, the process changes according to the indices considered: for the FTSE4Good Global 100 Index e FTSE4Good US 100 Index a security will be included in the index if it is at least ranked above the 90th position, while it will be removed from the index if it falls below 111th position; for the FTSE4Good UK 50 Index , a security will be placed in the index if it is at least above 40th position and will be removed if it falls below 61st position.
For tradable indices there is the need to maintain the number of securities constant over time. Therefore, during periodic revisions, the number of securities that qualify for inclusion is greater than those that are removed, being able to eliminate the securities that have the lowest positions. In case of more securities eliminated than those qualified for inclusion, other securities will also be eligible among the highest positions. Finally, in the case that a security ceases to be part of the benchmark index, it will automatically cease to be part of the tradable index and will be replaced, as well as in the event that a security ceases to be part of the associated traditional index, it will automatically cease to be part of the benchmark index. In the end of the FTSE Russell's sustainable indices part a brief digression about the capping methodology used to build the tradable indices. In fact, it is expected that for each tradable index, each stock that is part of it cannot weigh more than 10% of the index total. It is therefore necessary, at each six-monthly review, to carry out a capping process (literally means setting a maximum limit) to ensure that this threshold is respected. This process is carried out in stages:

- Step 1: each security whose weight is greater than 10% is reduced to 10%. The weights of all the titles that follow in the ranking are increased proportionally. They are then controlled and if they exceed 10%, they are also decreased up to 10%. This process is repeated until no security exceeds 10%.

- Step 2: If the aggregate weight of all securities above 5% is greater than 40%, proceed with step 3, otherwise the process is completed.
- Step 3:
  - If more than one title is set at 10%, then the weights of all the constituents subsequent previously set at 10% shall be amended in accordance with the following rules:
  - If the weight of the second largest title is greater than 9% then it is reduced to 9% and the weights of the subsequent titles in the ranking are increased proportionally. If the total weight of all the titles that exceed 5% in weight is greater than 40%, the following rules are continued
  - If the weight of the third largest title is greater than 8% then it is decreased to 8% and the weights of the following titles in the ranking are increased proportionally. If the total weight of all the titles that exceed 5% in weight is greater than 40%, the following is continued
  - If the weight of the fourth largest title is greater than 7% then it is decreased to 7% and the weights of the next titles in the ranking are increased proportionally. If the total weight of all the titles that exceed 5% in weight is greater than 40% then it is continued.
  - If the weight of the fifth largest title is greater than 6% then it is decreased to 6% and the weights of all subsequent titles in the 70 ranking are increased proportionally. If the total weight of all securities exceeding 5% in weight is greater than 40% then we continue
  - If the weight of the sixth largest title and subsequent titles in the ranking exceeds 4% then they are all decreased to 4% and the weights of the subsequent titles in the ranking are increased proportionately
- Step 4: The weight of all securities is checked. If the total weight of those securities that exceed 5% in weight is greater than 40% then the process is continued, first decreasing to 10% the weight of any large securities that have exceeded it and then starting again with Step 3.

3.4 Dow Jones Sustainability Indices

3.4.1 The Company

The indices in this series are offered in collaboration by RobecoSAM and S&P Dow Jones Indices. The series was launched back in 1999, qualifying as the first global index series oriented to sustainability topics. S&P Dow Jones Indices were founded in July 2012 following the merger of S&P Indices and Dow Jones Indexes, bringing with it the 120 years of experience characterizing both companies. Milestones to their history were the launch of the iconic Dow Jones Industrial Average in 1896 and the S&P 500 in 1957: today, the indices offered are well over one million. RobecoSAM, on the other hand, was founded in 1995, as an agency focusing exclusively in sustainable investments. It offers not only the index series in collaboration with S&P Dow Jones Indices, but also offers investment management, impact analysis, engagement services and more. It is part of Robeco, investment management company since 1929. Both are part of the Robeco Group, whose largest shareholder is OROX Corporation.

3.4.2 ESG Rating Methodology

In this paragraph we will see how the assignment of ESG ratings according to the methodology used by RobecoSAM, the basis for the subsequent construction of the DJSI indexes. The sources used for the evaluation of companies and the assignment of ESG ratings used by RobecoSAM are provided directly by the companies in form of questionnaires. This is functional to the fact that the assessment of ESG factors is done by filling out a survey, on an annual basis, which is called Corporate Sustainability Assessment (CSA). The companies assessed are asked to fill in the questionnaire, attaching the documents necessary to verify the truthfulness of the given answers. This method certainly allows a deeper understanding of the activity and values of the assessed company. The questionnaire introduced in 1999 is nowadays filled in by 3400 largest listed companies in the world, which are called upon to complete it. The industries are classified using the GICS classification therefore 60 different questionnaires are created, one specific for each sector. Within each sector then the companies that have performance ranked in the first percentile will be selected to join the Dow Jones Sustainability Indices series. For the creation of the different questionnaires, the first fundamental thing that is needed is the so-called Matrix of financial relevance: this matrix allows analysts to understand which are the sustainability factors that have the greatest impact on the business of the evaluated company and are therefore more relevant from a financial point of view. This process is necessary to sensibly attribute the applicability and weighting to each criterion used in the questionnaire. this matrix is composed of a Cartesian plan, where on the x-axis is the magnitude of the impact of the factor and on the y-axis is the probability of the impact to occur. The output of this process will be a Cartesian plan punctuated by several ESG type factors: for the completion of the questionnaire only those that are in the upper right hand corner will be taken in account, implying those which are highly probable and could have a relevant impact on the companies' business. Analyzing the criteria used for assessment, these are based on three pillars Economic, Social and Environment. These three dimensions are structured on average of 6 to 10 criteria, each of which already has a predetermined weight within the pillar. The sum of the weights of the different criteria indicates the total weight of that pillar over a maximum value of 100. The sum of the scores of the three pillars is equal to 100. Each criterion is in turn composed of a number of questions (the total questions in the questionnaire vary between 80 and 120 depending on the industry), which have a determined weight and can obtain a score ranging from 0 to 100. The highest score a company can achieve is 100 the so-called total sustainability score.

3.4.3 Index structure

The approach used for the construction of the DJSI indices is the best-in-class one: only those companies that have shown greater responsibility on ESG issues are selected to be part of the various indices, and that make those sectors that meet minimum sustainability criteria. For the creation of the indices, the sustainability scores provided by RobecoSAM are used. The DJSI family of indices is divided into three geographical groups: DJSI World, DJSI Regions and DJSI Countries. The ones just mentioned, from which the quantitative analysis in the next chapter has been selected, are indices that collect large capitalization securities (called benchmarks here), but we should also mention, for correctness, the DJSI Blue-Chips indices, which we do not deal with here. As we were saying, the starting point for building the indices is the total sustainability score. The companies required to fill in the questionnaire are many, but not all of them choose to do so: the smaller companies that decide not to fill in the questionnaire are not eligible to become part of the indices, while for those that exceed a certain size threshold, RobecoSAM is responsible for filling in the questionnaire using publicly available information. The universe of companies invited to fill in the questionnaire for each index of the family is composed of the highest capitalization securities adjusted for free float (they must exceed a certain threshold) that are part of the S&P Global BMI index (obviously those securities that are part of the geographical area under consideration will be chosen, so, for example, for the DJSI Europe index the 600 largest companies from developed European markets will be chosen) from the universe of stocks invited. The selection process that brings from the universe of companies to whom the questionnaire is sent to the universe of companies valuated is carried out in stages:

- Step 1: Include in the list all the companies that have chosen to participate in the questionnaire
- Step 2: Add to the list those other than point 1 that have a market capitalization adjusted for the largest float of the chosen threshold.
- Step 3: Divide the companies referred to in points (1) and (2) into groups by region and sector and add up their market capitalizations adjusted for free float.
- Step 4: Express each of the regional totals calculated in point (3) as a percentage of the market capitalization of that region and each of the sector totals calculated in point (3) as a percentage of the market capitalization of that sector (referring to the S&P Global BMI index).
- Step 5: If the percentage from point 4) is less than 50% for the region and the sector, add securities from the invited universe for that region and that sector among those that have not completed the questionnaire, starting from those with the market capitalization adjusted for the highest float, until the 50% threshold is reached or exceeded (note: these securities must also have a total sustainability score assigned by RobecoSAM based on publicly available information). After that no other company is added.

Further two steps bring from the universe of companies valuated to the universe of eligible companies:

- Exclude from the universe of rated titles those that have a total sustainability score lower than 40% of the total sustainability score of the title with the highest score.
- Ensure that there are enough securities in each sector with a total sustainability score to select at least one security in each sector according to the rules for each index. In the event that there is an insufficient number of companies in one or more sectors, these may be combined into a single group of sectors according to the GICS classification. The companies that come out with this selection process form the suitable universe

Lastly in order to land to the index more passages are done:

- Within each eligible sector, all invited companies are ranked in descending order according to their total sustainability score
- Within each eligible sector, those companies which are both in the eligible securities universe and in the first total 30 % of the invited universe are selected
- From the remaining companies, those in the universe of eligible securities that are within 0.3 points distance from the last company selected in the previous point are selected, even if this means exceeding the target
- From the remaining companies in the eligible universe, in descending order according to the total sustainability score, those that meet the following two criteria are included in the index:
    - Current components of the index
    - Companies that are in the total % of all invited companies in the given eligible sector (the percentage, called buffer, is variable from index to index, exactly like that of the target)

It should be noticed that the indices are weighted according to the market capitalization adjusted for the free float of the securities. Then, quarterly, the weighting of each stock making up the index is set at a maximum of 10%.
To conclude, it must be said that in the large family of DJSI indexes there are also indexes that are built on the a priori exclusion of some controversial sectors, such as alcohol, tobacco, betting, armaments, hence applying the negative screening approach.

3.5 Comparison of the Rating Methodologies

We have just seen how sustainability ratings are assigned for the three groups of indices and how the indices are structured. We can therefore end this chapter with a brief discussion of the strengths and weaknesses of the three methodologies. The comparison will be based upon good practice guidelines from the previously investigated ESG rating agencies published on their webpages and from the study carried out by Sustainability *Rate the Raters*. The research, which was carried out over two years, 2010 and 2011, is divided into four phases, and aims primarily at analyzing in depth the world of ESG rating agencies in order to find out their good practices. Secondly it aspires to open a debate on topical issues affecting these companies. In order to evaluate the diverse methodologies, rating agencies were asked to fill in a questionnaire with questions on various topics, such as the sources used to collect information on the companies rated, the degree of disclosure regarding the methodologies used, and many more. On several of the given answers we will evaluate the three agencies mentioned in the previous paragraphs. In particular, we will discuss three key topics: the degree of disclosure regarding the method used to assign scores, the information sources used to collect data and the presence or absence of ratings designed to take in account the sector to which companies belong to. As for the degree of disclosure on the methodology for the assignment of ratings, certainly MSCI ESG Research is the one that is most flawed, given the fact that the only available document the executive summary, on their website, does not give many information regarding their assessment methodology. As for the FTSE4Good indices there is the possibility to download relevant information. These contain amongst other explanations and practical examples which make the comprehension of the assessment methodology clear and understandable. But certainly, who best performs in this context is RobecoSAM, which makes the entire process of operation of the CSA, as well as some examples of CSA for some specific areas available on their website. The reason for the importance of the disclosure is to grant certain credibility of the ratings and rating agencies and mostly to ensure that the users understand the process behind the inclusion or rejection of corporations in or from the index. Of course, it is certainly not required that the agencies disclose the whole process in detail, thus also losing possible competitive advantages, but it is considered good practice to disclose as much information as possible. Analyzing the second assessment criteria, if the agencies take in account the belonging to a certain sector rather than another, all three agencies perform fairly good, since the ESG criteria on the basis of which the assessment is made and, above all, the weights assigned to the various criteria, vary according to the sector the company assessed belongs to. In fact, we have seen that each of the three methodologies is based on a sectoral subdivision standard, the GICS for MSCI and RobecoSAM and the ICB for the FTSE4Good series. For the FTSE4Good series we have also seen the use of the theme exposure matrix and for the DJSI series we have observed that for each sector there is a unique questionnaire available that is different from any other sector. We can now move on to the last assessment criteria that concerns the sources used to collect the data necessary to assign ratings. There are essentially two types of sources: publicly available information, provided directly by companies or third parties, and private information that are provided following the agency's requests. Each source has its advantages and disadvantages. Using only publicly available information can, on the one hand significantly increase the degree of transparency of the rating agency, and therefore its credibility, contrarily on the other hand this choice also has a disadvantage. by using only free information, you risk to not acquire necessary understanding of the core business and activities of the company and even less of the context in which it operates. At the same time, using only information provided privately by the company will allow agencies to have an omni comprehensive picture of the situation, sacrificing value in terms of credibility and transparency. It is clear, therefore, that the best solution may be to use a mix of both information sources: following this approach, you will have a sufficiently clear picture of the evaluated company, but you will not lose much in terms of reliability. As far as MSCI ESG Research is concerned, it is not very clear what kind of information is used, but it seems that only publicly available information is used. Same applies for the FTSE4Good series. RobecoSAM contrarily has a different approach, which is the one of the questionnaires. Using a questionnaire undoubtedly needs very detailed information provided directly by the companies evaluated. However, RobecoSAM does not disdain the use of public information, like in the case of MSA (Media and Stakeholder Analysis) inserted directly in the questionnaire. Therefore, RobecoSAM's MSA achieves the best ranking among the presented methodologies. It must be said, however, that all three agencies use a sort of "alert" function for the companies evaluated: the Media and Stakeholder Analysis for RobecoSAM, and the functions of identifying any ESG disputes for the other two agencies, already tested and working for MSCI ESG Research and under construction for FTSE Russell.

