LUISS

Department of Economics and Finance
Degree Program in Finance

Course of Advanced Corporate Finance

The ESG financial ecosystem: global policies for sustainability

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Academic Year 2021/2022

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Abstract

Long-term structural issues of climate change and the growing social inequalities are deeply affecting both the real economy and the financial system that underpins it. As a result, the term 'sustainable development' has progressively become established in economic and everyday language to indicate the need to move economic activities towards a business model that better respects and preserves the environment and society. Customers' awareness of environmental and social issues has risen exponentially over the past decade and new market opportunities in the light of sustainability are soaring. Companies are fostering their sustainable profile and investors from all the globe are moving their capitals towards high sustainable companies. In fact, the financial industry is acting as a catalyst for advancing sustainability by providing funding for economic activities, which in turn have a tangible effect on climate and social issues. At the same time, European policymakers are setting the normative landscape of the transition, by outlining a regulatory framework for sustainable development, i.e., a clear and transparent set of rules, standards and guidelines for investors and market participants aimed at effectively steering financial flows into relevant economic activities.

This paper aims to provide a comprehensive view of the phenomenon of sustainable development that is taking place within our economic system, and which represents one of the most far-reaching phenomena of recent decades. Being a highly topical and evolving issue, there is a great deal of literature on the subject, but it is still highly fragmented. Therefore, the objective and also the challenge that the author of the paper has set herself is precisely that of gathering together in a single text the most relevant aspects concerning sustainable development, and going over, adopting a critical approach, the evidence and discordances present in the literature, grasping the points of greatest interest.

This work begins by providing, within the first chapter, a broad framework that recounts the economic, financial and social context within which we are moving and what are the main initiatives undertaken by political and financial actors to initiate and complete the transition. The history of sustainable development and how it has evolved to date, the role of the financial system as the main driver of the economic transition, and the main investment trends that have engaged investors around the world, laying the foundations for an irreversible change in traditional finance, are thus highlighted. In the second chapter, the framework of the sustainability theme is completed by defining the European regulatory context within which sustainable development moves. In fact, the regulatory context not only ensures the relevance of the topic treated, but also helps to understand its critical issues and main points of evolution. Thus, the main regulations and directives issued by the European Commission are examined, as well as the reasons and principles underlying each regulatory text, and

the main challenges that European policymakers will have to face in the coming years in order to foster the evolution of the economic transition.

Subsequently, the third chapter discusses the issue of ESG ratings, a topic that is considered to be of crucial importance in the field of sustainable finance as it represents and underlies the central obstacle in the development of sustainable finance: the measurement of sustainability factors. In fact, as we are still at an early stage of the transition, there remains a considerable aura of uncertainty as to how ESG factors should be measured, which indicators should be taken into account for each dimension, and how the materiality of these indicators varies depending on the industry in question. The lack of consistency between different rating methodologies generates uncertainty and mistrust among investors, undermining the success of the transition. This problem is even greater if we consider the world of small and medium-sized enterprises, which, due to fewer resources available, still have great difficulty in keeping up with market demands for non-financial information, and thus in obtaining congruous assessments of their degree of sustainability, which also take into account their economic and social peculiarities. The chapter therefore analyses the rating systems used today by the major rating agencies, how these rating systems are constructed, the factors they take into account and what the main critical issues inherent in them are. In addition, the ad-hoc context of small and medium-sized enterprises is investigated in depth. In order to take a more pragmatic approach to the subject and to fully understand the condition of SMEs with regard to the sphere of sustainability ratings, an interview was conducted with Dr. Latin, analyst in the ESG team of Modefinance - an Italian fintech company that recently introduced a proprietary ESG rating methodology for SMEs - and the findings are reported.

To conclude the discussion, the relationship between ESG factors and company performance is analysed in depth in the fourth chapter, with the aim of answering the question: do ESG factors affect a company's ability to generate profit? And if so, how? An attempt is made to answer these questions by analysing the most relevant literature on the subject, comparing theoretical elaborations and empirical results of studies that support, on the one hand, the positive impact of ESG factors on a company's risk-adjusted returns and, on the other hand, a negative or null impact.

CHAPTER 1: THE NEW LIGHT OF SUSTAINABLE DEVELOPMENT

1.1 Global politics for sustainability

Over the past decades, climate change and its consequences to the global economy have become increasingly visible and environmental concerns have emerged. For the first time in the history of the World Economic Forum (WEF) Global Risks Survey, environmental risk and climate change have been rated as the biggest global threat, dominating all the top-five long-term risks by likelihood. The over-consumption of natural resources, the greenhouse gas (GHG)[1] emissions produced by industrial activities, and the ever-increasing social inequalities are just some of the issues that have greatly worried national authorities and supranational organizations.

The availability of natural resources such as non-renewable sources of energy, minerals, metals, etc. is now increasingly under pressure, and production activities have led to growing levels of pollution that are overburdening the Earth capacity of absorbing pollution. From a social perspective, mass production within the framework of a competitive economic system has deepened social inequalities already present in the social system, resulting in extreme working hours, child exploitation and underpayment.

The long-term structural issues of climate change and growing social inequalities are deeply affecting both the real economy and the financial system that underpins it. Indeed, investors are increasingly confronted with questions about the ability of projects and economic activities to remain viable over the long term without facing issues associated with environmental risks; this implies a profound and substantial change in the investment strategies adopted by investors and financial institutions, as they also must incorporate environmental and social risks, which can be considered transversal to already existing risks.

As a result, the term 'sustainable development' has progressively become established in economic and everyday language to indicate the need to move economic activities towards a business model that better respects and preserves the environment and society: on the one hand, companies have started to consider climate related risks when developing long-term strategies. For instance, several firms are greening their products or services and their infrastructures to avoid suffering a cost-spike due to potential new policy measures involving an increase in the price of fossil fuels (e.g., the introduction of a CO2 tax), or higher investment costs for the renovation of buildings and facilities. On the other hand, a significant and growing trend of capital reallocation towards sustainable economic activities

[1] Greenhouse gas is defined as any gas that has the property of absorbing infrared radiation emitted from Earth's surface and reradiating it back to Earth's surface, thus contributing to the greenhouse effect. Carbon dioxide, methane and water vapour are the most important greenhouse gases.

is becoming increasingly evident. As the words of the co-founder and chairman of BlackRock, Larry Fink, confirm: "We are on the verge of a complete transformation of finance".

Customer awareness of environmental and social issues and market opportunities in this new light of sustainability are soaring. Companies that want to foster their sustainable profile and be competitive in the market must make drastic strategic shifts and reinvent products and operations, while also building innovative partnerships to hasten results and boost the odds of success.

The Corona virus pandemic has painfully demonstrated the weaknesses of our global economic system and the vulnerability of our ecosystem, and it has contributed to give a strong impetus to sustainable business practices and more responsible behaviour of companies.

The transition toward a sustainable economy is estimated to be extremely costly and it presents no small challenge to the political parties charged with leading it. However, inaction would entail even greater costs caused by, for instance, the occurrence of numerous natural disasters that would damage many productive activities. These costs, according to a recent study conducted by the European Central Bank[2], would amount to about 10% of global GDP[3]. In contrast, the intervention to promote the transition would entail significative yet lower costs of around 2% of global GDP.

Because climate change is a problem with transnational boundaries, it requires multilateral action by all political and economic actors at the global level. For this reason, the main decisions on climate-related issues are taken within the United Nations (UN), which also involves non-state actors, such as companies and institutional investors, in the adoption of behaviors and initiatives to pursue environmental, social, and economic sustainability.

Climate-related actions are not new in the agenda of regulators, indeed, since the second half of the 20th century, several collaborative initiatives have been undertaken among countries to mitigate the impact of companies' production activities on climate. However, in recent years the number of companies has spiked and, with it, the CO2 emission production, and the exploitation of natural resources. Environmental concerns have become increasingly urgent, until a strong global response to climate-related issues took place in 2015, with the adoption of the Paris Agreement. The Agreement is a legally binding treaty on climate change that requires the 197 signatory countries to implement emission reduction actions, with the aim of keeping global warming well below 2°C, possibly within

[2] ECB's (2021) Economy-wide climate stress test at https://bit.ly/2YJPJjN

[3] The ECB has identified two major climate-related risks: physical risk and transition risk. The former refers to the negative financial impact that an extreme weather event and gradual changes in climate, such as environmental degradation, water and land pollution, etc., may have on global production activities and supply chains. The latter refer to the direct or indirect costs that companies might incur during the transition if they do not transform their business model to a more sustainable one. Transition costs could be generated, for example, by the introduction of CO2 taxes or by shifting consumer preferences towards greener products.

1.5°C, compared to pre-industrial levels. Unlike the Kyoto Protocol (1997)[4] which only applied to developed countries, this time both developed and developing countries are called upon to act. Signatory countries are required to periodically (every five years) communicate their plans to reach the goals of the Paris Agreement through the so-called Nationally Determined Contributions (NDCs). The latter are documents whose content consists of the set of actions that countries will implement in order to reduce their greenhouse gas emissions, build resilience and adopt to the impacts of rising temperatures. The first NDCs have been submitted in 2020 and starting in 2024, countries will report on the actions taken so that they can receive recommendations to set more ambitious plans in the next round.

The ultimate goal of the Paris Agreement is to achieve zero net global emissions by 2050. However, this represents a huge challenge: there is now wide scientific consensus that "global emissions must drop by 50% over the next decade for the world to have a chance of staying at 1.5 degrees of global warming and thus avoid the most catastrophic consequences of climate change"[5]. This of course has clear and immediate consequences on businesses, whose production activities must be as fast as possible transitioned into a more sustainable footing.

In this landscape, the financial industry plays a critical role as enabler of the transition towards a low-carbon economy. According to the OECD estimates, globally, EUR 6.9 trillion per year of infrastructure investments will be required to meet the Paris Agreement goals by 2030. Indeed, "infrastructure sits at the very centre of development pathways"[6] as energy, transport, building and water infrastructure account for more than 60% of global GHG emissions. Public sector resources alone will not be sufficient to meet this challenge, and mobilization of institutional and private capital will be necessary[7].

In the same year as the Paris Agreement, the governments of the UN member states also created the 2030 Agenda for Sustainable Development, a program of 17 goals (*Sustainable Development Goals*, SDGs) and 169 targets relating to economic development, environment, and human rights. The content of the 2030 Agenda amplifies and expands on the goals set out in the Paris Agreement. Thus, among the 17 SDGs, there are not only goals for combating climate change but also several goals concerning human rights, gender equality, inclusive economic growth and decent work conditions.

[4] Published on December 11, 1997, the Kyoto Protocol is an international environmental treaty on global warming that establishes specific goals for signatory industrialized nations to reduce greenhouse gas emissions and global warming.
[5] EU Technical Expert Group on Sustainable Finance (2020): Technical Report – Taxonomy: Final report of the Technical Expert Group on Sustainable Finance
[6] OECD, The World Bank, UN Environment (2018), Financing Climate Futures: Rethinking Infrastructure
[7] OECD, (2017), Investing in Climate, Investing in Growth, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264273528-en

The goals of the 2030 Agenda came into force on the 1st of January 2016 and must be achieved by 2030. The flexibility and breadth of the SDGs introduced at national level, allow them to be transferable and applicable to corporate policies as well. Indeed, as underlined before, private sector's action to achieve the SDGs, together with the public sector, is of paramount importance. For this reason, the UN Global Compact[8] and its regional associations have decided to design business-based standards in order to guide companies on how to apply SDGs to businesses. These standards focus on the adoption of sustainable practices by companies and their supply chains, and they also pursue the broader scope of pushing investors towards 'sustainable investments' (i.e., investments oriented towards sustainable activities), while trying to stop greenwashing[9].

1.1.1 ESG Factors

To assess the extent to which companies engage in sustainable practices and implement their efforts to develop their sustainable profile, the term ESG – an acronym for Environment, Social, and Governance – is now widely used and indicates the performance of companies in terms of sustainability. Indeed, Environment, social, and governance (ESG) are the three dimensions that make up the universe of sustainability towards which the transition is heading.

[8] The UNGC is the world's largest corporate sustainability initiative to encourage companies from all over the world to align their strategies and operations with universal principles on human rights, labour, environment and anti-corruption, and take actions that advance societal goals

[9] Greenwashing is the action of a company that, through communication and marketing strategies, aims to achieve a positioning focused on environmental sustainability in order to reap the resulting benefits in terms of reputation and image and therefore turnover, without actually behaving in a sustainability-oriented manner that differs from that of its competitors.

The term ESG was firstly mentioned in the UN report "Who Cares Wins" (2005), for which the former UN Secretary General, as a result of the increasing urgency of environmental and social topics, invited the most important financial institutions (such as banks, asset managers, asset owners, and other stakeholders) "to develop guidelines and recommendations on how to better integrate environmental, social and corporate governance issues in asset management, securities brokerage services and associated research functions"[10]. It was in that occasion that the so called "ESG principle" was introduced, providing that any economic activity should no longer only be oriented towards profit but should also consider broader interests which are outlined in the factors of Environment, Social and Governance (ESG).

The introduction of the ESG principle was the first evidence on the financial relevance of ESG issues in the investment analysis. In fact, from that moment forward, the financial community has started to acknowledge the threats that environmental, social and governance issues may involve for businesses, and therefore, the value that ESG information can generate if incorporated into the investment analysis (Eccles et al., 2020).

The E dimension of ESG considers the practices that companies adopt to pursue environmental impact and climate risk mitigation, the strategies toward renewable energy as well as the operational processes to improve water use, waste management and impact on biodiversity (OECD, 2020). The metrics included in the E pillar are transversal to all these areas and they can be classified into short-term or long-term metrics depending on the entity of the sustainable project implemented by the firm, namely, implementable operational changes (short-term) or more complex strategic re-orientation (long-term). The E pillar includes information on, for instance, the ecological impact of a certain company's infrastructure, the carbon emissions produced by a firm, the impacts of climate change on corporates value chain, the environmental impacts of firms' products and services and specific impacts of companies' activities on biodiversity, nitrogen levels, water, genetic modification, pollutants, etc.

The S dimension assesses the behavior of companies in relation to labor rights and working conditions of employees, diversity and equal opportunity and health and safety. Also, the social pillar includes information about corporates' digital inclusion, societal impacts of digitalization, responsible design and use of products, responsible marketing, volunteering, and more specific issues such as animal testing, weapons, alcohol and opioids, etc.

[10] UNEP FI, (2005), Connecting Financial Markets to a Changing World
https://www.unepfi.org/fileadmin/events/2004/stocks/who_cares_wins_global_compact_2004.pdf

Lastly, the G dimension stands for the companies' policies concerning transparency of processes and procedures, ethics and integrity, board diversity, remuneration and incentives, digital responsibility, non-financial risk management, governance and controlling of E&S issues, etc. The purpose of a firm, how and in whose interests it should be operated, and the proper ratio of owners to other stakeholders are all topics of corporate governance. The board of directors can be very important in ensuring sustainability because one of its responsibilities is to make sure management makes decisions that are compatible with the company's values. The management typically puts the interests of the stockholders first when setting goals. In contrast, a sustainable corporate governance should, when executing its monitoring and advisory duty, take into account the interests of non-shareholding stakeholders, such as employees and customers. Positive, horizontal ties between stakeholders, as opposed to inflexible, vertical relationships based on the principal-agent model, should be the focus of businesses with sustainable corporate governance.

To be competitive in this new broader landscape that considers ESG as a fundamental aspect of business, corporates are required to fundamentally rethink their position and act in terms of the complex societal context of which they are a part (Marrewijk, M., 2003). Firms should develop new mechanisms to address and monitor the issues related to the ESG dimensions and pursue so-called "sustainable development strategies" – i.e., strategies that meet the needs of present generation without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development). Furthermore, firms should act considering the interests of a broader set of stakeholders and strengthen their positioning in the market under the ESG label.
The financial system has the role to lead the transition by directing capitals toward those economic activities that implement sustainable business practices and embrace the need to reinvent their economic model as function of the environmental and social issues.

1.2 Corporate Social Responsibility (CSR)

The growing tendency for companies to take account of the extent to which they affect society and to set objectives that go beyond the purely financial ones is commonly referred to as Corporate Social Responsibility (CSR). This concept stands for the action of a company that is not only profit-driven but also takes responsibility towards society and a wider set of stakeholders.
The first studies on CSR date back to the late 1930s, while a first formal definition was introduced in 1953 by the authors Bowen and Johnson who described corporate social responsibility simply as corporate philanthropy or charity. Over the years, the concept of CSR has evolved, and new definitions have been introduced in which common themes such as an emphasis on the company's

relationships with stakeholders and an increased awareness of the social and environmental effects of business activity recur. Dahlsrud (2008) identified 37 definitions of CSR, however, although there are common themes in each delineation, there is still not a single agreed definition. According to the World Business Council for Sustainable Development (WBCSD), "Corporate Social Responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large". The authors Mohr, Webb and Harris (2001) define a socially responsible company as a company that is able to understand the impact of its business on the social and environmental sphere surrounding it, limiting as much as possible the negative effects on stakeholders and maximizing the positive ones. The European Commission has also defined Corporate Social Responsibility as "the process whereby enterprises integrate social, environmental, ethical and human rights concerns into their core strategy, operations and integrated performance, in close collaboration with their stakeholders, with the aim of: (1) maximizing the creation of shared value for their owners/shareholders and for their other stakeholders and society at large; (2) identifying, preventing and mitigating their possible adverse impacts".

The pressure coming from investors' increased focus on corporate social responsibility also has significantly changed companies' relations with their stakeholders, leading them to adopt stakeholder-oriented strategies with the goal of maximizing social value. Several scholars have emphasized the importance for companies to understand how their actions propagate through their own relational network, affecting various stakeholders both directly and indirectly (Rowley and Berman, 2000), in order to adopt a sound environmental and social policy. This implies a profound change in the classic idea of the enterprise as a "central element in value creation processes" (Landi, 2020).