4 Linear Regression Analysis Telecom S.p.A. and ENEL S.p.A.

4.1 Foreword

The following chapter will try to analyze, implementing a linear regression model, the relationship between the financial performance of Italian utilities and their ESG performance.
This will be done, on the one hand, through the findings of sustainability studies, the analysis of the implementation of environmental and social policies and of the principles of good governance, consequently merged in order to develop a "rating" model, which will provide the needed data about the ESG performance. Once derived an ESG-score this will be used in a linear regression model to study the possible relationship "good ESG performance" - "good financial performance", will try to verify the existence of this relationship through the empirical analysis of two of the largest and most important Italian listed utilities: Telecom S.p.A. and Enel S.p.A..
On the other hand, to measure CFP a widely used indicator will be used, Tobin's Q, in its simple version, proposed by Kaplan and Zingales.
The analysis will be conducted firstly on a period of 14 years, for the results to be more relevant, not being affected by peculiar conditions occurred in one year, which would make the outcome irrelevant with respect to the studied variable.
A final remark seems to be necessary, regarding the sources and documents that have been used and that will be mentioned in the rest of the chapter. In order to carry out the analysis, information from the company's sustainability reports, Bloomberg's ESG rating and financial analysis, and different data from other ESG rating providers, have been used.
The chapter will be structured briefly considering at first the methodology used to perform the analysis, thereafter the collected data and the way the ESG-ratings are assigned, then assessing the performance of the two companies, finally introducing the output of the regression analysis.

4.2 Methodology

4.2.1 Linear Regression

In order to study the relationship between ESG and corporate financial performance a two step approach is used, based upon the Ordinary Linear Square (OLS) estimation procedure.
The model performed in Python is a single variable linear regression model based upon the relationship between Simple Q and ESG-Scores.
The first step will take in account the entire period (2005-2018), while the second step will consider data starting from 2009, hence considering on the one hand a smaller sample, on the other hand more recent data.
The model is tested using following general regression equation:

$$Simple\ Q_t = \alpha_t + \beta_t * ESG\ Score_t + \varepsilon_t$$

In order to validate the results of the regression analysis two parameters are controlled, the R-squared and the p-value.

Regarding the first parameter, The R-squared, represents the fraction of the variation the dependent variable that is predicted by the independent variable, in other terms the fitting of the regression line respect to the input data.

The p-value is used in the context of hypothesis testing in order to reject or accept the null hypothesis or the alternative hypothesis.

The null hypothesis H_o: $\beta = 0$ against the alternative hypothesis H_1: $\beta \neq 0$.

If the p-value shows values smaller than the significance level tested the null hypothesis will be rejected hence demonstrating the significance of the variable, in this case of the β variable.

4.2.2 ESG-Rating

One crucial input for the regression analysis is the independent variable, which in this case will be given by the ESG-Score of the company. In order to assess the ESG-Score of 2018, I used a set of determinants, which in my opinion impact the performance in the three dimensions, environmental, social and governance, presented in the three tables below. Every dimension has been divided in 3 sub-sections, which are preliminary, disclosure and performance, representing the three stages of which the ESG-performance is composed. In the preliminary sections, the policies, management systems and programs are comprised, in the disclosure sections the disclosure of relevant information for each dimension is analyzed, as in the performance sections relevant factors regarding the performance are considered. Secondly, I defined a weight matrix in order to reflect the different impact of very dimension. This matrix will be tailored to the two companies and the different impact every business has. Following the study of the sustainability reports of the two companies a score has been attributed to every determinant, ranging from 0 to 1. Lastly the computational part has been performed, implying the product between the determinant score by the weight, and finally summed up to obtain a score comprised between 0 to 100.

In order to determine the ESG-Scores of the two companies from 2005 to 2017 I parametrized the score given for 2018 to the Bloomberg ESG-Ratings, hence determining the Year to Year variation of the Bloomberg Rating and applying it to the assigned 2018 rating, in order to derive the scores of the period.

1. ENVIRONMENT	
Criteria	Identification
A. PRELIMINARY	
1.Environmental Policies	Commitment to Environmental Challenges Commitment to reduce Emissions Commitment to Monitor Performance
2.Environmental Mangement System	Environmental Committee Environmental Responsabilities at Board Level External Environmental Audit Objective, Targets and Programms Monitoring & Management
3. Environmental Programs	Programm for Greenhouse Gas Programm for Renewable Energy Program for improvement of Consumption Efficiency Programm for Hazardous Waste Programm for Water Management Programm for Mobility
B. DISCLOSURE	
1. Carbon Disclosure Program Questionnaire	Partecipation
2. Scope of GHG Reporting	Adoption of Criteria (1,2,3)
C. PERFORMANCE	
1. Fines & Penalties	Presence
2. Carbon Intensity	Trend
3. Renewable Energy Mix	Percentage

2. SOCIAL	
Criteria	Identification
A. PRELIMINARY	
1. Freedom Association Policy	Presence
2. Discrimination Policies	Commitment to eliminate Commitment to ensure equal Opportunities
3. Diversity Programm	Presence Managerial Responsabilities International Labour Org. ILO Diversity Monitoring
4. Stock Option Plan for Employees	Presence
5. Health and Safety Programm	Presence
6. Conflict zone Mineral Policy	Presence
7. Supply Chain Policy	Presence Audit Monitor
8. Data Privacy Policy	Commitment to notify data subjects in case of policy changes or data breach Commitment to informed and limited collection of essential personal identifiable information Clear terms involving the use of personally identifiable information (PII) Commitment to seek consent for the collection, use and sharing of non-essential PII Approval by senior management or the board of directors
9. Human Rights Policies	Commitment to respect human rights Public Availability Reference to relevant international human rights standards Approval by Board of Directors Commitment to provide remedy where violations do occur
10. Community Involvement Programms	Digital Division Programm Policy Commitment to local communities Reporting on community consultation issues
11. Corporate Foundation	Presence
B. DISCLOSURE	
1. Supply Chain Disclosure	Reporting
C. PERFORMANCE	
1. Customer and Employee Controversies	Presence
2. Collective Bargaining Agreement	Percentage of Employees Covered by Collective Bargaining Agreement
3. Employee Turnover Rate	Employee Turnover Average
4. Top Employer Recognition	Presence

3. GOVERNANCE	
Criteria	Identification
A. PRELIMINARY	
1. Bribery and Corruption Policy	Prohibition of bribery Definition of bribery or corruption Prohibition and definition of conflicts of interest investment in training and education Prohibition and definition of facilitation payments Guidelines
2. Whistleblower Program	A reporting hotline available 24/7 Non-retaliation policy and Confidentiality Structures in place to process whistleblower reports Disclosure on the number reports received, the types of misconduct and measures taken
3. Global Compact Signatory	Signature Date
4. ESG Governance	Commitment at Board or Committee Level Link to Remuneration Policy ESG Performance Targets and Controlling
5. Self Evaluation Mechanism	Presence
6. Compliance to Codice di Autodisciplina B.I.	Presence
B. DISCLOSURE	
1. CV of Board Members	Disclosure
2. Taxes	Disclosure
3. ESG Reporting	Reporting following GRI Standard Verfication by External Auditor
4. Remuneration Policy Disclosure	Disclosure MBO linked to sustainability
C. PERFORMANCE	
1. Gender Diversity	Gender diversity within the Board Gender diversity in Management Gender pay-gap
2. Separation of CEO and Chairman (CEO DUALITY)	Presence
3. Board Independence	Disclosure
4. Committees	Presence of Required Committees Independence of Committees

4.3 Analysis

4.3.1 ESG-Score Telecom S.p.A

This part will analyze the ESG performance of Telecom S.p.A. in 2018, based on the companies Sustainability report. I will present every criteria in order to better qualify the ESG performance of the company.

The first part of the analysis has to focus on the assignment of the weight to every dimension, which I assigned taking into account the company's materiality assessment.

Table 10.

Given the map, I decided to assign to the environmental and social dimension an overall category weight of 30% as to the governance dimension one of 40%.

Telecom S.p.A.			
1.Environment			
CATEGORY	CAT. WEIGHT	RELATIVE WEIGHT	ABSOLUTE WEIGHT
A.Preliminary	30%	45%	13,5%
B.Disclosure		10%	3%
C.Performance		45%	13,5%
2.Social			
CATEGORY	CAT. WEIGHT	RELATIVE WEIGHT	ABSOLUTE WEIGHT
A.Preliminary	30%	50%	15%
B.Disclosure		10%	3%
C.Performance		40%	12%
3.Governance			
CATEGORY	CAT. WEIGHT	RELATIVE WEIGHT	ABSOLUTE WEIGHT
A.Preliminary	40%	40%	16%
B.Disclosure		20%	8%
C.Performance		40%	16%

Entering the analysis of the single dimension, in the first one, the preliminary and performance category accounts for 13.5% of the overall score, as the disclosure category accounts for 3%. The preliminary category is divided into three criteria called Environmental policies, Environmental management systems and Environmental programs. Within this section the company scores the highest mark in the Environmental programs, considering that the company has relevant programs in every criteria analyzed as of the sustainability report, for example for the reduction of GHG there are programs for the containment of personnel movement and smart buildings. Regarding the improvement of consumption efficiency, there are programs involving Data Centers, Co-generation and infrastructural efficiency programs, which aim at significantly improving energy consumption. For the disclosure category there are two criteria, taking part to the carbon disclosure program questionnaire and the scope of Green house gas Reporting (GHG). Telecom scores the highest mark in both criteria as it takes part to the questionnaire since 2005 and as it discloses all of the three criteria of the GHG reporting, reporting 94.800 million tons for scope 1, 1.090 million tons for scope 2 and 6.800 million tons for scope 3. As the Performance section concerns, three criteria are considered, which are Fines & Penalties, Carbon intensity and Renewable Energy Mix, scoring in the second the highest rating as the carbon intensity indicates a negative trend over the last three years, and showing no environmental fines during the year.
The second dimension, Social, has the preliminary category accounting for 15% of the total weight, the disclosure category accounting for 3% and the performance category is 12%. Regarding the preliminary category, among the most relevant topics for the company there are the adoption and the commitment to Discrimination Policies, Data Privacy Policies, Supply Chain Policies and the presence of a Corporate Foundation. Discrimination policies are contained in a separate document called Social Responsibility

Policies, in which it states that it is against every form of discrimination, “every form of discrimination are expressly prohibited, whether they are based on sexual orientation, ethnic origins, gender, disability, age or other things.”[62] Regarding the Data Privacy Policies, which are a “hot-topic” for the company, as it deals with sensible and relevant information of customers, the company is compliant with the provisions of the GDPR regulation, therefore it has established a Data Protection Officer (DPO), who is in charge of handling data breach situations, minimizing them and in case of occurrence, communicating them to consumers and authorities. The company manages and controls the Supply chain “qualifying, controlling quality and assigning rating to vendors”. It yearly monitors the suppliers, assessing and evaluating their performance with a questionnaire and executing due-diligence and the supply chain is audited internally and externally. Finally, the company established a corporate foundation in 2008, funding the foundation with 30.6 million and spending 24.5 since 2009, “Listening and intercepting the needs of the community, anticipating solutions. Stimulating ideas and planning within society. Supporting innovation and defining new training processes through the use of a sustainable technology model are among the main inspiring reasons of Fondazione Telecom.” Regarding the disclosure category, Telecom discloses the breaches of its policy by suppliers and describes the handling of them.

The third category in the social dimension regards the social performance, which comprises among other criteria customer and employee controversies, the collective bargaining agreement and the employee turnover rate. Regarding customer controversies there is evidence of 3 reported fines by the Italian antitrust authority, worth 6.6 million €, for misleading advertisement and 10 fines by the regulatory authority, worth 4.0 million € for not having complied to number portability obligations.

The Governance dimension, accounts for 16% in its preliminary and performance category and for 8% of the total score in the disclosure category.

The relevant criteria of the preliminary category are in my opinion bribery and corruption policies, the whistleblowing program, being signatory to the Global compact and integrating ESG among the governance responsibilities.

Bribery and corruption policies aim at prohibiting bribery and corruption, and telecom has a strong policy in this field. The policy defines bribery, corruption and conflict of interests and the company trains employees at different levels to raise awareness.