This change was formalized for the first time by Freeman in 1994 with the introduction of the Stakeholder Theory, which contrasted with the classical Shareholder Value Theory introduced by Friedman in 1970. According to the classical view, companies have the sole objective of shareholder's value maximization and have no responsibility to satisfy other stakeholders' interests or to contribute to improving the well-being of society. Therefore, companies are only compelled to generate a profit, to satisfy their shareholders and to pursue a positive growth.

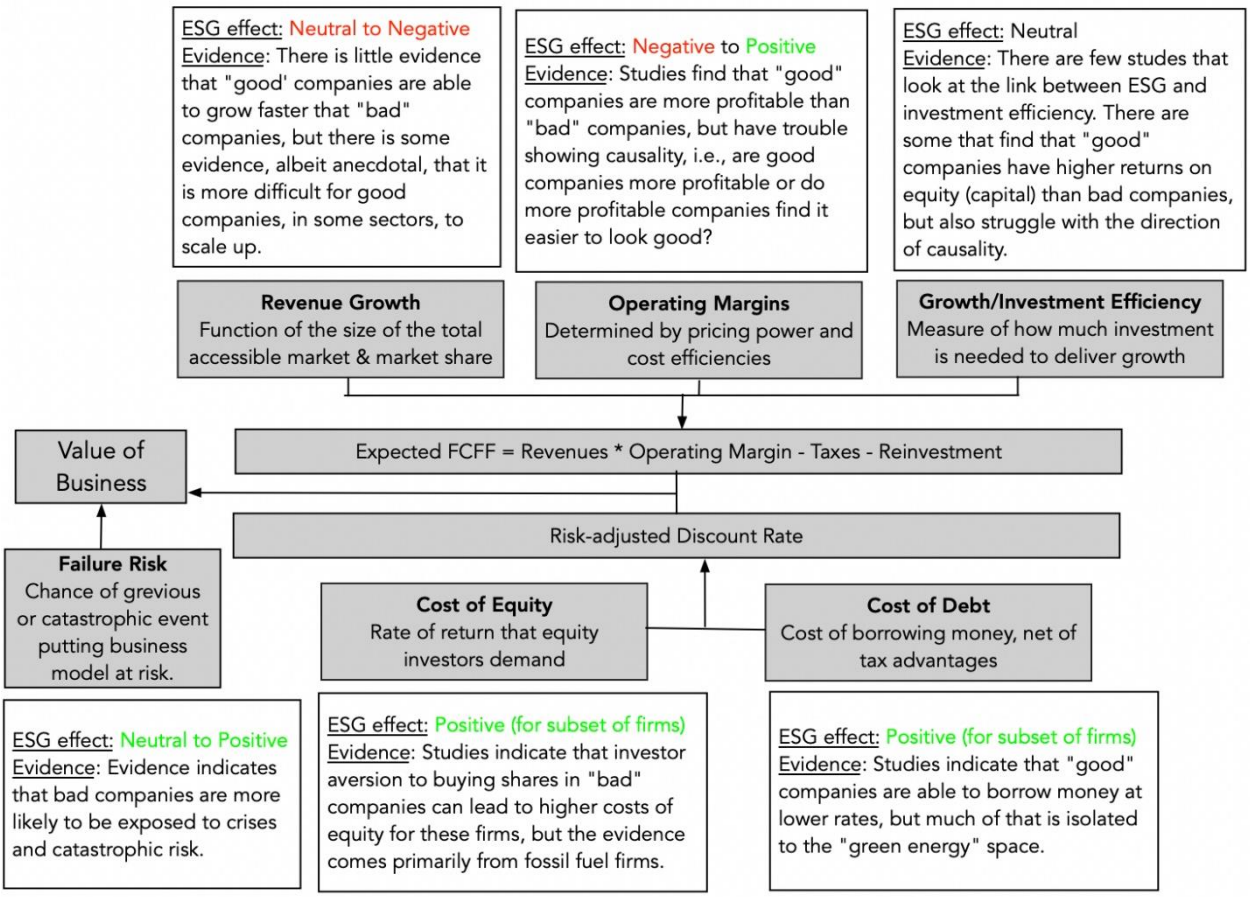
By contrast, in Freeman's stakeholder theory, each company is considered as part of a larger ecosystem of related groups (customers, employees, environmental groups, local communities and others) whose interests should be considered and satisfied for a business to be truly competitive in the market and last in the long run. According to this approach, managers must recognize the extent of the externalities produced by their decisions and must ensure that the interests of all actors in the

company's relational network are aligned and satisfied. According Alsayegh et al. (2020), companies need to realize that “their future landscape can hardly be achieved without paying due attention to their sustainability strategies and without disclosing environmental, social and governance (ESG) information”.

A company's performance is therefore no longer measured solely considering its financial profile, but it is the result of a broader assessment that also evaluates the firm’s social and environmental performance. To express this concept concisely, “Triple bottom line” (TBL) is the sustainability-related construct, coined by Elkington (1997), used to define this new business valuation framework under the three headings of economic, social and environmental, indicating the expansion of the economic sphere of a business into the environmental and social sphere.

The evolution and expansion of a business valuation framework that considers also the ESG factors is raising no little discussion among scholars and researchers. More precisely, what is being widely discussed is how the degree of a company's involvement in the ESG sphere can impact the economic valuation of the company itself. In fact, from common valuation practices in corporate finance we know that the valuation of a company is a function of the cash flows that the company is expected to generate in the future, the cost of capital that the company incurs, and its potential future growth. In this context, it is hotly debated if and to what extent the level of a company’s exposure to environmental and social risks and the extent to which it pursues ESG objectives can impact the firm's economic valuation.

ESG advocates claim that 'good' companies are more valuable. However, there is a large discussion going on about this issue, because there is still little and confusing empirical evidence demonstrating the actual value generated by ESG factors. The framework for determining how ESG affects value is straightforward because, in order for ESG to have an impact on value, it must change one of four variables: risk, funding/capital costs, operating profit margins, reinvestment efficiency, or revenue growth (through an increase or decrease in growth).



Damodaran, A., (2021), The ESG Movement: The "Goodness" Gravy Train Rolls On!, Musings on Markets

The risk front provides the best evidence in favor of ESG, showing that "poor" companies incur higher finance costs and run a larger chance of catastrophe. However, a large portion of this evidence comes from fossil fuel companies (Damodaran, A., 2021). Profitability and cash flow metrics provide the weakest support for ESG. In fact, although there is a large literature finding the presence of a positive correlation between ESG and profitability and/or cash flow, almost all studies supporting this thesis do not show the existence of a causality relationship between the two. Therefore, it is still open the question whether “good” companies are more profitable or profitable companies are better able to take the actions that make them look good.

In addition to this, there are other hotly debated topics among scholars, such as the financial returns from investments in ESG securities, i.e., their ability to generate higher, lower or equal risk-adjusted returns compared to non-ESG investments, and the topic of measuring ESG factors, which obviously impacts any other sphere of ESG valuation.

These topics will be taken up in the following chapters, in order to analyse the conflicting theories and empirical evidence supported by researchers, and to understand what flaws still need to be addressed in the world of sustainable finance.

1.3 The role of sustainable finance

Investors have always grounded their investment decisions on observing the financial aspects and risks of the companies they are interested in. Indeed, sustainability has always played a marginal, often negligible role in investment decisions, as the risks associated with it can only materialize in the long run. However, over the past decade, interest in sustainability has taken on increasing economic relevance and the rising pressure coming from environmental, social, and governance issues has led to a material response from investors around the world, who started to "mobilize efforts to contribute to a global improvement" (OECD, 2020). This has given rise to a new strand in the world of finance identified by the name "sustainable finance". The latter is defined by the European Commission as "the process of taking due account of environmental and social considerations in investment decision-making, leading to increased investments in long-term and sustainable activities"[11]. This transformation of the financial world is grounded on the recognition that 'the interest in long-term sustainability is economically reasonable and does not necessarily imply a lower return for investors' (Giangulano, Solimente 2019).

The financial crisis of 2007-2008 also contributed significantly to the investors' shift towards sustainable finance. Indeed, the financial crisis made clear to what extent the financial industry has been greed and focused on short-term returns, regardless of the impact in terms of the growing social inequalities and environmental deterioration. Since then, the inclusion of sustainability aspects – Environment, Social and Governance (ESG) – in the investment analysis gained incredible attention and new investment practices – commonly referred to as "Sustainable and Responsible Investments (SRI)" – began to develop.

EUROSIF defines Sustainable and Responsible Investment as "a long-term oriented investment approach that integrates Environmental, Social & Governance (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 behaviour of companies"[12].

SRI investing (or ESG investing) can be identified as a broad intermediate category that stands between pure social investing and traditional investing based on financial returns. In fact, on the one hand, social investing only pursues social returns, without caring about the financial ones: philanthropy is an example. On the other hand, financial investment seeks only financial returns with the objective of maximizing them. ESG investing stands in the middle of the two and it has not a

[11] European Commission – Finance, Overview of Sustainable Finance, https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance_en

[12] EUROSIF, (2021), EUROSIF Report – Fostering Investor Impact, https://www.eurosif.org/wp-content/uploads/2021/11/2021-Eurosif-Report-Fostering-investor-impact.pdf

precise definition, as "it incorporates different meanings depending on the motivation of the investor that uses it" (OECD, 2020). The so-called "impact investors", for instance, use ESG factors to filter their available set of investment choices in order to pursue social impact alongside financial returns. Hence, impact investors' priority is to finance companies that distinguish from their peers for their sustainable practices and their marked attention for environmental and social issues. At the same time, other investors conceive ESG as an instrument to better capture information about companies and to create long-term value by reducing their exposure to potential risks. In this case, investors' goal is to maximize financial returns by integrating ESG in their investment analysis. However, whether and to what extent ESG factors influence companies' returns has to be defined yet.

The escalating attention to sustainable finance is confirmed by record numbers: according to the Global Sustainable Investment Review (GSIA, 2020)[13], sustainable investment has grown steadily across the global investment industry (55% growth from 2016), reaching $35.3 trillion in 2020 from $30.6 trillion in 2018 and $22.8 trillion in 2016. In its Global ESG 2022 Outlook, Bloomberg Intelligence (BI) states that global ESG assets under management (AuM) are on track to exceed $41 trillion by 2022 and $50 trillion by 2025 – one third of the projected $140 trillion in global AuM. In Europe, data from the OECD report of 2020[14] show that the level of ESG practices amounts to USD 17 trillion. Furthermore, ESG investment funds and ETFs have grown exponentially to over USD 1 trillion in the US, Europe, and Asia. Data from Morningstar highlight that the number of funds launched that use ESG criteria has increased from 140 globally in 2012 to 564 in 2019. Furthermore, even though sustainable investing originated with ESG investments in equity, Bloomberg's report showed that the ESG bond market has also grown extensively.

1.3.1 UNPRI and ESG Investing

As already mentioned, a growing number of interactions between financial markets and climate and social issues have soared (Louche et al., 2019), and financial institutions and private investors are increasingly incorporating several ESG strategies in their investment procedures.

The first guidelines for sustainable investments were developed in 2006, with the introduction of the 'Principles for Responsible Investment - PRI'. The latter were launched by the United Nations Global Compact (UNCG) and the United Nations Environment Program Finance Initiative (UNEP FI)[15] to

[13] The report focuses on five regions: United States, Europe, Japan, Canada, Australia & New Zeland

[14] OECD 2020, ESG Investing: practices, progress and challenges, https://www.oecd.org/finance/ESG-Investing-Practices-Progress-Challenges.pdf

[15] The UNEP FI is a global partnership established between the United Nations Environment Program (UNEP) and the financial sector, with the aim of catalyzing action across the financial system to align economies with sustainable development. It brings the UN together with banks, insurers, and investors globally to shape the sustainable finance agenda.

promote the consideration of ESG issues by institutional investors in their investment and due diligence processes (Gond and Piani, 2012). This meant, for instance, integrating ESG factors into their investment analyses, being an active shareholder to promote companies' ESG practices and demand reporting on ESG parameters to investee companies.

Indeed, in early 2005, Kofi-Annan, the then UN Secretary-General, invited a group of twenty of the world's largest institutional investors to participate at the process of delineation of the principles for responsible investment, together with a group of 70 experts from several different industries. Underlying these principles was the belief that "an economic efficient, sustainable global financial system is a necessity for long-term value creation. Such a system will reward long-term, responsible investment and benefit the environment and the society as a whole"[16].

The goals that the PRI's project aims to achieve are outlined in the PRI Blueprint, which asserts the three main areas of impact of the initiative:

- Responsible Investors: PRI developers will guide responsible investors around the world in the pursuit of long-term value and will advise investors on how to enhance alignment throughout the investment chain. To do this, PRI developers have engaged in investor support actions to increase the integration of ESG issues in a growing number of asset classes, promote a community of active owners by increasing signatories' engagement into investee companies' decisions, and continuously educate responsible investors also by expanding the reach of responsible investment training.

- Sustainable Markets: PRI developers "will address unsustainable aspects of the markets that investors operate in, to achieve the economically efficient, sustainable global financial system that responsible investors and beneficiaries need"[17].
  This objective is pursued through the promotion of relevant data in all markets (such as, globally comparable company disclosure and consolidated investor reporting) and the tackling of obstacles to a sustainable financial system.

- A Prosperous World for All: creators of PRI "will enable signatories to improve the real world – now and in the future – by encouraging investments that contribute to prosperous and inclusive societies for current and future generations"[18]. The ultimate

[16] Principles for Responsible Investment, About the PRI, unpri.org/about-us/about-the-pri
[17] PRI (2006), A Blueprint for responsible investment, United Nation, UNEP Finance, UN Global Compact
[18] *Ibid*

goal of the PRI leaders is to drive climate action and enable real-world impact aligned with the SDGs.

The principles for responsible investments are addressed to all investors worldwide[19] and provide a guideline for investors who want to consider ESG factors in portfolio management activities. The investors that decide to adopt the PRI are called "signatories" and they represent the majority of the world's professionally managed assets (UNIPRI, Blueprint). There are three main categories of PRI signatories: asset managers (such as BlackRock), asset owners (e.g., pension funds or sovereign wealth funds, etc.), and data providers (e.g., MSCI). At the very beginning of the PRI launch, signatories' total assets under management accounted only for few hundred billion dollars; by 2020, the amount of AuM has grown dramatically, reaching more than 100 trillion dollars (Kim and Yoon, 2020).

The principles for responsible investments are the following:

Source: UNPRI, unpri.org/about-us/about-the-pri

Alongside these general and theoretical principles, over time investors have developed concrete strategies to identify and direct their capital towards companies with higher ESG performance or companies whose business is based on the implementation of sustainable business practices. The Global Sustainable Investment Review reports the most up-to-date sustainable investment strategies which are:

- **Corporate engagement & shareholder action**: This is a long-term strategy that aims at influencing companies' behaviour or increase disclosure on sustainability issues by "employing shareholder power to influence corporate behaviour, including through direct corporate engagement (i.e., communicating with senior management and/or boards of

[19] The PRI now has 4683 signatories

companies), filling or co-filling shareholder proposals and proxy voting that is guided by comprehensive ESG guidelines"[20].

- **Negative/exclusionary screening**: it consists in "the exclusion from a fund or portfolio of certain sectors, companies, countries, or other issuers based on activities considered not investable. Exclusion criteria (based on norms and values) can refer, for example, to product categories (e.g., weapons, tobacco), company practices (e.g., animal testing, violation of human rights, corruption) or controversies"[21]. This category can also include **norms-based screening**, which is the inclusion or higher representation of issuers that are compliant with international standards such as those issued by the UN, ILO, OECD and NGOs.
- **ESG integration**: it consists in "the systematic and explicit inclusion by investment managers of ESG factors into financial analysis"[22]. In this strategy ESG factors are explicitly considered alongside financial factors meaning that investors weigh their investment choices by considering the potential impact (either positive or negative) that ESG issues have on company financials. ESG integration does not represent a sustainable investment strategy per se, yet it is seen more as an additional step in fundamental analysis.
- **Best-in-class/positive screening**: this is a strategy that implies the investment in sectors, companies or projects selected for higher ESG performance relative to industry peers, and that achieve a rating above a defined threshold. Unlike ESG integration, best-in-class screening requires peer group benchmarking or overweighting (underweighting) the leaders (laggards), i.e., companies with highest (lowest) ESG score.
- **Sustainability themed/thematic investing**: investing in themes or assets specifically contributing to sustainable solutions – environmental and social – (e.g., sustainable agriculture, green buildings, lower carbon titled portfolio, gender equity, diversity).
- **Impact investing and community investing**:
    - *Impact investing* is defined as "investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return"[23]. Impact investing means investing to achieve positive, social and environmental impacts, such as investing in a company with low ESG score but that presents the intention to improve its ESG score by implementing more sustainable practices.

[20] Global Sustainable Investment Alliance, (2020), Global Sustainable Investment Review (GSIR), http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf
[21] *Ibid*
[22] *Ibid*
[23] GINN, Definition of Impact Investing, https://thegiin.org/impact-investing/

- *Community investing*: with this approach "capital is specifically directed to traditionally underserved individuals or communities, as well as financial that is provided to businesses with a clear social or environmental purpose. Some community investing is impact investing, but community investing is broader and considers other forms of investing and targeted lending activities"[24].

The most commonly used sustainable investment strategies are ESG integration and negative/exclusionary screening, with the latter accounting for almost USD 20 trillion of AuM (OECD, 2020). While negative screening is the most used approach in Europe, ESG integration is by far the most common approach in the US and worldwide compared to other strategies. Nevertheless, these approaches are most of the time combined, therefore the same investment strategy (based on financial measures) usually integrates one or more sustainable investment approaches.

The EUROSIF report of 2021 explores additional styles of ESG investing (so called, "investor impact" mechanisms) that complement and expand the strategies outlined above. These practices, if properly implemented, would lead investors to have a greater chance of generating a positive impact on the environment and society through the solicitation of certain actions by the companies in which they have invested. For each investor impact mechanism, however, there are some limitations, which could only be overcome by the action of policymakers, who should enact effective policies for the pursuit of sustainability goals.