Regarding the whistleblower program, the company has a reporting hotline, available 24/7 and assures to whistleblowers a non-retaliation policy, avoiding informers to be impacted or harmed by keeping them anonymous. The company discloses its figures regarding the whistleblower program and the measures taken following the complaints. Telecom S.p.A is signatory of the Global compact since 2002. Finally, the company has integrated ESG among the governance responsibilities, assigning the monitoring and management of ESG issues to the Risk & Compliance committee, hence at board level.

[62] Telecom S.p.A, *Social Responsibility Policy*

Regarding the disclosure category, the CV of the board members are available online, as it discloses tax paid in the countries it has to. The Reporting of non-financial documents follows the GRI standards and is verified by an external auditor, in this case, it is audited by PWC.

The governance performance is assessed considering gender diversity, within the board and in management and considering the gender pay-gap, the so-called CEO-Duality, as the separation of CEO and Chairman of the board, the disclosure of the boards independence and the presence and independence of the boards committees. The board is composed of 15 members, of which 40% are women and 12 members are independent, no CEO-Duality is present as Amos Genish has been CEO and Chairman of the board in 2018, this changed in November 2018 as Luigi Gubitosi succeeded to the previous CEO and Chairman. In the management team female participation reaches 20% and the gender pay-gap is of 85%, measured as ratio between gross income for women and man.

Following Borsa Italiana S.p.A. Codice di Autodisciplina, the committees of Telecom S.p.A. are compliant to the code’s rulings.

CATEGORY	WEIGHT	SCORE	2018
1. ENVIRONMENTAL	30%	6,65	24%
A. PRELIMINARY	13,5%	2,30	10,48%
1.Environmental Policies	2,0%	0,75	1,50%
2.Environmental Mangement System	4,5%	0,75	3,38%
3. Environmental Programs	7,0%	0,80	5,60%
B. DISCLOSURE	3,0%	2,00	3,00%
1. Carbon Disclosure Program Questionnaire	1,5%	1,00	1,50%
2. Scope of GHG Reporting	1,5%	1,00	1,50%
C. PERFORMANCE	13,5%	2,35	10,25%
1. Fines & Penalties	3,5%	1,00	3,50%
2. Carbon Intensity	5,0%	0,75	3,75%
3. Renewable Energy Mix	5,0%	0,60	3,00%
2. SOCIAL	30%	12,90	25%
A. PRELIMINARY	15%	9,60	13,50%
1. Freedom Association Policy	1,0%	1,00	1,00%
2. Discrimination Policies	1,0%	1,00	1,00%
3. Diversity Programm	1,0%	1,00	1,00%
4. Stock Option Plan for Employees	1,0%	0,50	0,50%
5. Health and Safety Programm	1,0%	1,00	1,00%
6. Conflict zone Mineral Policy	1,0%	0,30	0,30%
7. Supply Chain Policy	2,5%	1,00	2,50%
8. Data Privacy Policy	4,0%	0,80	3,20%
9. Human Rights Policies	1,5%	1,00	1,50%
10. Community Involvement Programms	0,5%	1,00	0,50%
11. Corporate Foundation	1,0%	1,00	1,00%
B. DISCLOSURE	3,0%	1,00	3,0%
1. Supply Chain Disclosure	3,0%	1,00	3,00%
C. PERFORMANCE	12%	2,30	8,3%
1. Customer and Employee Controversies	4,0%	0,70	2,80%
2. Collective Bargaining Agreement	4,0%	1,00	4,00%
3. Employee Turnover Rate	2,5%	0,60	1,50%
4. Top Employer Recognition	1,0%	0,00	0,00%
3. GOVERNANCE	40%	11,25	34%
A. PRELIMINARY	16%	6,00	16,0%
1. Bribery and Corruption Policy	3,5%	1,00	3,5%
2. Whistleblower Program	3,5%	1,00	3,5%
3. Global Compact Signatory	2,0%	1,00	2,0%
4. ESG Governance	3,5%	1,00	3,5%
5. Self Evaluation Mechanism	2,0%	1,00	2,0%
6. Compliance to Codice di Autodisciplina B.I.	1,5%	1,00	1,5%
B. DISCLOSURE	8%	2,90	6,6%
1. CV of Board Members	1,0%	0,50	0,5%
2. Taxes	2,0%	1,00	2,0%
3. ESG Reporting	3,5%	1,00	3,5%
4. Remuneration Policy Disclosure	1,5%	0,40	0,6%
C. PERFORMANCE	16%	2,35	11,0%
1. Gender Diversity	5,0%	0,60	3,0%
2. Separation of CEO and Chairman (CEO DUALITY)	2,0%	0,00	0,0%
3. Board Independence	4,0%	0,75	3,0%
4. Committees	5,0%	1,00	5,0%
TOTAL SCORE ACHIEVED IN 2018			81,0%

4.3.2 ESG-Score Enel S.p.A.

This part will analyze the ESG performance of Enel S.p.A. in 2018, based on the companies Sustainability report. I will present every criteria in order to better qualify the ESG performance of the company. As for Telecom S.p.A. I assigned the weights considering the materiality map given in the company's sustainability report. Assigning to the environmental dimension a weight of 30%, to the social dimension an overall weight of 25% as to the governance dimension one of 45%, making it for Enel the most important dimension.

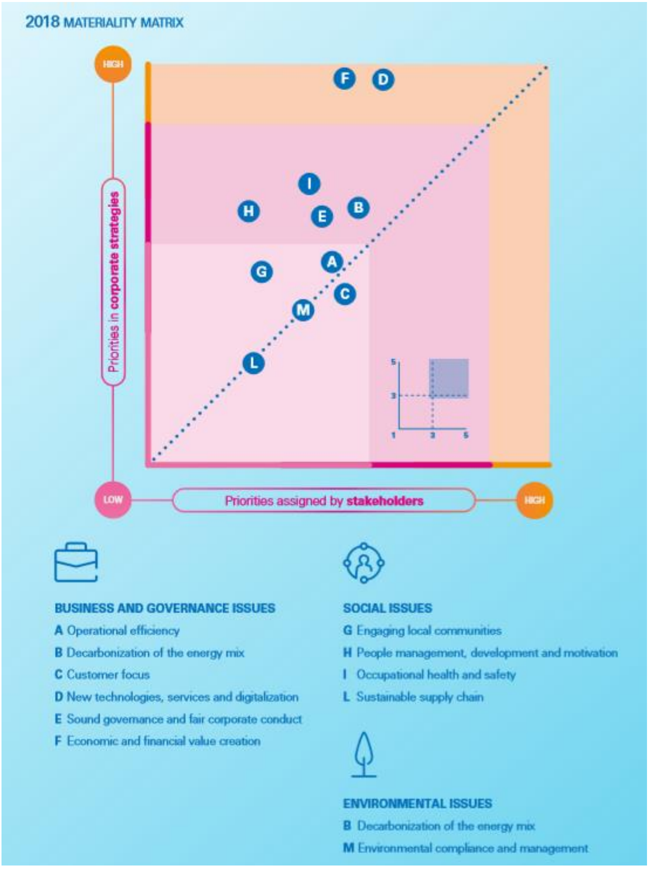


Table 11.

Enel S.p.A			
1.Environment			
CATEGORY	CAT. WEIGHT	RELATIVE WEIGHT	ABSOLUTE WEIGHT
A.Preliminary	30%	45%	13,5%
B.Disclosure		10%	3%
C.Performance		45%	13,5%
2.Social			
CATEGORY	CAT. WEIGHT	RELATIVE WEIGHT	ABSOLUTE WEIGHT
A.Preliminary	25%	50%	13%
B.Disclosure		10%	3%
C.Performance		40%	10%
3.Governance			
CATEGORY	CAT. WEIGHT	RELATIVE WEIGHT	ABSOLUTE WEIGHT
A.Preliminary	45%	40%	18%
B.Disclosure		20%	9%
C.Performance		40%	18%

Starting to analyze the first dimension, the environmental, the preliminary and the performance category account for 13.5% of the total score, whilst the disclosure accounts for 3%. The preliminary category is divided into three criteria which again are Environmental policies, Environmental management systems and Environmental programs. As of the first criteria, Enel is committed to Environmental challenges and to the reduction of emissions, as it clearly emerges from its sustainability report "Combating climate change and protecting the environment are among the responsibilities of a major global player in the energy industry such as Enel as we seek to achieve the full decarbonization of electricity generation by 2050, thereby helping to achieve the United Nations' SDG 13."[63]

Regarding the Environmental management system Enel S.p.A has a Corporate Governance and Sustainability committee, hence represents environmental responsibilities directly at board level. Among the responsibilities of the Corporate Governance and Sustainability committee there is the definition of environmental targets and programs as well as the monitoring and management of environmental issues.

Regarding environmental programs the company has strong commitments towards the environment, ambitious plans for achieving long-term sustainability and meeting the targets, such as the drastic increase of renewable energy production to reach 54 GW by 2021 and the implementation of new technical solutions for network digitalization and decentralization, such as smart grids. In order to realize these solutions more than 16.5 billion € have been dedicated in a three-year period (2018-2020). This will reduce the emission per kilowatt hour of energy produced to 0.23kg/kWh by 2030, from the 0.369 kg/kWh of today. With respect to the environmental disclosure category, Enel is not taking part to the Carbon Disclosure Program Questionnaire and it is adopting only two out of three GHG reporting criteria. It needs to be stated that it is working on including the third criteria for the next sustainability report and it is giving for now estimates of the third criteria.

Regarding the environmental performance category, Enel was imposed 292 fines for breaches of environmental law and regulation, with a countervalue of 12 million €. The carbon intensity trend is negative, while the renewable energy mix is increasing.

The Social dimension, which accounts for 25%, is divided in 12.5% in the preliminary category, 2.5 in the disclosure category and 10% in the performance category.

Among preliminary category criteria the most important for Enel S.p.A. are, Diversity Policies and Programs, Supply Chain Policies, Data Privacy Policies, Health and Safety Policies and Programs and the presence of a Corporate Foundation.

Diversity is a strong value to Enel, therefore it ensures "fundamental principles of non-discrimination, equal opportunities and equal dignity for all forms of diversity, inclusion, and work-life balance.", and there are Programs and policies to ensure implementation of these principles in every point mentioned, such as "Diversity & Inclusion Days" or the global "Parental Program" regarding gender diversity, the "Job Shadowing" a tutoring Program for age diversity and many more.

[63] Enel S.p.A., *Sustainability Report, (2018)*

In relation to Supply chain Policies suppliers are evaluated based on their Health and Safety standards, Environmental approach and Human rights respect. Clusters of Vendors are assigned a rating and monitored over time, following an initial training for all of them. Regarding the Data Privacy Policies, the company is compliant with the provisions of the GDPR regulation, therefore it has established a Data Protection Officer (DPO), who is in charge of handling data breach situations, minimizing them and in case of occurrence, communicating them to consumers and authorities. Occupational and Third-Party Health and Safety is considered as a robust risk for Enel, therefore it is accurately defining policies and programs for its avoidance. A crucial policy developed has been the Stop Work policy which states asks "each and every […] to intervene quickly and stop any activity that might jeopardize your health and safety or that of others or, similarly, that might cause harm to the environment. Specifically, these are activities that could be detrimental to the quality of environmental elements (air, soil, water, flora and fauna), or to a site's archaeological and artistic heritage."[64] Regarding the disclosure category, Enel discloses the breaches of its policy by suppliers and describes the handling of them. Regarding the performance of Enel in the Social dimension, no significant customer or employee controversies are reported on the sustainability report. Enel has a turnover rate of 6.9% and has been awarded by Forbes with the Top Employee recognition in 2018.

The Governance dimension which accounts for 45% of the total score, is divided in 18% for both the preliminary and performance category and 9% for the disclosure section. The relevant issues for the governance preliminary category are Bribery and Corruption Policy, the Whistleblower Program, being signatory of the Global Compact and the ESG governance.

Regarding Bribery and Corruption Enel has developed a Zero Tolerance of Corruption Plan in which bribery and corruption are severely prohibited, following an accurate definition of situations which could be defined as bribery and corruption.

Furthermore, the company as part of the whistleblower program has a reporting hotline 24/7 for complaints and a non-retaliation policy guaranteeing anonymous complaints, thereafter it discloses its figures regarding the whistleblower program and the measures taken following the complaints.

Enel is signatory of the UN Global Compact since 2014.

The ESG governance is represented at board level, as the company has a dedicated committee, having to set targets and monitor objectives and the remuneration policy is linked in the long-term to sustainability goals, such as among others environmental objectives.

Regarding the disclosure category, the company discloses the CVs of all board members of the board and taxes payed on their corporate website, the remuneration of the top management is not reported. The ESG reporting is audited by external auditors in this case EY is in charge of auditing the sustainability report.

The performance category considers Gender Diversity, CEO duality Board independence and Committees.

[64] Enel S.p.A., *Sustainability Report, (2018)*

Enel, has been awarded with the diversity award, and 3 woman are in the company's Board of directors, representing 36% of the board 84.6% in the management and 20.6% in the general workforce, furthermore the chairman of the board is a woman, implying CEO-Duality.
Regarding the Gender Pay-Gap the ratio between gross income comparing women and man it is calculated at 85%.
Following Borsa Italiana S.p.A. Codice di Autodisciplina, the committees and the board of directors are compliant to the code's rulings, with respect to independence and dimension.

CATEGORY	WEIGHT	SCORE	2018
1. ENVIRONMENTAL	30%	6,2	25,9%
A. PRELIMINARY	13,5%	3	14,0%
1.Environmental Policies	2,0%	1	2,0%
2.Environmental Mangement System	5,0%	1	5,0%
3. Environmental Programs	7,0%	1	7,0%
B. DISCLOSURE	3%	1	1,1%
1. Carbon Disclosure Program Questionnaire	1,5%	0	0,0%
2. Scope of GHG Reporting	1,5%	1	1,1%
C. PERFORMANCE	13,5%	2,2	10,8%
1. Fines & Penalties	4,0%	0,2	0,8%
2. Carbon Intensity	5,0%	1	5,0%
3. Renewable Energy Mix	5,0%	1	5,0%
2. SOCIAL	25%	12	19,8%
A. PRELIMINARY	13%	8,3	10,8%
1. Freedom Association Policy	0,5%	1	0,5%
2. Discrimination Policies	0,5%	1	0,5%
3. Diversity Programm	1,0%	0,3	0,3%
4. Stock Option Plan for Employees	0,5%	0	0,0%
5. Health and Safety Programm	1,0%	1	1,0%
6. Conflict zone Mineral Policy	1,0%	0	0,0%
7. Supply Chain Policy	2,5%	1	2,5%
8. Data Privacy Policy	1,5%	1	1,5%
9. Human Rights Policies	1,5%	1	1,5%
10. Community Involvement Programms	2,0%	1	2,0%
11. Corporate Foundation	1,0%	1	1,0%
B. DISCLOSURE	3%	1	3%
1. Supply Chain Disclosure	3%	1	3%
C. PERFORMANCE	10%	2,7	6,4%
1. Customer and Employee Controversies	3,0%	0	0,0%
2. Collective Bargaining Agreement	3,0%	1	3,0%
3. Employee Turnover Rate	2,0%	1	2,0%
4. Top Employer Recognition	2,0%	0,7	1,4%
3. GOVERNANCE	45%	13,1	42,4%
A. PRELIMINARY	18%	6	18,0%
1. Bribery and Corruption Policy	4,5%	1	4,5%
2. Whistleblower Program	3,5%	1	3,5%
3. Global Compact Signatory	3,0%	1	3,0%
4. ESG Governance	4,0%	1	4,0%
5. Self Evaluation Mechanism	1,5%	1	1,5%
6. Compliance to Codice di Autodisciplina B.I.	1,5%	1	1,5%
B. DISCLOSURE	9%	3,5	8,0%
1. CV of Board Members	1,0%	1	1,0%
2. Taxes	2,0%	1	2,0%
3. ESG Reporting	4,0%	1	4,0%
4. Remuneration Policy Disclosure	2,0%	0,5	1,0%
C. PERFORMANCE	18%	3,6	16,4%
1. Gender Diversity	4,0%	0,6	2,4%
2. Separation of CEO and Chairman (CEO DUALITY)	4,0%	1	4,0%
3. Board Independence	5,0%	1	5,0%
4. Committees	5,0%	1	5,0%
TOTAL SCORE ACHIEVED IN 2018			88,1%

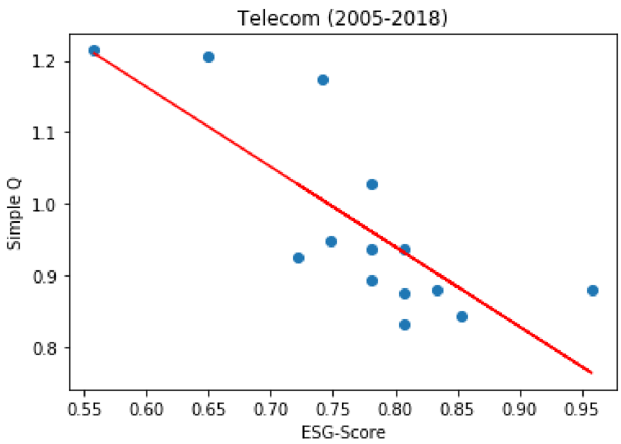
4.3.3 Linear Regression Analysis Simple Q Vs. ESG-Score

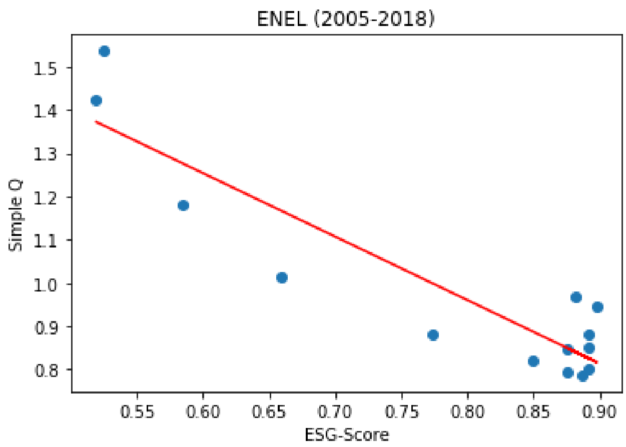
In order to perform the linear Regression analysis on Python, preliminary work of collecting the necessary data has been done, such as the values for the Simple Q[65], gathering the necessary data from Bloomberg and the ESG-Scores have been computed.

Having collected all relevant information regarding the two variables, two arrays on Python were created one containing the values for the dependent variable, the other with the values of the independent variable.

Following the creation of the arrays the *polyfit* function was applied, which returns the coefficients of the OLS function between the two arrays.

Applying the plot and print function the following graphs and relevant data regarding the OLS estimation have been obtained.





The functions describing the regression between the factors are:

$$Simple\ Q_{t,Telecom} = 1.83211 – 1.11525 * ESG\ Score_t$$

$$Simple\ Q_{t,Enel} = 2.13419 - 1.46730 * ESG\ Score_t$$

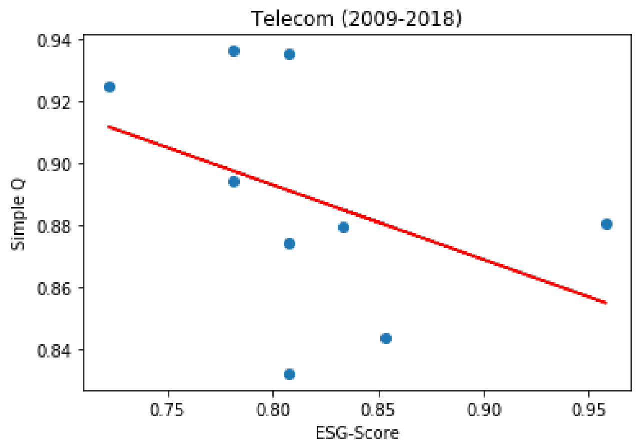
	Telecom	Enel
R-Squared	0.6127625048	0.8289623858
p-Value	0.0009322800065	0,0000061148256

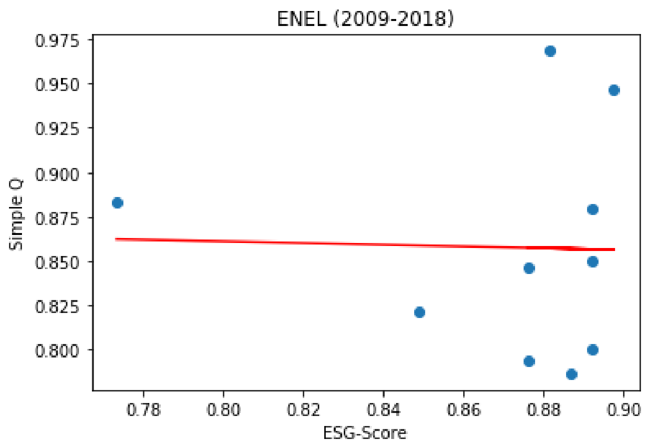
The information to verify the goodness of the regression are presented in the table, demonstrating good fitting of the regression with respect to the input data, as presenting high levels of R-squared and high statistical significance levels, since the p-values are smaller than small alphas, implying the rejection of the null hypothesis, H_o: $\beta = 0$, hence accepting the alternative hypothesis H_1: $\beta \neq 0$ in both cases.

[65] N. Kaplan, L. Zingales, *Do Investment-Cash Flow Sensitivities Provide* (1997)

The results obtained with the regression analysis show a negative correlation between Simple Q and ESG-scores over the considered period. This implies for both companies that increasing ESG-scores, produces negative results on the Simple Q.

Furthermore, a second regression has been performed considering a smaller timeframe, ranging from 2009 to 2018, using the same dependent and independent variable. The results of this second analysis are presented below.





The regression lines equations are described as follows

$Simple\ Q_{t,Telecom}$ = 1.085610 - 0.240679 $*\ ESG\ Score_t$

$Simple\ Q_{t,Enel}$ = 0.89914 - 0.04759 $*\ ESG\ Score_t$

	Telecom	Enel
R-Squared	0.170207406	0.0008068
p-Value	0.2698040860568	0.9379140439207

From the table it is possible to observe that the two regressions present low values (0.17 and 0.0008) regarding the R-squared. The p-values values show that this regression have low statistical significance being the null hypothesis rejected for alphas greater than 0.27 an 0.94. This implies that the confidence level is respectively 73% and 6%. This result is in line with having used a smaller sample.

The results of the second regression demonstrate a less negative, close to zero, impact of the ESG-score results on the dependent variable.

Conclusions

The first chapter of the dissertation explores the origins and development of the three ESG aspects, environmental, social and governance topics and the evolution of Socially Responsible Investments (SRIs) over the last decades. Furthermore, I examined the different Corporate Governance approaches and models rooted in the United Kingdom, Germany and Italy, which represent the most widespread conceptions from both an academic and business perspective. Moreover, the first chapter contains an analysis of the state of art of Integrated Reporting in Europe. The second chapters deals with the relationship between ESG and Corporate Financial Performance, initially exploring the prevalent methods for the evaluation of the financial performance, later gathering direct opinions of authoritative members of the business community, such as CEOs, Consultants, Venture Capitalists and members of the Board of Directors regarding the existence of the relationship between the two factors. These opinions present different perspectives about the relationship, relevance and awareness of ESG topics in Italy. The third chapter deals with three of the most important SRI Indices, examining the different ESG-rating methodologies and the differences in their composition and definition. Finally, the fourth chapter presents the results of two linear regression analyses performed to observe the relationship between the ESG-Score of two Italian companies, Telecom S.p.A. and Enel S.p.A., and the variable chosen as proxy for their financial Performance, the Simple Q.
The first analysis considers a time period between 2005 and 2018, while the second takes into account the years between 2009 and 2018.
Following an in depth-study of the subject undertaken, I have developed the following final remarks:

1. The first general observation concerns the relevance that ESG performance has gained in the business community so far. It is quite clear that increasing importance is given to sustainability issues, coupled with a more structured approach of companies actively dealing with ESG topics. Nowadays more and more companies consider ESG as an endogenous element of the business and not as a "nice to have", additional factor in relation to the corporations' prevailing objective of profit maximization. Along this progressive and though widespread process, different degrees of development have been achieved, influenced by different and relevant circumstances. Firstly it is important to consider that companies operating in innovative businesses, often presenting less industrial legacy, are able to integrate environmental and social issues more easily into their business models; in these companies sustainability is often considered as a crucial element of their business and value creation process rather than a set of principles to be progressively and laboriously integrated through a gradual adjustment of governance mechanisms. For these companies sustainability has great impact in terms of customer acquisition and legacy creation.

On the contrary, companies that operate in traditional and consolidated production or service areas need to renew their processes in order to improve their ESG performance by dynamically seeking the best social and environmental balance, often incurring in trade-offs between financial and non-financial objectives. Secondly, the increase in legislative and regulatory measures regarding environmental, social and governance aspects, which despite significant differences at global level, affect businesses with different degrees of pervasiveness. This framework relentlessly contributes to the acceleration of the change processes necessary to improve ESG performance.

2. The second remark concerns the analysis of the ESG performance of the two companies observed, Telecom S.p.A. and Enel S.p.A. Both companies, which operate in diverse sectors, show a positive trend in their ESG performance over the period examined in the study (2005-2018). The materiality matrix, contained in the Telecom Sustainability Report, highlights the classification of the issues presented here in descending order of relevance: governance, social and environmental; the same matrix in Enel's Sustainability report indicates the following relevance: governance, environmental and social. In fact, the ESG-Score of the two companies, according to this paper's analysis, using also Bloomberg's ESG data for the computation of the 2005-2014 scores, shows an improvement in the performance of both companies. The former, Telecom S.p.A, ranged from a score of 56 to one of 81, and the latter, Enel S.p.A, ranged from a score of 52 to a score of 88.