The investor impact mechanisms are the following:

1. **"Shareholder engagement"**: this method is particularly effective when the investor holds a significant portion of a company's shares and has an established relationship with the target company's management. In this case, the investor's desire to improve the ESG performance of the company would certainly be able to influence the action of the company's management, which would otherwise risk losing an important shareholder. However, it may happen that in spite of the best intentions of the company's shareholders and management in wanting to implement sustainable policies, the costs of doing so are so high that this is renounced in order not to affect the company's profitability. Shareholder engagement therefore has a 'flaw' and ceases to be effective when these conditions occur. For this reason, shareholder engagement is not enough to incentivize companies to improve their ESG performance, but at the same time policymakers would be needed to introduce, for example, severe penalties for companies

[24] *Ibid*

that produce a certain degree of negative externalities (e.g., GHG emissions). This would create incentives for companies to undertake decarbonization processes effectively anyway.

2. **"Funding of capital-constrained companies and underfunded projects that are key for the transition"**: it is often the case that early established companies with the intention of bringing environmental and social welfare to society - by creating innovative environmental products or technologies in line with the transition - do not have sufficient funds to start up. Such companies therefore have high potential but severe capital constraints. SRI investors could therefore create positive impact by providing these companies with the necessary capital. However, again there are limits to the effectiveness of this investor imapct method. Indeed, often transition-related companies do not find the needed capital because, although the product or service they offer is worthwhile, their business model is not financially viable and it would not create profit. Investors, therefore, although they care about ESG aspects, would not invest their capital into unprofitable activities.

3. **"Sending market signals"**: in the secondary market, investors could send signals of preference towards ESG assets, making it clear that their choice of portfolio securities is also influenced by ESG criteria. In this way, companies could be incentivized to improve their ESG parameters in order to remain attractive for investment. The signals emitted in the market through investors' repeated choice of ESG securities would lead to a clear reduction in the cost of capital for companies with high ESG performance and this would provide even more incentive for companies to improve their ESG performance. However, one limitation to this is the heterogeneity of ESG rating criteria. Indeed, the signals given to the market would be strong and empirically recognizable if all investors relied on a single ESG rating model for investment decisions. Actually, investors use different ESG rating providers that adopt different scoring methodologies; it sometimes happens that the same company is rated with different ESG scores by different rating providers. This makes empirical verification of some market signals much more difficult and complex.

The conclusion to be drawn from these three levers of investor impact is that the action of SRI investors is necessary, but not sufficient in order to achieve the sustainability goals that have been set. In fact, clear and defined guidelines set by public authorities are pivotal to create the market conditions needed to unlock capital towards sustainable investments. Thus, a perfect combination of private and public action is required: institutional investors, retail investors, public authorities and

international organization must coordinate their actions and be able to travel at the same pace toward a greener economy.

1.3.2 Growing sustainable product ecosystem: green bonds, sustainable ETFs and mutual funds

In addition to integrating ESG factors into investment procedures, specific financial instruments so-called "low-carbon" or "carbon-efficient" products are being developed by issuers in order to drive capitals toward sustainable projects. Essentially, the financial industry can be seen as a catalyst for advancing sustainability: investors and financial institutions provide funding for economic activities, which in turn have a tangible effect on climate and social issues (Maltais and Nykvist, 2020).

Now investors support and facilitate the transition toward a low carbon economy by investing in several financial instruments defined as "green", which have a focus on businesses' environmental outcomes and low-carbon activities. These include green bonds and specialized climate funds such as the Blackrock iShares Global Green Bond ETF, Invesco WilderHill Clean Energy ETF and many others.

Green bonds correspond to "one of the most prominent financial innovation in the area of sustainable finance over the past ten years" (Maltais and Nykvist, 2020). They are defined as financial instruments that can lead to sustainable innovation by providing funds to increase sustainable infrastructure investments. Basically, green bonds have the same characteristics as normal bonds, with the added 'use of proceeds' clause stating that the raised capital will be used to finance green projects or activities implemented by the issuer.

The green bond market has steadily grown over the past decade, but it still accounts only for about 3-3.5% of total bond issuance (Spinaci, 2022), and it will have to grow further for the United Nations to achieve the goals of the Paris Agreement. According to the European Commission Impact assessment report on green bonds[25], the green bond market, both globally and at EU level, grew by an average of 50% per year in the period from 2015 to 2020, reaching almost USD 400 billions in 2021, and it is forecasted to reach USD 1 trillion of yearly global issuance in 2023.

Sustainable funds and ETFs are also widely used sustainable financial instruments. Indeed, the amount of assets under management of global ESG funds has dramatically increased over the last decade, going from 0.5 trillion in 2015 to almost 1.3 trillion in 2021 (Capota et al., 2022). This upward trend is set to continue, as investors are increasingly aware of climate change issues and millennials, who are more vocal about environmental issues, are progressively entering the financial markets.

[25] Commission staff working document impact assessment report accompanying the document Proposal for a Regulation of the European Parliament and of the Council on European green bonds, Strasbourg 2021

Fund managers approach sustainable investments in several ways: Blackrock iShares Global Green Bond ETF, for instance, focuses on "investment-grade green bonds whose proceeds are exclusively applied to projects or activities that promote climate or other environmental sustainability purposes"[26], while Invesco WilderHill Clean Energy ETF invests in companies that are "engaged in the business of advancement of cleaner energy conservation"[27].

Overall, capital markets are playing a leading role in the transition to a more transparent, resilient, and sustainable economy (Bizoumi et al., 2019; Busch et al., 2016). Indeed, financial markets have the responsibility to push capital towards more sustainable activities, allowing companies to access funds to finance their sustainable innovation. Through the issuance of dedicated financial instruments and the allocation choices made by investors, financial markets can drive the transition and contribute to significant changes for countries' sustainable development.

[26] BlackRock, URL: https://www.blackrock.com/us/individual/products/305296/ishares-global-green-bond-etf
[27] Invesco, URL: https://www.invesco.com/us/financial-products/etfs/product-detail?audienceType=Investor&ticker=PBW

CHAPTER 2: REGULATORY FRAMEWORK FOR SUSTAINABILITY

2.1 Action Plan for Sustainable Finance

European regulators play a central role in determining and implementing the sustainability goals set out in the Paris Agreement and the UN 2030 Agenda for Sustainable Development. In fact, over the past decade, it has been, and still is, the task of European policymakers to outline a regulatory framework for sustainable development, i.e. a clear and transparent set of rules, standards and guidelines for investors and market participants aimed at effectively steering financial flows into relevant economic activities.

As outlined in the previous chapter, the joint action of the public and private sectors is of crucial importance for advancing and completing the transition of our economic system towards sustainability. Indeed, both parties pursue the common goal of promoting and developing sustainable finance: on the one hand, regulators build up the necessary regulatory framework to guide private investors in their sustainable investment strategies, while, on the other hand, private investors commit themselves to participate actively and independently in the transition, investing their capital into economic activities that meet the sustainability criteria set forth in the regulatory framework.

The bigger framework within which the European Union is moving to achieve sustainability goals is outlined in the Sustainable Finance Action Plan, whose ultimate goal is to achieve carbon neutrality by 2050. The Action Plan was introduced by the European Commission in March 2018, and it aims at steering investments on the path of sustainability while monitoring and managing the risks that may arise from the transition. To this end, the Action Plan lays down guidelines and measures to be taken "for the realisation of a financial system capable of promoting development that is genuinely sustainable in economic, social and environmental terms, contributing to the implementation of the Paris Agreement on Climate Change and the United Nations 2030 Agenda for Sustainable Development"[28]. The Plan is very comprehensive: it does not only propose legislative actions but also several other actions that the EU encourages economic actors to take to an active evolvement in sustainable finance. Moreover, it has the function of setting the scene for the dialogue with stakeholders on how to address and overcome the challenges that will be accompanying the EU through the process of transition.

The Action plan pursues three broad and ambitious objectives:

[28]"Finanza sostenibile" Consob, https://www.consob.it/web/area-pubblica/finanza-sostenibile

1. Reorienting capital flows toward sustainable activities in order to close the investment gap to meet the climate and energy challenges. This is to be achieved through the introduction of the Taxonomy for sustainable activities
2. Mainstreaming sustainability in the way how financial institutions and financial sectors manage their own risks with respect to environmental and social threats
3. Fostering transparency and promoting long termism, through enhanced disclosure requirements for assets managers, financial institutions and companies

Although the Action Plan is certainly very ambitious and its goals are not easy to be achieved without challenges, all its initiatives open the floor for the next actions on the path to sustainability and also explore different national initiatives and road lines that could be taken by the private sector.
The Action Plan is based on three main building blocks:

1. **The Taxonomy of Sustainable Activities**: this is a classification system that relies on science-based criteria to identify the economic activities that can be considered as "sustainable". The taxonomy has been introduced by the European Commission in June 2020 within the Taxonomy Regulation. The latter constitutes the backbone of the sustainable canvas as it establishes a framework clearly defining environmentally sustainable activities and investments therein, and also comprehensive disclosure requirements of non-financial information addressed to companies and financial market participants.