The methodology used for the derivation of the ESG 2018 scores was based:

(i) On the identification of criteria relevant to the ESG performance of both companies.

(ii) On assigning different weight matrices based on the environmental, social and governance impact of the two companies' businesses.

(iii) On the evaluation of performance and on the attribution of corresponding scores in the respective areas, based on the evidence taken from the 2018 Sustainability Reports.

(iv) On the weighting and sum of the assigned scores in order to obtain the overall ESG-Score

Regarding the 2005-2017 ESG scores used in the analysis, the 2018 score computed following the previous line of reasoning, was benchmarked to the 2018 score assigned by Bloomberg. In order to obtain consistent scores over the entire period yearly percentage variations were considered and multiplied by the base year (2018).

3. The third observation concerns the results of the two regression analyses, evaluating the correlation between the ESG performance and the Corporate Financial Performance of the two examined companies. The first analysis shows that there is a negative correlation between the two factors in both companies. This is represented on one hand by the ESG performance, which increased during the period, and on the other hand the response variable which is represented by

Tobin's Q, that shows values that tend to decrease during the period examined. I believe that one possible explanation for this inverse relationship could be caused by the greater relative impact of factors related to business and financial performance compared to the relative performance of ESG variables. In fact, the factor that in my opinion mainly influences Tobin's Q is represented by the Stock Price, which determines the Market value of equity (MVE), hence a great amount of the fraction’s numerator. The Share Price determined through market evaluations reflects mainly financial performance indicators and, in my opinion, secondarily reflects sustainability components. The latter is certainly embedded in the share price, but in the case of the examined companies, Telecom and Enel, this was incapable of offsetting the negative effect of mere financial performance, which influenced the Share Price negatively affecting the analysis conducted. Furthermore, the result of the analysis could be significantly influenced by the limited sample of companies studied over a relatively short period of time (13 years). Both elements could cause bias to the performed analysis, as some studies suggest. Moreover literature mostly suggests, on wider samples and longer periods, a positive correlation between the two factors. This correlation emerges in Eccles, Ioannou and Serafeim’s study entitled "The Impact of Corporate Sustainability on Organizational Processes and Performance", where they compare a sample of 90 “high sustainable” companies with an equally sized control sample of “low sustainable” companies over a 20-year period, proving better performance of the “high sustainable” sample.

The second regression analysis conducted on the two companies excludes the initial years considered in the other analysis, hence referring to a shorter period of time. This provided a more positive correlation between the two factors, even though statistical significance has been strongly reduced.

The reason for this less negative relation could arise from the different period studied. In fact, considering only more recent years could improve the impact of the ESG Performance on the Simple Q, as attention and consideration towards such issues progressed. Nevertheless, it must be said that the relationship is still negative, further demonstrating the hypothesis presented for the previous analysis, stating that the increase in the ESG Performance over time is not able to offset the negative financial performance registered for the two companies.

4. The fourth remark concerns the growing importance that, in my view, sustainability issues are becoming increasingly critical success factors for businesses. Indeed, there are significant and converging signals in this direction: (i) the strong growth in the demand for SRI funds and the growing volume of their Assets under Management; (ii) the development of ESG-Rating services and ESG indices, increasing transparency and highlighting often better ESG performance compared to their less sustainable equivalents, providing more and more information and tools for

investors and companies; (iii). the growing awareness of consumers and regulators towards environmental, social and governance issues, which implies the need for companies to rapidly adapt and embed ESG into their strategy. This trend is substantiated by Larry Finck’s recent statements, CEO of BlackRock, who in his recent letter to shareholders "putting sustainability at the center of how we invest" provides clear evidence of how high ESG performance will ensure future access to capital markets and external sources of financing, correspondingly demonstrating the importance for companies to integrate ESG factors into their corporate strategies.

6. The last consideration, arising from the above remarks, concerns the need to develop a unique and standardized evaluation system for the measurement of ESG performance. It is in fact clear that a system of "hard metrics", coupled with standardized reporting requirements and adequate communication of business and sustainability strategies to shareholders and stakeholders appears fundamental in order to correctly assess ESG performance. The correct assessment will effectively permit to reward companies that incorporate sustainability into their business strategies and make investments in order to achieve high standards. The effort made in this dissertation, in order to classify standardized ESG criteria, wants to be considered as a starting point for further analysis, towards the development of a consistent measurement system.

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The impact of ESG criteria on corporate financial performance a study on Italian Utilities: Telecom S.p.A. and ENEL S.p.A.

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Academic Year 2018/2019

Index

Introduction

This dissertation analyzes in the first chapter the origins and developments of the three ESG aspects, environmental, social and governance and the evolution of Socially Responsible Investments (SRIs) over the last decades. Furthermore, a study of the different Corporate Governance approaches and models rooted in the United Kingdom, Germany and Italy, which represent the most widespread conceptions from both an academic and business point of view is presented. Finally, the first chapter contains an analysis of the state of art of Integrated Reporting in Europe.
Moreover, the first chapter contains an analysis of the state of art of Integrated Reporting in Europe. The second chapters deals with the relationship between ESG and Corporate Financial Performance, initially exploring the prevalent methods for the evaluation of the financial performance, later gathering direct opinions of authoritative members of the business community, such as CEOs, Consultants, Venture Capitalists and members of the Board of Directors, about the existence of the relationship between the two factors. These opinions, present different perspectives about the relationship, relevance and awareness of ESG topics in Italy. The third chapter deals with three of the most important SRI Indices, examining the different ESG-rating methodologies applied and the differences in their composition and definition. Finally, the fourth chapter presents the results of two linear regression analysis performed to analyze the relationship between the ESG-Score, I computed, of two Italian companies, Telecom S.p.A. and Enel S.p.A., and the variable chosen as proxy for their financial Performance, the Simple Q. At last conclusion regarding the output of the regression analysis are drawn.

1 <u>*Sustainability within the ESG Concept*</u>

1.1 Foreword

The Environmental, Social and Governance (ESG) concept is nowadays a crucial aspect for corporations and its positive link to corporate financial performance is of great interest from both an academic and practical perspective.
From an academic perspective, recent studies have argued that a well-defined corporate governance process, coupled with outstanding financial performance achieved through clear organizational processes, can increase investor trust hence facilitating the acquisition of the necessary funds. The field studied from the early 70’s, with more than 2000 published academic papers didn’t include Governance in the original definition, hence the need of separate discussion.
From a practical standpoint the relevance of ESG for corporations can be measured from an investment perspective, especially considering the Asset under Management (AuM) in Socially Responsible Investments also called Social and Responsible Investments (SRI), which in the US almost doubled during the 2012-2014 crisis period, and which maintained in Europe constant compounded annual growth rate (CAGR) of 52% during the last decade, reaching 14 TN $ in 2018.

1.2 History and development

1.2.1 Sustainability, Environmental and Social aspects

The origins of the ESG concept, as a unitarian ethical code for corporate behavior, are closely related to the ones of sustainability, which has a far more general and omni-comprehensive character. Considered as a milestone to environmental issues the seminal book *The Silent Spring* is often recalled. This book, in Townsends’ opinion, “gave birth to modern environmental movements” and increased awareness by creating linkages between pollution, water, air plants, animals and people. Whereas the first definition of Sustainability is to be attributed to Mrs. Brundtland who was chairwoman of the World commission on Environmental and Development (WCED). According to the report “Sustainable development is development that meets the needs [economic, social and environmental] of the present without compromising the ability of future generations to meet their own needs.” This statement has provided an overarching definition of what sustainability implies. A later definition of Sustainability and the development of an ESG reporting framework was provided by John Elkington, in the three P model in 1995, stating that firm able to operate within three dimension, labeled as People, Planet and Profit, can have “livable, fair and feasible growth”. The attention towards social aspects along in the definition of sustainability was brought by Milton Moskowitz and Archie B. Carroll. The first compiling a record of socially responsible firms and publishing numerous articles on the New York Times, the second developing the concept of CSR. Efforts to introduce social and environmental issues within corporate accounting frameworks have been firstly addressed by Joan Bavaria forming an alliance with leading environmentalists under the name "Coalition for Environmentally Responsible Economies” (C.E.R.E.S.) and releasing a set of 10 voluntary principles, commonly referred to as “Valdez Principles”. These principles combined with Elkington’s work, paved the ground for establishing the Global Reporting Initiative (GRI) in 1997, which represented a crucial step for Sustainability and ESG, as it provided a fundamental measurement tool, such as Sustainability Reporting Guidelines. Lastly the United Nations’ Global Compact, a non-binding set of ten organizational principles regarding environmental and social aspects, such as human rights, child labor and corruption, which have been adopted by over 10,000 corporations in more than 160 countries.

1.2.2 Corporate Governance

A common feature of the previous definitions is omitting governance from their frameworks. This concept has progressively been integrated within the ESG analysis by several scholars and nowadays is considered to be the most influential aspect of Corporate Financial Performance. The first trace of corporate governance can be found as early as in the XVIII book written by A. Smith *The Wealth of Nations*. As a milestone to Corporate Governance scholars often refer to the 1932 work by Adolf A. Berle and Gardiner Means *The Modern Corporation and Private Property*. In their work the two academics present the two following considerations: (i) major shareholder owned less than 1% of the shares and that the corporations were tending towards less concentrated ownership structures; (ii) they highlighted the loss of relation between ownership and control, underlying for the first time Agency Relation issues. Corporate Governance assumes a critical role in the American corporate environment starting from the 70’s, when the Federal Security and Exchange Commission (SEC), in the role of investor supervisor. In the 80’s, sometimes referred to as the “Deal decade”, innovative financial and legal techniques increased take-over bids for the control of corporations and the acknowledgment that the role of shareholders, including institutional investors, was not pivotal for corporate decision-making became clear. Governance discussions in the 90's, where many privatizations took place, became an increasingly central topic at international level. The 1992 Cadbury Report marked a turning point for the development of corporate governance and started rapidly spreading across the globe, providing a first general definition of Corporate Governance, as "The system by which companies are directed and controlled" and identifying three themes to strengthen the unitary board system, firstly the structure and responsibilities of the board of director, secondly the role of auditors and recommendations to the accountancy profession, and thirdly the rights and responsibilities of shareholders.

1.2.3 Socially Responsible Investments

A definition of what Socially Responsible Investments (SRI) are has been given by EUROSIF in the last available Report of 2018:

"Sustainable and Responsible Investment is a long-term oriented investment approach, which integrates ESG factors in the research, analysis and selection process of securities within an investment portfolio […]." The history of SRI roots back to the 70's, gained relevance during the 80's and 90's. SRIs started, by tackling an open wound of the time, the Vietnam conflict and the use of Agent Orange, a toxin used by the US Army during that war, as in 1971 the Pax World Balanced Fund was established to address this issue delivering an alternative investment opportunity. In the 80's SRIs standardized their approach, adopting what is commonly known as "negative" or "avoidance screening", resembling the broader market indices whilst avoiding certain industries. Nowadays the approach mostly used by SRI investors combines two features, "Best in Class" and "avoidance screening". The first sets an avoidance threshold gained from non-sustainable investments to exclude corporations or entire sectors. A decisive aspect necessary for further development of SRI and the integration of the ESG analysis is represented by the dilemma on whether including ESG valuations in allocation decisions conflicts with fiduciary duties of institutional investors. To answer this question the United Nations appointed a law firm to study national laws, determining that the integration of ESG factors was part of the managers fiduciary duties.

1.3 The different Governance concepts and models

Corporate Governance is defined by the Cadbury Code as "The system by which companies are directed and controlled" , but it is clear that this can't be seen neither as a universal governing system, nor as a single unifying theory.

Idiosyncratic features in corporations and country's corporate environment create fundamental matters that Corporate Governance needs to address promptly according to the system it applied to. For example, different ownership structures present different issues regarding the separation between ownership and control arising two different relation, which are Agent-Principal relation or the Agent-Agent relation. Furthermore, Corporate Governance evolved following different perspectives, hence not being characterized by a single unifying theory. Scholars have summarized two main streams, the narrow prevailing in Anglo-Saxon environment, which considers shareholders as the only stakeholder of a company, and the broader view prevailing in the European environment, considering a broader range of stakeholder as interested in the companies.

1.3.1 The United Kingdom Model, One-tier system

The United Kingdom's Corporate Governance system, contrarily to the "tick-box system" contained in the Cadbury Code, is traditionally focused on the Board of Directors and is nowadays governed mainly through the Combined Code. In this Governance system the Board of Directors has "universal powers", as it has both management and control functions within the board. Given both management and control functions to the board, a pivotal role is attributed to independent directors. These are members of the board, parallel to directors and executives of the firms, who are though excluded from day-to-day management of the business. All directors have the same powers and duties, being able to take initiative in strategic management decisions and underlying severe fiduciary duties. The code recommends the board to be composed of at least half independent directors excluding the chairman and it also recommends 'CEO duality', which implies the chairman of the board to be an independent director and different from the company's CEO.

1.3.2 The German Model, Two-tier system

The German Corporate Governance system relies on two distinctive and firmly rooted features. The first characteristic is provided by statutory rules requiring mandatory two-tier board systems for all public corporations, formed by a Management Board (Vorstand), responsible of running the business, and a peculiar Supervisory Board (Aufsichtsrat). The second characteristic, so called 'Co-Determination' (Mitbestimmung), is about stakeholder interest, particularly those of employees, who are required to participate in the management of the company, bearing the rights to the appointment of the Supervisory Board members. The tasks of the Supervisory board can be divided into two main groups, its legal functions and 'soft functions'. The legal functions include the appointment and removal, advise and supervise the board of directors' members. Regarding Board Composition in Germany membership in the *Aufsichtsrat* is incompatible with coincident membership in the *Vorstand*, and individuals are not allowed to take up more than ten supervisory board mandates at the time. The Deutscher Corporate Governance Kodex requires at least 30% of the Board to be women and to guarantee diversity. The 'Co-determination' principle, the *Mitbestimmungsgesetz*, is prescribed by law and requires companies with more than 2000 employees to have half of the supervisory board members appointed by employee representatives.

1.3.3 The Italian Model, the Traditional model

Corporate Governance in Italy has been coded and deeply revised by the Testo Unico della Finanza in 1998 and subsequently by the corporate law reform in 2003 . The model firstly proposed by the law, referred to as traditional model, is composed of two mandatory boards, the Consiglio di amministrazione (Board of Directors) and a mandatory second Board, the Collegio Sindacale. The Corporate law reform introduced then the option to choose between the Italian model (tradizionale), a one-tier (monistico) or a two-tier (dualistico) Board model. Within the traditional board model, considered to be the default option, if not specified in the company's statute, the tasks of the consiglio di amministrazione are those of running the day-by-day business and of defining the firm's long-term strategy. The tasks of the Collegio Sindacale are similar to the ones of the German Supervisory Board. The adoption of board models different to the traditional model is meager.

1.4 Integrated Reporting in Europe

Disclosure of non-financial information regarding social and environmental matters in Europe has been enhanced by the release of the EU Directive 2014/95/EU, which has regulated disclosure standards for non-financial information aiming at standardizing Integrated Reporting (IR) across Europe. Next to EU other organizations developed reporting standards for non-financial information at a global level, such as the International Integrated Reporting Council (IIRC).
IR is described from the IIRC as "[...]information about an organization's strategy, governance, performance and prospects in a way that reflects the commercial, social and environmental context within which it operates. It provides a clear and concise representation of how an organization demonstrates stewardship and how it creates and sustains value." The goal of this organization is to provide a framework within which corporations can operate to produce integrated reports indicating most material social, environmental and economic actions, outcomes, risks and opportunities. Given the intention to offer suitable balance between flexibility and prescription, the IR framework is principle-based rather than rule-based.

1.5 The convergence of the factors towards a unitary definition of ESG

The three factors presented separately can be merged into a holistic strategic management tool, "each offering a different yet complementary perspective on the activities of an organization."
The process of consolidating these three concepts within one definition has been mainly influenced by two factors. (i) The numerous accounting frauds and environmental disasters, there has been an increased regulatory pressure for corporate governance and social and environmental businesses. (ii) The growing demand for Socially Responsible Investments (SRI). Governance is seen as a tool to integrate social and environmental aspects within business strategies and decision-making processes. This is done considering not only shareholder benefits but focusing on a broader range of stakeholders, transforming ESG in a strategic management tool serving as a long-term performance driver and offering an efficient risk Management tool.

2 *<u>The relationship between ESG and Corporate Financial Performance</u>*

2.1 Foreword

To better understand the impact of ESG factors on Corporate Financial Performance (CFP) it is appropriate to better define and analyze it. In Corporate milieu it is more complicated to define performance as it can have many facets. Amongst other CFP depends as much from internal factors as from external factors, fact which could generate an overall negative performance despite efforts and actions that would have produced positive CFP otherwise. Time horizon considered by different stakeholders may bias CFP as well, as it can vary from short-term to long-term, achieving positive performance in one horizon and negative in the other. The measurement of a firms' financial performance is mainly based on its financial statements, composed of Balance Sheet, Income statement and Cash Flow Statement, released on a yearly basis.
These documents contain most data needed to determine financial performance.

2.2 Corporate Financial Performance

2.2.1 Financial Ratios

Financial Ratio analysis is one of the commonly CFP analysis performed by investors and managers. These are proportions between accounting or market variables, which reveal the performance of a company in certain areas. Financial Ratios are divided in 3 categories upon the set of activities they were generated from, as operating activities, investment activities and financial activities. Profitability Ratios are derived from Financial Statement data and represent the ability of a firm to sell their Products at a higher price than the cost of production. Four mainly used Profitability Ratios are so called Gross Margin, Operating Margin, EBIT Margin and Net Profit Margin. Liquidity Ratios use Balance Sheet factors to assess the short-term financial solvency of a firm. Three versions of Liquidity Ratios are the Current Ratio, the Quick Ratio and the Cash Ratio. Solvency Ratios and Interest Coverage Ratios both evaluate long-term solvency of a Firm, the second analyzing the ability of a Firm to generate means to cover interest expenses. Solvency Ratios can be computed using long-, and short-term debts to Cash Flow and Assets, while Interest Coverage Ratios in terms of EBIT or EBITDA compared to Net Interest Expense.
Leverage Ratios express the extent to which Firms' rely upon debt to finance their activities. These Ratios are of three kinds Debt-to-Capital Ratio, Debt-to-Enterprise Value and so-called Equity multiplier.

2.2.2 Operating Return Rations

The main operating return Ratio are the Return on Equity (ROE) and the Return on Invested Capital (ROIC). The ROE measures the return on venture capital or on equity, hence considering solely the return for Shareholders, representing the yearly return for every euro invested in the companies' Equity. This Ratio can be decomposed to better analyze the companies' performance, following the DuPont scheme, which divides the ROE in Profit Margin, Asset Turnover and Equity Multiplier. The ROIC, represents the operating profitability measured by the ratio between the result of recurring operations and the amount of capital invested. This Ratio, differently to the ROE neutralizes the effect of the company's capital intensity and depreciation policies and therefore returns with greater accuracy and reliability the ability of industrial management to release resources and thus ultimately the operating performance of the company.

2.2.3 Other Valuation Techniques

Amongst the price and valuation techniques three are the most commonly applied by analysts, which are the Economic Value Added, the Valuation Multiples and the DCF. The EVA indicator represents the company's ability to generate value through the creation of a positive differential between the results produced by the company's operations and the cost occurred to provide itself with the resources to generate those results. Valuation Multiples are a relative valuation method, that takes advantage of the law of one price considering the price and performance of comparable companies to calculate the comparables' ratio, relating it to the target's obtaining its price. Among this sort of ratio, the Market-to-Book Ratio (M-to-B Ratio), the Price/Earnings Ratio (P/E Ratio), and Tobin's Q. Other valuation multiples are based on the Enterprise value confronted to different figures, like Sales, EBIT and EBITDA. The most reliable and ultimate model to valuate a firm's value is the Discounted Cash Flow model (DCF). This method is generally the most widespread in the evaluation field and therefore the most common indicator of company performance. It is constructed using the Cash Flows produced, discounted by a discount rate which is usually the Weighted Average Cost of Capital (WACC) to compute the Net Present Value.

2.3 Literature Review

This part will summarize the literature regarding the link between ESG and Corporate Financial Performance. It will start outlining the overall relation and will then focus on the relation between the single factors, Environment, Social and Governance and CFP.

2.3.1 ESG and Corporate Financial Performance

In the past two decades the overall relationship between ESG and CFP has been widely studied. The outcomes of their work are ambiguous and do not unanimously agree upon the positive effects of ESG. The Neoclassical theory focuses on the determination of goods, outputs, the distribution of income in markets through supply and demand and the maximization of utility and profits. Within this theory ESG is often seen as an additional cost to company's Profit and Loss (P&L), hence burdening the companies market competitiveness by reducing its Profits, neglecting though the multigenerational economic transfer, as many scholars criticize. Many other theories consider ESG efforts positively, in terms of reputation enhancement and safeguard and in relation to stakeholder relations. Empirical studies conducted by Horváthová, regarding the relationship to CSR, Bebchuk, Cohen and Wang, studying Corporate Governance, and by Eccles, Ioannou, and Serafeim to Sustainability.

2.3.2 The effect of every sub-factor on CFP

The overall effect of ESG performance is determined by the performance of every sub-factor, Environmental, Social and Corporate Governance, on CFP. Among the three factors following Friede et al. the Environmental factor is the one with the most positive externalities. Amongst theories explaining negative correlation there are works from McGuire, Sundgren and Schneeweis and Daszyńska-Żygadło which conduct so-called "Event-Studies", as Dowell, Hart and Yeung and Derwell, Gunster, Bauer and Koedijk for the US market and Elsayed and Paton and Kruger in Europe study the environmental effect in the long-term. Analyzing the relationship between Social Performance and CFP the analysis of Friede et al. concludes that this is the factor with the weakest relation. Theories range from organizational human resources, human resources management and diversity in processes and boards. Lastly, governance is stated to be the factor with the most positive and negative relations. The studies analyze different aspects ranging from internal governance mechanisms to board independence, size and level of debt financing.

2.4 Inteviews

This section will be dedicated to the presentation of four interviews conducted with managers, consultants and lawyers that have addressed in corporation's sustainability and ESG issues and topics. The reason for these interviews is to collect their valuable experiences and opinions, hence giving an insight about the perception, value and dealing with such a crucial topic. I hereby would like to thank each and every one of them for their availability and their profoundly inspiring contribution.

3 SRI Indices

3.1 *Foreword*

This chapter will discuss SRI stock indices, how the ESG ratings are constructed upon which the incorporation decisions are based and how these are built. The analysis will center around three of the most famous SRI indices. Finally, a brief comparison will be done and an assessment about the credibility of the sources, and validity will be done. SRI indices in general are stock indices, which take in account not only financial criteria such as market capitalization, value and liquidity of a stock, but also consider ESG factors when selecting stocks to be included in the index. SRI indices can be used as benchmarks for the performance of ESG stocks compared to their non-ESG equivalents, as well as to monitor the performance of pension funds and other long-term oriented investors. Unlike the performance of SRI funds, the performance of SRI indices has not been subject of many studies. Micheal Schröder in 2007 studied the performance of 29 SRI indices performing linear and multiple regression analysis, determining that the former indices had better performance in terms of both alpha and beta respect to their non-SRI counterparts. Meir Statman in 2006 compared the performance of 4 major SRI indices to the performance of the S&P 500, showing that three out of four performed better. Lastly the Teachers Insurance Annuity Association (TIAA) considered five of the oldest SRI indices compared to both the Russell 3000 and the S&P 500 showing no statistical significance in their results neither in terms of return nor of the risk born by investors.

3.2 MSCI Global SRI Indices

3.2.1 The Company

MSCI is an American independent finance company, founded in 1969, serving as financial service provider and advisor for institutional investors, as part of their business they also research and provide analysis tools about ESG factors. In 2009 MSCI became publicly listed. Their expansion and M&A path started in 2004 with the acquisition of Barra. In 2010, MSCI acquired among others RiskMetrics Group and Measurisk, the former owned the Centre for Financial Research and Analysis (CFRA), Innovest Strategic value Advisors, Inc. and KLD Research and Analytics, which were grouped under MSCI ESG Research. MSCI ESG Research was therefore able to develop an extensive platform and set standards for hedge fund risk analysis and reporting.

3.2.2 ESG Rating Methodology

MSCI bases their ESG-rating upon government and non-government information, such as Government databases, media and non-government organizations, and disclosure by the company itself, such as 10-K, sustainability, proxy reports and results of the AGM meeting. Furthermore, companies are monitored on a systematic and continuous basis. The company can therefore obtain four different scores, ordered from the worst to the best score, following a color scheme: red; orange, yellow and green. In addition, the company receives an in-depth review at least annually. The ratings of companies are computed given exposure to key ESG-type risks, based on a granular breakdown of the company's business. Risks bore by companies are assigned given six to ten ESG-type key factors where companies in a given industry sector generate relevant environmental and social externalities and weighted according to the global industry classification. , the final score adjusted for each company's industry sector corresponds to a rating ranging from a maximum of AAA (best) to a minimum of CCC (worst). These ratings are not intended to be absolute but should always be read considering the standards and performance of competitors in the same sector.