2. A **mandatory disclosure regime** for both non-financial and financial companies to provide investors with the information necessary to make sustainability investment choices. According to such disclosure requirements, companies must inform investors about the impact of companies' activities on the environment and society as well as companies' exposure to financial risks due to sustainable factors (so called "double materiality" principle). The disclosure regime is contained in three main acts of legislation, namely the Sustainable Finance Disclosure Regulation (SFDR), in force since March 2021, the Corporate Sustainability Reporting Directive (CSRD) proposed by the commission in April 2021, and the Taxonomy Regulation.

EU sustainability disclosure regime for financial and non-financial companies			
Instrument	Corporate Sustainability Reporting Directive (CSRD) proposal[13]	Sustainable Finance Disclosure Regulation (SFDR)[14]	Taxonomy Regulation[15]
Scope	All EU large companies and all listed companies (except listed micro enterprises)	Financial market participants offering investment products, and financial advisers	Financial market participants; all companies subject to CSRD[16]
Disclosure	Report on the basis of formal reporting standards and subject to external audit	Entity and product level disclosure on sustainability risks and principal adverse impacts	Turnover, capital and operating expenditures in the reporting year from products or activities associated with Taxonomy
Status	Under negotiation; expected to apply from 2023	Applies from 10 March 2021	Applies from January 2022

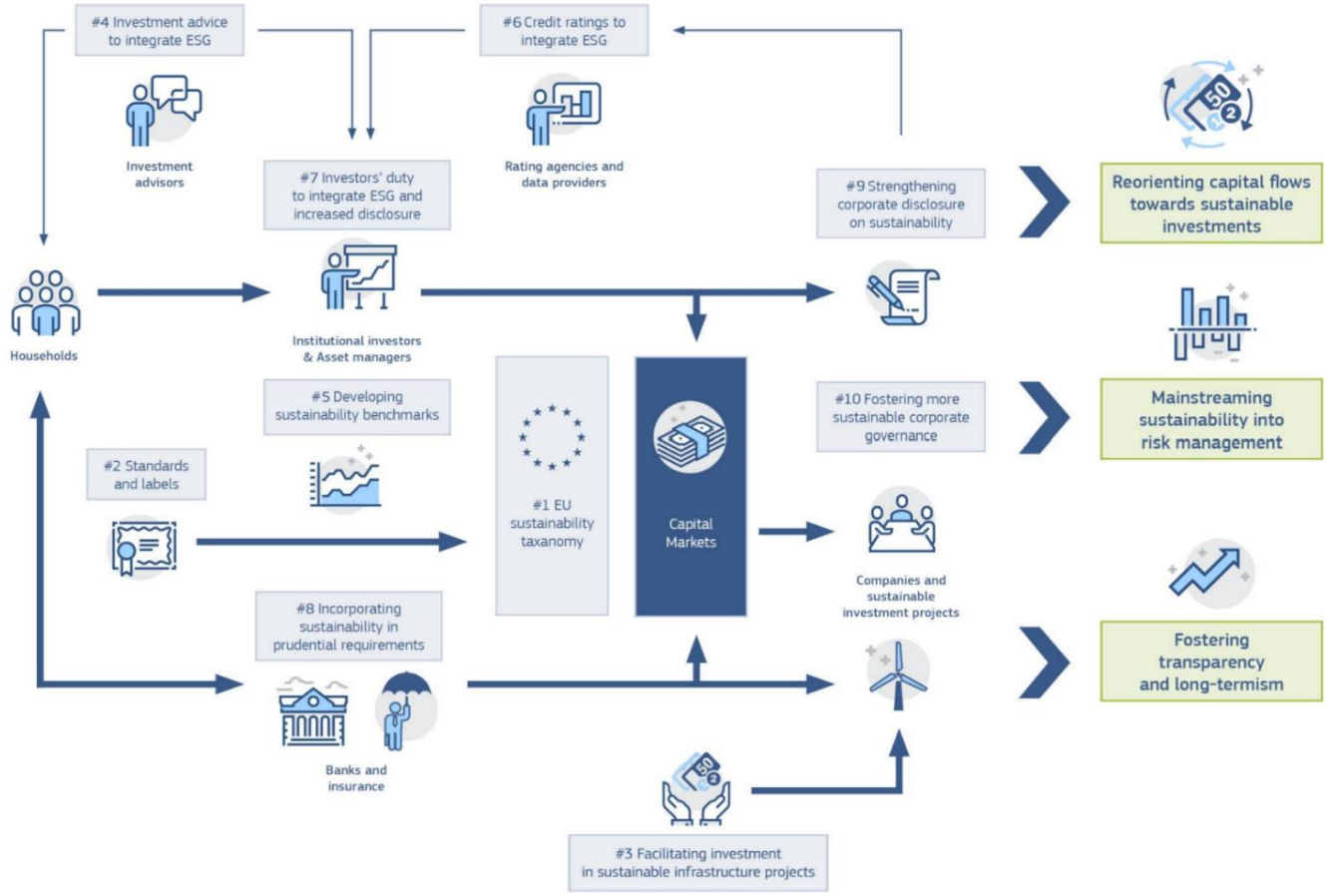
Source: EU Commission 2021, Strategy for Financing the Transition to a Sustainable Economy

3. **A set of investment tools**, namely benchmarks, standards and labels to allow companies, financial institutions and market participants developing sustainable investment strategies aligned with the EU's climate and environmental goals, while preventing greenwashing. The set of investment tools is defined in the EU Climate Benchmarks Regulation, introduced by the European Commission in April 2020. The Commission has also recently proposed a new standard for European green bonds to create high-quality voluntary standards for all issuers and foster the attractiveness of sustainable investments.

As the Action Plan is very comprehensive and ambitious, in addition to the three pillars mentioned above, it contains other actions that the EU encourages economic actors to take for the active development of sustainable finance and from which the full scope of the European Commission's action on sustainability is defined. The actions are the following:

4. The promotion of investments in sustainable projects
5. The request addressed to asset managers and financial intermediaries who invest on behalf of their clients to take their clients' sustainability preferences into account
6. The development and harmonization of sustainability indices
7. The encouragement of ESG criteria integration by rating companies
8. The clarification of institutional investors and asset managers' duties regarding sustainability considerations, i.e., the integration of sustainability aspects into their investment decision-making process
9. The possibility of introducing risks associated with climate transactions and environmental factors into the determination of banks' minimum capital requirements, relying on the sustainable asset classification system outlined within the Taxonomy

10. The promotion of sustainable corporate governance through the introduction and dissemination of sustainability strategies and the long-term ESG approaches by the boards of directors



Source: European Commission (2018), Action Plan: Financing Sustainable Growth

The European thrust on sustainability is therefore aimed at strengthening the economic-financial system in terms of transparency, consistency and elimination of information asymmetries between the economic actors. In fact, information asymmetries concerning sustainability could generate confusion among investors that are willing to invest sustainably, and thus lead to inefficiencies in the transition process within which we are moving.

The purpose of the newly introduced regulatory requirements is to create a solid network of structured, clear, and accurate information on sustainability, so as to establish a common basis for all financial market participants to move towards a sustainable economic system. The information must be truthful, complete, and comparable and must clearly state how the economic activities implemented by companies can impact on the environment and society and to what extent sustainability risks may pose a threat on companies in the medium and long term.

2.2 The common alphabet of sustainability: Taxonomy Regulation

Until now, the global economy has been heading in a direction that is incompatible with the sustainability objectives established at the European and global levels. As a result, as previously stated, large investments must be made in all industrial sectors, notably the carbon-intensive ones, to decarbonize economic operations and bring them into compliance with sustainability norms.

The European Taxonomy is a tool developed by European regulatory authorities to enable investors and businesses worldwide to distinguish between activities that can be classified as sustainable and those that are either far from sustainability or in the process of adaptation, using objective thresholds and quantitative criteria. The EU Taxonomy can be used by investors, businesses, issuers, and project promoters to plan, start, and track their transition to a greener economy. By informing the market about sustainable and non-sustainable activities, the Taxonomy aims to give investors security and shield stakeholders from greenwashing.

2.2.1 Sustainable economic activities

Article 3 of the Taxonomy Regulation states that in order to determine the degree of sustainability of an investment, an economic activity can be considered sustainable if:

1. It "contributes significantly to at least one of the six environmental objectives defined in Article 9 of the regulation:
    - Climate change mitigation
    - Climate change adaptation
    - Sustainable and protection of water and marine resources
    - Transition to a circular economy
    - Pollution prevention and control
    - Protection and restoration of biodiversity and ecosystems

2. It does not significant harm (DNSH) to the other five, where relevant
3. It meets minimum safeguards (e.g., OECD Guidelines on Multinational Enterprises and the UN Guiding Principles on Business and Human Rights)"[29]

Among the activities that contribute significantly to achieving one of the environmental objectives, the EU Taxonomy makes a distinction between two main types:

[29] EU Technical Expert Group on Sustainable Finance (2020): Technical Report – Taxonomy: Final report of the Technical Expert Group on Sustainable Finance

- Activities that directly aid in the transition via their own efficacy, such as those that are environmentally sound since they rely, for instance, on renewable energy
- Enabling activities, i.e., activities that support the transition indirectly by providing goods or services that allow other businesses to make major contributions to sustainability. These might involve, for example, the selling of parts utilized in the manufacture or creation of environmentally friendly materials that replace conventional ones that cause pollution

A third type of activities, called "transitional activities," is also present. In fact, the Taxonomy acknowledges that there are some industries and businesses where low-carbon solutions are either unavailable or difficult to deploy in the short and medium term. In such circumstances, the regulation states that the economic activity will still be regarded as falling within the scope of sustainability if it exhibits an environmental performance far above the industry average and does not prevent or impede the development of low-carbon alternatives.
By adding the alternatives of enabling and transitional activities to those that provide direct significant contribution to environmental objectives, the scope of the Taxonomy Regulation is significantly broadened. This enables businesses operating in specific economic sectors to still be considered in line with EU sustainability goals and not be automatically excluded from the options of investors who want to green their portfolios and be in line with the Europe sustainability goals.
In any case, all activities share the trait of being consistent with medium- and long-term climate goals.

Although Articles 3 and 9 of the Taxonomy Regulation generally define the characteristics that economic activities must present to be considered as sustainable, they lack sufficient specificity. In fact, it is not clear, for example, what exactly "significant contribution" means, nor what the environmental objectives of, for instance, "climate mitigation" or "climate adaptation" consist of. In order to give more body and specificity to the provisions contained in the Regulation, delegated acts were also introduced along with the Taxonomy, i.e., acts whose purpose is to give greater pragmatism to the regulations and define their content with technical criteria. The delegated acts of the Taxonomy contain so-called technical screening criteria, namely quantitative criteria based on scientific evidence that precisely define each environmental goal and clarify when and how an economic activity contributes to the achievement of one of them.
The first technical screening criteria based on GHGs targets were introduced at the end of 2020 and they concern the climate change mitigation and adaptation targets that will apply from 2022. At the same time, in the first half of 2021, disclosure requirements for financial and non-financial companies regarding the first two environmental goals came into force. In 2021, the technical screening criteria

for the remaining environmental objectives were also introduced, and the relevant disclosure obligations for the year 2022 are to be published in the course of 2023.

2.2.2 Disclosure obligations for companies under Taxonomy Regulation

By clarifying what is meant by a 'sustainable economic activity', the Taxonomy is defined as the backbone of European sustainability, as it defines a common sustainability alphabet for all economic actors, reducing uncertainties and information asymmetries regarding sustainability within the financial markets.

However, this common alphabet would be useless if businesses did not periodically disclose which sustainable practices they use and if investors did not reveal how much of their portfolios were allocated to sustainable investments. Consequently, along with the list of sustainable activities, the Taxonomy Regulation also establishes requirements for two groups of economic actors to disclose non-financial information:

1. Financial companies who participate in financial markets by offering financial products and operate within EU countries, including pension funds
2. Non-financial large firms that are already subject to non-financial disclosure obligations under the Non-Financial Reporting Directive[30]

In addition, also EU member states must refer to the indications contained in the Taxonomy when they want to introduce public measures, standards or labels for green financial products.

According to Article 8 of the Taxonomy Regulation, all non-financial companies subject to the Non-Financial Reporting Directive (NFRD), and soon to the new Corporate Sustainability Reporting Directive (CSRD), will have to declare, starting in 2023, how and to what extent their business complies with the sustainability criteria outlined within the Taxonomy, i.e. whether it is 'Taxonomy aligned'. To do so, firms must provide two main information:

- The proportion of the company's revenues aligned with the Taxonomy (i.e., how much of the company's total turnover comes from activities that are taxonomy-aligned): this information allows investors who choose to invest in a company to know the percentage of their investment committed to sustainable activities aligned with the Taxonomy

- Capital expenditure (capex) and, if relevant, operational expenditure (opex) aligned with the Taxonomy. The need for this information is justified by the ability of capital expenditures to

[30] Under the NFRD, large listed companies, banks and insurance companies ('public entities') with more than 500 employees must publish reports on the policies they adopt in relation to social responsibility and treatment of employees.

provide investors with insight into the company's medium- to long-term plans and commitment to sustainability.

The reasoning behind the Taxonomy's disclosure requirements seems to be straightforward: on the one hand, businesses are required to disclose the amount to which they are now involved in sustainable activities, giving market participants a current snapshot of the company's sustainable profile. On the other hand, firms must state their long-term goals and strategic orientation, showing how and to what extent they are prepared to participate in sustainable activities.

The Technical Expert Group on Sustainable Finance (TEG)[31] also advises that businesses should provide this data in an organized manner, with separate sections for each environmental goal they have set. In practice if a corporation implements an economic activity that concurrently pursues, say, adaptation and mitigation of climate change, it should specify what percentage of its revenue comes from the activity pursuing adaptation and what percentage comes from the second environmental goal. The same applies to capital expenditures. The TEG also provides guidance on how to calculate turnover and capital expenditures, depending on the environmental objective pursued through the economic activities.

In addition to this, companies must periodically perform a due diligence process to verify that the economic activities they implement do not pose any significant harm to other environmental objectives described in article 9 of Taxonomy Regulation and that they are compliant with minimum safeguards, i.e., the standards set forth in the OECD Guidelines on Multinational Enterprises[32] and the UN Guiding Principles on Businesses and human rights. The due diligence and its reporting process that companies may adopt is described within the OECD Guidelines.

2.2.3 Disclosure requirements for financial market participants

Not only non-financial companies must declare the portion of their activities that is aligned with the environmental objectives, but also financial companies that market or manufacture financial products in the EU (including pension products) must declare the portion of their investments that is Taxonomy aligned. To do so, financial companies must rely on a key performance indicator, represented by the ratio of taxonomy aligned investments and financial assets (at the numerator) to total investments and financial assets (at the denominator).

[31] The TEG is a group of 35 experts set up by the European Commission in May 2018 to assist European policymakers developing guidelines and legislative proposals on sustainable finance.

[32] The OECD Guidelines reflect the expectation from governments to businesses on how to act responsibly. They cover all key areas of business responsibility, including human rights, labour rights, environment, bribery, consumer interests, as well as information disclosure, science and technology, competition, and taxation. (https://mneguidelines.oecd.org/)

Articles 5 and 6 of the Taxonomy further provide that for financial products that are already subject to disclosure under Articles 8 and 9 of the Sustainable Finance Disclosure Regulation (SFDR)[33] and that invest in assets that have environmental objectives, financial market participants must disclose:

1. "How and to what extent they have used the Taxonomy in determining the sustainability of the underlying investments;
2. To what environmental objective(s) the investments contribute; and
3. The proportion of underlying investments that are taxonomy-aligned, expressed as a percentage of the investment, fund or portfolio".[34]

For all other financial products (those who fall under article 6 of SFDR), investors must declare the information following the comply-or-explain principle, i.e. they should inform investors that the investment does not take into account the European sustainability criteria and explain the reason.
Investors should declare this information separately for each environmental objective pursued as part of their pre-contractual and periodic disclosure obligations and also on their websites, as provided by the SFDR. Pre-contractual disclosure focuses on ex-ante information, such as the environmental objectives of the financial product, while periodic reporting should contain ex-post information, e.g., how the environmental strategies underlying the investment have been implemented in practice. Starting from July 2022, investors must disclose information on the alignment to the climate mitigation and adaptation environmental objectives, and as of 2023 also information for the remaining four environmental objectives.

2.2.4 Challenges for taxonomy: what still needs to be addressed

The investing public analyzes how well-aligned corporations are with environmental goals and their decarbonization process using the information on capital expenditures that companies must provide in accordance with Article 8 of the Taxonomy. This ought to cause a more transparent and conscientious shift in the market's appetite for low-carbon or carbon-neutral investments. Additionally, information about how companies fit with the sustainable activities outlined by the Taxonomy should enable investors to increase the effectiveness of their engagement efforts by rigorously monitoring and steering the companies' journey towards sustainability.

[33] The SFDR will be explored in more detail in the next section
[34] EU Technical Expert Group on Sustainable Finance (2020): Technical Report – Taxonomy: Final report of the Technical Expert Group on Sustainable Finance

However, although the introduction of the taxonomy marks a significant advancement for the European sustainable transition, some issues with the new Regulation still need to be addressed. Examples include the scarcity and unavailability of sustainability-related data, the costs associated with data collection that new disclosure requirements place on businesses and financial actors, and the absence of a comprehensive ESG taxonomy.