3.2.3 Index structure

The investment universe for this series of indices is made up of the stocks that make up the MSCI Global Investable Market Indexes (GIMI) series. All, those securities that belong to sectors, considered not in line with sustainability principles, are consequently excluded from this investment universe. The indices are composed on a “best in class” basis: in particular, securities that are already part of the index must have a rating of at least B to continue to be part of it, and securities that are not yet part of the index must have a rating of at least BBB to be considered eligible. Every index is then created with the objective of covering 25% of the market capitalization, adjusted for the free float of each GICS sector of the underlying "relative" index. Once the 25% coverage is reached, the company so-called "marginal company", which is the company that allows to exceed the 25% coverage threshold, is identified. If the company is already part of the index it is kept within, otherwise the marginal company is only included, if considering the differences arising from inclusion respect to the 25% coverage are smaller than the difference respect to the 25% arising from the exclusion.

3.3 FTSE4Good

3.3.1 The Company

The FTSE4Good index series is provided by FTSE Russell, founded in 1962, nowadays considered as one of the world's leading index providers. The strengths of the company are the use of relevant information calculated using robust methodologies, their accuracy, which allows them to offer products always in line with times and with sudden changes.
In 1995 with a Joint Venture between the Financial Times and London Stock Exchange was created giving birth to FTSE. A further crucial step was taken with the acquisition of Russel, establishing FTSE Russel. As far as corporate responsibility concerns, FTSE Russell is very thoughtful and the continuous and growing demand of customers for products and services that are increasingly oriented towards ESG factors, proves the strategic decision to be right. Amongst FTSE ESG Ratings, there are the FTSE Environmental Markets Series, the FTSE Developed ex Fossil Fuels Index Series and finally the FTSE4Good Index Series. This is composed of 13 indices of those companies that demonstrate excellent performance in ESG.

3.3.2 ESG Rating Methodology

As a source of information for the assessment of companies FTSE Russel uses only publicly available information, believing that this improves credibility. The ratings are based upon three pillars, environmental, social and governance which are again subdivided in more than 300 indicators. To every indicator a score is attributed signaling the company’s exposure to the considered indicator. The exposure may have the following scores: 3 high exposure, 2 medium exposure, 1 low exposure, 0 negligible/ not determinable. To be able to calculate a company's exposure to certain ESG factors and risks, what is called an "Exposure Matrix" is built, collecting data on the company's activity, its geographical location, any controversial incidents and possible multinational status and then used as factors. Once the matrix has been constructed for each of the 14 themes, a score is assigned indicating exposure to it. The greater the exposure, the more individual indicators the company will be rated on. In order to calculate the ESG Rating, the Scores for the theme needs to be calculated and giving the relative relevance, these are consequently summed up.

3.3.3 Index Structure

In order to be part of the FTSE4Good Index indices, from June 2016 a minimum rating is required depending on whether the company is part of a state classified as advanced or emerging. In particular, if the company is part of a developed country, then it must be rated at least 3.1 or higher, if it is part of an emerging market the rating must be of at least 2.0. Furthermore, if the company is already part of the index to maintain its status, if it is part of a developed country, the ranking needs to be higher than 2.5, if it is not higher than 1.8. Otherwise it will risk being eliminated from the index. Companies at risk of elimination will be given a period of 12 months during which they must increase their ESG rating, otherwise they will be ultimately removed from the index. In addition to having ESG ratings above a certain threshold, in order to be part of an index, companies must not be involved in certain sectors and businesses. FTSE Russell is also developing a system to monitor any disputes in which the company is involved: if the company has been identified as being involved in significant disputes, then it cannot be part of the index series. Finally, for companies that are part of a developed country, and have a score of 0 or 1 in each applicable theme to which they have a high exposure, they will be excluded from inclusion in the index series. To be comprised within the indices all companies that are part of the corresponding traditional index are eligible for inclusion.

3.4 Dow Jones Sustainability Indices

3.4.1 The Company

The Dow Jones Sustainability Indices series launched in 1999, qualifying it as the first global index series oriented to sustainability topics, are a joint effort between RobecoSAM and S&P Dow Jones Indices. S&P Dow Jones Indices were founded in July 2012 following the merger of S&P Indices and Dow Jones Indexes, bringing along 120 years of experience characterizing both companies, whereas RobecoSAM was founded in 1995, focusing only on sustainable investments, as part of Robeco, investment management company since 1929.

3.4.2 ESG Rating Methodology

The ESG Rating Methodology used by the Indices is provided by RobecoSAM, and is based upon information provided directly by companies, using dedicated questionnaires. This is obviously functional to the fact that the assessment of ESG factors is done by filling out a questionnaire, on an annual basis, which is called Corporate Sustainability Assessment (CSA) and attaching the documents necessary to verify the truthfulness of the given answers. This method certainly allows a deeper understanding of the activity and values of the assessed company. The industries are classified using the GICS classification therefore 60 different questionnaires are created. Within each sector then the companies that have performance ranked in the first percentile will be selected to join the Dow Jones Sustainability Indices series. For the creation of the different questionnaires, a so-called Matrix of financial relevance is prepared, in order to assess the financial relevance of sustainability factors. The matrix is then transposed on a cartesian plane, and only the points on the upper right part are included in the questionnaire, implying those with probability and relevant impact. Analyzing the criteria used for assessment, these are based on three pillars Economic, Social and Environment. These three dimensions are structured on average of 6 to 10 criteria, each of which already has a predetermined weight within the pillar. The sum of the weights of the different criteria indicates the total weight of that pillar over a maximum value of 100. The sum of the scores of the three pillars is equal to 100. The highest score a company can achieve is 100 the so-called total sustainability score

3.4.3 Index structure

The approach used for the construction of the DJSI indices is the best-in-class one: only those companies that have shown greater responsibility on ESG issues are selected to be part of the various indices, and that make those sectors that meet minimum sustainability criteria. In order to select companies eligible for inclusion the first precondition is the adhesion to the questionnaire or those RobecoSAM filled in itself. Following this first selection the universe is ranked by Score and divided by region, sector and free float in order to reach in every aspect 50% of the market capitalization. Further steps require the exclusion of companies with sustainability scores lower than 40%. In order to obtain the Index companies of the eligible sectos are ranked on their sustainability score and those within the 30%.

3.5 Comparison of the Rating Methodologies

We have just seen how sustainability ratings are assigned for the three groups of indices and how the indices are structured. We can therefore end this chapter with a brief discussion of the strengths and weaknesses of the three methodologies. The comparison will be based upon good practice guidelines from the previously investigated ESG rating agencies published on their webpages. In order to evaluate the diverse methodologies, rating agencies were asked to fill in a questionnaire with questions on various topics, such as the sources used to collect information on the companies rated, the degree of disclosure regarding the methodologies used, and many more. The agencies will be rated upon the degree of disclosure regarding methodologies applied, the information used to base the rating upon and the design of mechanism to consider the sector the companies operate in. As for the degree of disclosure on the methodology for the assignment of ratings, certainly MSCI ESG Research is the one that is most flawed, releasing only an executive summary, FTSE4Good releases explanation and practical examples of the rating methodology, whereas RobecoSAM discloses the entire construction process giving practical examples. Regarding the design of criteria to consider the belonging to a certain sector rather than another al three agencies perform fairly good, having to a certain extent all included this sort of mechanisms. The third assessment criteria regards the information used to base their rating upon. As far as MSCI ESG Research is concerned, it is not very clear what kind of information is used, but it seems that only publicly available information is used. Same applies for the FTSE4Good series. RobecoSAM contrarily has a different approach, which is the one of the questionnaires.

4 Linear Regression Analysis Telecom S.p.A. and ENEL S.p.A.

4.1 Foreword

The following chapter will try to analyze, implementing a linear regression model, the relationship between the financial performance of Italian utilities, Telecom S.p.A. and Enel S.p.A. and their ESG performance.

As a proxy for the Corporate Financial Performance a widely used indicator will be used, Tobin's Q, in its simple version, proposed by Kaplan and Zingales. For the ESG performance a score will be assigned, giving a set of criteria and a score matrix therefore developed. The analysis will be conducted firstly on a period of 14 years, for the results to be more relevant, not being affected by peculiar conditions occurred in one year, which would make the outcome irrelevant with respect to the studied variable.

Finally, regarding the sources and documents that have been used, these came from the company's sustainability reports, Bloomberg's ESG rating and financial analysis, and different data from other ESG rating providers.

The chapter will be structured briefly considering at first the methodology used to perform the analysis, thereafter the collected data and the way the ESG-ratings are assigned, then assessing the performance of the two companies, finally introducing the output of the regression analysis.

4.2 Methodology

4.2.1 Linear Regression

In order to study the relationship between ESG and corporate financial performance a two-step approach is used, based upon the Ordinary Linear Square (OLS) estimation procedure.

The model performed in Python is a single variable linear regression model based upon the relationship between Simple Q and ESG-Scores.

The first step will take in account the entire period (2005-2018), while the second step will consider data starting from 2009, hence considering on the one hand a smaller sample, on the other hand more recent data.

The model is tested using following general regression equation:

$$Simple\ Q_t = \alpha_t + \beta_t * ESG\ Score_t + \varepsilon_t$$

In order to validate the results of the regression analysis two parameters are controlled, the R-squared and the p-value.

The R-squared represents the fraction of variation in the dependent variable predicted by the independent variable, in other terms the fitting of the regression line respect to the input data. The p-value is used in the context of hypothesis testing in order to reject or accept the null hypothesis or the alternative hypothesis.

The null hypothesis H_o: $\beta = 0$ against the alternative hypothesis H_1: $\beta \neq 0$

If the p-value shows values smaller than the significance level tested the null hypothesis will be rejected hence demonstrating the significance of the variable, in this case of the β variable. If the p-value shows values smaller than the significance level tested the null hypothesis will be rejected hence demonstrating the significance of the variable, in this case of the β variable.

4.2.2 ESG-Rating

In order to assess the ESG-Score of 2018, I used a set of determinants, which in my opinion impact the performance in the three dimensions, environmental, social and governance. Every dimension has been divided in 3 sub-sections, which are preliminary, disclosure and performance, representing the three stages of which the ESG-performance is composed. The preliminary sections, comprise policies, management systems and programs, the disclosure sections analyze disclosure of relevant information for each dimension, as the performance sections consider relevant factors regarding the performance. In order to attribute different relevance to every dimension and factor, a weight matrix has been developed. Following the study of the sustainability reports of the two companies a score has been attributed to every determinant, ranging from 0 to 1. Lastly the computational part has been performed, implying the product between the determinant score by the weight, and finally summed up to obtain a score comprised between 0 to 100. In order to determine the ESG-Scores of the two companies from 2005 to 2017 I parametrized the score given for 2018 to the Bloomberg ESG-Ratings, hence determining the Year to Year variation of the Bloomberg Rating and applying it to the assigned 2018 rating, in order to derive the scores of the period.

4.3 Analysis

4.3.1 ESG-Score Telecom S.p.A.

The first part of the analysis focused on the assignment of the weight to every dimension, which I assigned taking into account the company's materiality map. The weighted therefore assigned to every dimension are 30% to the Environmental and Social dimension and 40% to the Governance dimension. The preliminary category is divided into three criteria called Environmental policies, Environmental management systems and Environmental programs. Within the environmental category, the weights assigned to the three categories are of 13.5% to both preliminary and performance category and 3% to the disclosure category. The company scores the highest mark in the Environmental programs, considering the company's relevant programs in every criteria analyzed as of the sustainability report. For the disclosure category there are two criteria, taking part to the carbon disclosure program questionnaire and the scope of Green house Gas Reporting (GHG). Telecom takes part to the questionnaire since 2005 and as it discloses all of the three criteria of the GHG reporting, therefore being assigned 1 in both criteria. Regarding the performance section the company presents negative carbon intensity over the last three years and didn't incur in environmental fines. The Social dimension has the preliminary category accounting for 15% of the total weight, the disclosure category accounting for 3% and the performance category is 12%. Among the policies Discrimination is strongly opposed and prohibited and Data Protection is highly considered, in compliance to the GDPR rulings. Supply chain is qualified, controlled and ratings are assigned to vendors, which if not in line can be excluded from the Supply Chain. The company has a Corporate Foundation since 2009. Regarding the disclosure section, Telecom discloses the breaches of its policy by suppliers and its own respect to costumers, describing the handling and remedy. The company was fined from Italian regulation authorities, both AGCOM and AGCM. The Governance dimension, accounts for 16% in its preliminary and performance category and for 8% of the total score in the disclosure category. Relevant policies concerning bribery and corruption are defined adequately and the whistleblowing program associated with a non-retaliation policy is effective. Telecom assigns the function of monitoring and management of ESG issues to the Risk and Compliance committee. In the disclosure section the company presents the CV of the board members online, it discloses tax paid in different countries, the Reporting of non-financial documents follows the GRI standards and the reports are verified by an external auditor. The governance performance is assessed considering gender diversity, especially female participation is 40% at board level and an overall participation of 20%, as the gender pay-gap is of 85%. Furthermore, the Board is composed of 15 members of which 12 independent and no CEO-Duality is present. The committees composition is compliant with the Codice di Autodisciplina released by Borsa Italiana S.p.A..

4.3.2 ESG-SCORE Enel S.p.A

The relevance assigned in the weight matrix to the three dimensions to Enel S.p.A are of 30% at the environmental dimension, 25% at the social dimension and 45% at the Governance dimension. The preliminary and performance category in the environmental dimension account both for 13.5% as the disclosure category accounts for 3%. As for environmental policies Enel shows commitment to Environmental challenges and to the reduction of emissions and has therefore ambitious plans in order to achieve the given goals, scoring in both categories high percentages. Therefore, the company programs to increase renewable energy production and implement technical solutions to improve network efficiency. Regarding the disclosure section Enel doesn't take part to the Carbon Disclosure Questionnaire and adopts two out of three GHG reporting criteria. Regarding the environmental performance category, Enel was imposed 292 fines for breaches of environmental law and regulation, with a countervalue of 12 million €. The carbon intensity trend is negative, while the renewable energy mix is increasing. The Social dimension, which accounts for 25%, is divided in 12.5% in the preliminary category, 2.5 in the disclosure category and 10% in the performance category.

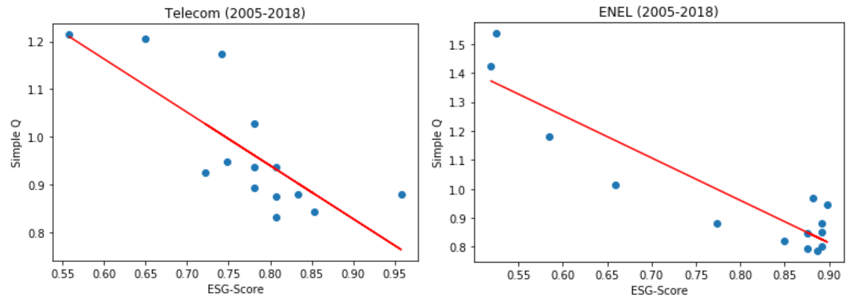
In the preliminary category Enel values diversity with policies aiming at the inclusion of diversity, it also evaluates and accurately monitors suppliers, clustering vendors and assigning ratings, which may lead to the exclusion from the suppliers. Regarding Data Protection the company is compliant to the provisions of the GDPR. Regarding the disclosure category, Enel discloses the breaches of its policy by suppliers and describes the handling of them. Regarding the performance of Enel in the Social dimension, no significant customer or employee controversies are reported on the sustainability report. Furthermore, the company has a turnover rate of 6.9%, considered to be low, and has been awarded by Forbes with the Top Employee recognition in 2018. The Governance dimension which accounts for 45% of the total score, is divided in 18% for both the preliminary and performance category and 9% for the disclosure section. In the preliminary category to be reported the presence of a "Zero-tolerance corruption Plan", and of a whistleblowing program and non-retaliation policy. ESG governance system at board level is attributed to the sustainability and governance committee, and further relevance to ESG topics is conferred giving the linkage of variable remuneration to ESG performance. Regarding the disclosure category, the company discloses the CVs of all board members of the board and taxes payed on their corporate website, the remuneration of the top management is not reported. The ESG reporting is audited by external auditors in this case EY is in charge of auditing the sustainability report. Enel, has been awarded with the diversity award, and 3 woman are in the companies Board of directors, representing 36% of the board 84.6% in the management and 20.6% in the general workforce, furthermore the chairman of the board is a woman, implying CEO-Duality.

Regarding the Gender Pay-Gap the ratio between gross income comparing women and man it is calculated at 85%.

Following Borsa Italiana S.p.A. Codice di Autodisciplina, the committees and the board of directors are compliant to the code's rulings, with respect to independence and dimension.

4.3.3 Linear Regression Analysis Simple Q Vs. ESG-Score

In order to perform the linear Regression analysis on Python, preliminary work of collecting the necessary data has been done, such as the values for the Simple Q, gathering the necessary data from Bloomberg and the ESG-Scores have been computed. The results of the analysis are presented below

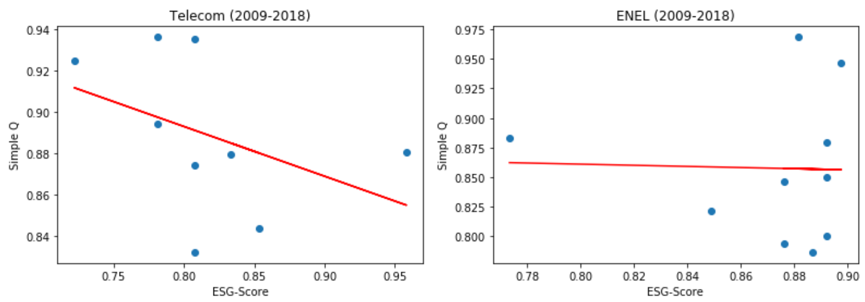


The functions describing the regression between the factors are:

$Simple\ Q_{t,Telecom} = 1.83211 - 1.11525 * ESG\ Score_t$
$Simple\ Q_{t,Enel} = 2.13419 - 1.46730 * ESG\ Score_t$

	Telecom	Enel
R-Squared	0.6127625048	0.8289623858
p-Value	0.0009322800065	0,0000061148256

The information to verify the goodness of the regression are presented in the table, demonstrating good fitting of the regression with respect to the input data, as presenting high levels of R-squared and high statistical significance levels, since the p-values are smaller than small alphas, implying the rejection of the null hypothesis H_o: $\beta = 0$ hence accepting the alternative hypothesis H_1: $\beta \neq 0$ in both cases.
The results obtained with the regression analysis show a negative correlation between Simple Q and ESG-scores over the considered period. This implies for both companies that increasing ESG-scores, produces negative results on the Simple Q.
Furthermore, a second regression has been performed considering a smaller timeframe, ranging from 2009 to 2018, using the same dependent and independent variable. The results of this second analysis are presented below.



The regression lines equations are described as follows:

$Simple\ Q_{t,Telecom} = 1.085610 - 0.24607 * ESG\ Score_t$
$Simple\ Q_{t,Enel} = 0.89914 - 0.04759 * ESG\ Score_t$

	Telecom	Enel
R-Squared	0.170207406	0.0008068
p-Value	0.2698040860568	0.9379140439207

The results of the second regression demonstrate a less negative, close to zero, impact of the ESG-score results on the dependent variable. From the table it is possible to observe that the two-regression analysis present low R-squared values (0.17 and 0.0008), implying poor fitting of the line to the input data. Moreover, the p-values values show that these regressions have low statistical significance being the null hypothesis rejected for alphas greater than 0.27 an 0.94. This implies that the confidence level is respectively 73% and 6%. This result is in line with having used a smaller sample.

Conclusions

Following an in depth-study of the subject undertaken, I have developed the following final remarks:

1. The first general observation concerns the relevance that ESG performance has gained in the business community so far. It is quite clear that increasing importance is given to sustainability issues, coupled with a more structured approach of companies actively dealing with ESG topics. Nowadays more and more companies consider ESG as an endogenous element of the business and not as a "nice to have", additional factor in relation to the corporations' prevailing objective of profit maximization. Along this progressive and though widespread process, different degrees of development have been achieved, influenced by different and relevant circumstances. Firstly it is important to consider that companies operating in innovative businesses, often presenting less industrial legacy, are able to integrate environmental and social issues more easily into their business models; in these companies sustainability is often considered as a crucial element of their business and value creation process rather than a set of principles to be progressively and laboriously integrated through a gradual adjustment of governance mechanisms. For these companies sustainability has great impact in terms of customer acquisition and legacy creation. On the contrary, companies that operate in traditional and consolidated production or service areas need to renew their processes in order to improve their ESG performance by dynamically seeking the best social and environmental balance, often incurring in trade-offs between financial and non-financial objectives. Secondly, the increase in legislative and regulatory measures regarding environmental, social and governance aspects, which despite significant differences at global level, affect businesses with different degrees of pervasiveness. This framework relentlessly contributes to the acceleration of the change processes necessary to improve ESG performance.

2. The second remark concerns the analysis of the ESG performance of the two companies observed, Telecom S.p.A. and Enel S.p.A. Both companies, which operate in diverse sectors, show a positive trend in their ESG performance over the period examined in the study (2005-2018). The materiality matrix, contained in the Telecom Sustainability Report, highlights the classification of the issues presented here in descending order of relevance: governance, social and environmental; the same matrix in Enel's Sustainability report indicates the following relevance: governance, environmental and social. In fact, the ESG-Score of the two companies, according to this paper's analysis, using also Bloomberg's ESG data for the computation of the 2005-2014 scores, shows an improvement in the performance of both companies. The former, Telecom S.p.A, ranged from a score of 56 to one of 81, and the latter, Enel S.p.A, ranged from a score of 52 to a score of 88.
The methodology used for the derivation of the ESG 2018 scores was based:
(i) On the identification of criteria relevant to the ESG performance of both companies.
(ii) On assigning different weight matrices based on the environmental, social and governance impact of the two companies' businesses.
(iii) On the evaluation of performance and on the attribution of corresponding scores in the respective areas, based on the evidence taken from the 2018 Sustainability Reports.
(iv) On the weighting and sum of the assigned scores in order to obtain the overall ESG-Score

Regarding the 2005-2017 ESG scores used in the analysis, the 2018 score computed following the previous line of reasoning, was benchmarked to the 2018 score assigned by Bloomberg. In order to obtain consistent scores over the entire period yearly percentage variations were considered and multiplied by the base year (2018).

3. The third observation concerns the results of the two regression analyses, evaluating the correlation between the ESG performance and the Corporate Financial Performance of the two examined companies. The first analysis shows that there is a negative correlation between the two factors in both companies. This is represented on one hand by the ESG performance, which increased during the period, and on the other hand the response variable, which is represented by Tobin's Q, that shows values that tend to decrease during the period examined. I believe that one possible explanation for this inverse relationship could be caused by the greater relative impact of factors related to business and financial performance compared to the relative performance of ESG variables. In fact, the factor that in my opinion mainly influences Tobin's Q is represented by the Stock Price, which determines the Market value of equity (MVE), hence a great amount of the fraction's numerator. The Share Price determined through market evaluations reflects mainly financial performance indicators and, in my opinion, secondarily reflects sustainability components. The latter is certainly embedded in the share price, but in the case of the examined companies, Telecom and Enel, this was incapable of offsetting the negative effect of mere financial performance, which influenced the Share Price negatively affecting the analysis conducted. Furthermore, the result of the analysis could be significantly influenced by the limited sample of companies studied over a relatively short period of time (13 years). Both elements could cause bias to the performed analysis, as some studies suggest. Moreover literature mostly suggests, on wider samples and longer periods, a positive correlation between the two factors. This correlation emerges in Eccles, Ioannou and Serafeim's study entitled "The Impact of Corporate Sustainability on Organizational Processes and Performance", where they compare a sample of 90 "high sustainable" companies with an equally sized control sample of "low sustainable" companies over a 20-year period, proving better performance of the "high sustainable" sample.
The second regression analysis conducted on the two companies excludes the initial years considered in the other analysis, hence referring to a shorter period of time. This provided a more positive correlation between the two factors, even though statistical significance has been strongly reduced.
The reason for this less negative relation could arise from the different period studied. In fact, considering only more recent years could improve the impact of the ESG Performance on the Simple Q, as attention and consideration towards such issues progressed. Nevertheless, it must be said that the relationship is still negative, further demonstrating the hypothesis presented for the previous analysis, stating that the increase in the ESG Performance over time is not able to offset the negative financial performance registered for the two companies.

4. The fourth remark concerns the growing importance that, in my view, sustainability issues are becoming increasingly critical success factors for businesses. Indeed, there are significant and converging signals in this direction: (i) the strong growth in the demand for SRI funds and the growing volume of their Assets under Management; (ii) the development of ESG-Rating services and ESG indices, increasing transparency and highlighting often better ESG performance compared to their less sustainable equivalents, providing more and more information and tools for investors and companies; (iii). the growing awareness of consumers and regulators towards environmental, social and governance issues, which implies the need for companies to rapidly adapt and embed ESG into their strategy. This trend is substantiated by Larry Finck's recent statements, CEO of BlackRock, who in his recent letter to shareholders "putting sustainability at the center of how we invest" provides clear evidence of how high ESG performance will ensure future access to capital markets and external sources of financing, correspondingly demonstrating the importance for companies to integrate ESG factors into their corporate strategies.

6. The last consideration, arising from the above remarks, concerns the need to develop a unique and standardized evaluation system for the measurement of ESG performance. It is in fact clear that a system of "hard metrics", coupled with standardized reporting requirements and adequate communication of business and sustainability strategies to shareholders and stakeholders appears fundamental in order to correctly assess ESG performance. The correct assessment will effectively permit to reward companies that incorporate sustainability into their business strategies and make investments in order to achieve high standards. The effort made in this dissertation, in order to classify standardized ESG criteria, wants to be considered as a starting point for further analysis, towards the development of a consistent measurement system.

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