In fact, the Taxonomy's first challenge is to ensure that there is a market-wide availability of data connected to sustainability, i.e., to ensure that more and more businesses reveal their sustainability information so that investors can direct their investments accordingly. Currently, the companies subject to the disclosure obligation are only large companies (subject to the Non-Financial Reporting Directive), i.e., approximately 11,000 companies. Therefore, although the introduction of the CSRD will expand the pool of companies subject to regulation, the majority of European companies currently remain outside the scope of the Taxonomy Regulation. In fact, around 99% of companies in Europe are small and medium-sized enterprises, most of them unlisted, and therefore not subject to non-financial disclosure requirements. Although such companies may still decide to publish information concerning their sustainability, they are not subject to any obligation, and may be left outside the scope of consideration of financial market participants who want to make their investments according to sustainable criteria. Alternatively, investors who want to invest in certain companies that are not obliged to publish non-financial information, could turn to third-party data providers, such as ESG rating agencies, to find information on the sustainability profile of the companies they are interested in, thus exponentially increasing the impact of the assessments made by these agencies, whose methodologies for assessing ESG information are not standardized, transparent and fully comparable yet. This could generate confusion and opacity of sustainability-related information and undermine the goal of alignment with the common sustainable alphabet of the Taxonomy.

Another relevant aspect of Taxonomy Regulation concerns the costs that companies and financial actors have to afford in order to be compliant with regulation and who will ultimately bear these costs. In other words, it is undoubtedly the case that firms and financial market participants subject to the Taxonomy will have to bear higher compliance costs in order to find and publish information about their sustainability on a regular basis; what is uncertain is who will ultimately bear these costs. In fact, it is possible that some funds would impose extra charges on investors with the rationale of ESG-related disclosure and monitoring, thereby shifting the costs of compliance to the final investors. This would drastically decrease the attractiveness of sustainable financial products and their competitiveness within the market, thus undermining the European path towards climate neutrality (Lai, 2019). As a result, companies and financial actors that conduct the costly and time-consuming

assessment for their sustainability, would not be rewarded by increased investments and capital inflows. To prevent this from happening, European regulators must either gradually increase the number of businesses subject to the regulatory requirement or develop incentives for businesses and financial actors who are not subject to the requirement to align with the Taxonomy. This will also help to solve the issue of the accessibility of ESG data. Indeed, if the proportin of companies that must afford compliance expenses remains very low, sustainable investments risk becoming niche products, as they are unattractive and therefore only chosen by investors with strong environmental and social preferences. If, on the other hand, we imagine that the disclosure requirements of non-financial information are extended to all companies in the same way as the financial disclosure requirements, the idea of companies having to bear the compliance costs for the disclosure of this new information would be normalized and the scenario envisaged earlier would not arise.

Finally, further pitfalls of the Regulation arise due to the absence of a full ESG taxonomy. Indeed, the current taxonomy document defines sustainability exclusively in environmental terms: this, however, does not "reflect the market of sustainable financial products, where social, governance and environmental aspects are often interlinked" (Och, M., 2020). The focus of the Taxonomy therefore appears limited, also in light of the UN Sustainable Development Goals. To keep pace with the evolution of financial markets and not to create inconsistencies between European regulations and the needs of financial market participants, a clear commitment on social and governance standards can be expected from the EU.

2.3 Companies' non-financial disclosure: NFRD and CSRD

2.3.1 Non-Financial Reporting Directive

Within the package of directives and regulations that the European Union has provided in order to channel the investments of market participants towards companies that implement sustainable activities there is the Non-Financial Reporting Directive (Directive 2014/95/EU). The latter was introduced in 2014 and it lays down the rules on disclosure of non-financial information by certain large companies. The primary aim of the Directive is to increase the transparency of sustainability-related information in the market and to channel private capital towards activities with higher levels of sustainability.

The Directive provides that large listed companies, banks and insurance companies ('public interest entities') with more than 500 employees are required to publish information on the policies they implement in relation to:

- Environmental matters
- Social matters and treatment of employees

- Respect for human rights
- Anti-corruption and bribery
- Diversity on company boards (in terms of age, gender, educational and professional background)

Specifically, the "NFRD requires companies to disclose information about their business models, policies (including implemented due diligence processes), outcomes, risks and risk management, and key performance indicators (KPIs) relevant to the business". If firms do not have policies for one or more of the five areas listed in the Directive, they must state the reason for not doing so, following the comply-or-explain principle.

This information is being disclosed in accordance with the "double materiality" principle, which mandates that businesses disclose information on both the potential effects of sustainability issues on their operations (inside-out dimension) as well as the effects of their operations on society and the environment (outside-in dimension). However, the Directive does not outline how or by what means businesses must disseminate non-financial information; as a result, businesses have a great deal of latitude in how to report. Consequently, companies can rely on international, European or national guidelines to produce their statements, using for example the ones from the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), the International Integrated Reporting Framework (IIRC), the Task Force on Climate-related Financial Disclosures (TCFD), the United Nations Guiding Principles Reporting Framework, the UN Global Compact, the OECD guidelines for multinational enterprises and ISO26000. Furthermore, companies can choose to publish sustainability-related information in their management report, or, under certain conditions, prepare a separate report.

However, while the flexibility guaranteed by European policymakers can be viewed positively, as it should not entail an excessive administrative and financial burden on companies to be compliant with the Directive, it has also generated no little confusion for investors (the 'users' of the information) and companies (the 'preparers') about the sustainability information published. In fact, the public consultation conducted by the European Commission in 2018 regarding the NFRD revealed a clear problem of comparability, reliability and relevance of the information claimed by investors, a problem that also spills over to companies that are in any case asked for additional non-financial information (in addition to the already published information), by for example rating agencies or NGOs (Hahnkamper-Vandenbulcke, N., 2021).

As a matter of fact, the heterogeneity of the non-financial information disclosed by the companies undermines the effectiveness of non-financial reporting as it generates confusion among investors who have difficulty in finding information and comparing those from different firms. Indeed, both

investors and civil society organizations continuously demand clearer and better organized information about firms' ESG performance and impacts though companies face uncertainty and complexity concerning their reporting duties.

Many respondents of the Commission's consultation agreed that to solve the problems of heterogeneity and lack of reliability of information, European policymakers should introduce a unified set of non-financial disclosure standards, so that sustainability information reported by companies is organized and easily comparable. For the definition of reporting standards, European authorities could build on those already existing at the international level, and provide simplified standards for SMEs, avoiding an excessive financial burden for the latter due to compliance costs. Furthermore, in order to facilitate the availability and reliability of published information for investors, a significant proportion of investors believe that it would be useful to introduce the digitization of non-financial information disclosure, by for example tagging such information to make it machine-readable, and possibly publish it on a single widely accessible platform. This would obviously have extremely positive effects for investors and all parties interested in obtaining non-financial information of companies, as they would be able to find information very easily and benchmark companies effectively. However, one has to take into account the cost-efficiency needs of companies, especially SMEs, which would have to organize information in a more structured and thus more time-consuming and costly manner.

2.3.2 Corporate Sustainability Reporting Directive proposal

"Problems in the quality of sustainability reporting have knock-on effects. It means that investors lack a reliable overview of sustainability-related risks to which companies are exposed'[35]. Indeed, without a sound quality and reliability of non-financial information reported by companies, sustainable finance cannot develop, and the sustainable transition is not going to happen.

Thus, given the various deficiencies of the Non-Financial Reporting Directive and the limitations highlighted by both investors and companies, the European Commission (which had already announced its intention to revisit the NFRD in December 2019 when introducing the European Green Deal) on 21 April 2021 published a proposal for a directive on sustainability reporting, called the Corporate Sustainability Reporting Directive (CSRD). The aim of the NFRD review is to improve and facilitate the disclosure of non-financial information and thus strengthen the growth and development of sustainable finance.

[35] Hahnkamper-Vandenbulcke, N., (2021), Non-financial Reporting Directive, European Parliamentary Research Service

There are several novelties that the CSRD brings to the European non-financial information reporting framework, first and foremost, the extension of the number of companies subject to the non-financial information disclosure obligation. In fact, it has previously been pointed out that the effects of the Taxonomy, although positive and geared towards a sound transition, may be limited due to the low number of European companies to which the regulation applies. In order to remedy this, the CSRD stipulates that all large companies, whether they are listed or not and without the previous 500-employee threshold (as it was in the NFRD), and all listed SMEs, except for the listed micro-enterprises, will have to make a sustainability report. However, to limit the compliance burden on listed SMEs, the Directive proposal provides the possibility for them to use simplified reporting standards. Furthermore, while for large companies the CSRD provisions would apply as of 2023, SMEs would have to publish non-financial information on a regular basis starting from 2026. This choice of the Commission was dictated by the need to give more breathing space to SMEs that have been hardest hit by Covid-19 and thus by the economic crisis that has been generated over the last two years.

Secondly, in order to counteract and eliminate heterogeneity in corporate sustainability reporting, the Commission's Corporate Sustainability Reporting Directive proposal stipulates that companies will have to report their sustainability data according to common reporting standards, which will be developed by the European Financial Reporting Advisory Group (EFRAG)[36] .
The development of reporting standards is guided by two main guidelines: the first is to make sure that the information provided by companies complies with the principle of double materiality, i.e., that it provides a clear picture of the impact that companies have on sustainability factors as well as the environmental and social risks to which they are exposed. The second is to make sure that the standards incorporate the key components of international reporting requirements. In fact, corporations should align themselves globally as well as at the European level to be able to draw in new capital from investors all over the world. Furthermore, the reporting standards developed by EFRAG should be consistent with other European sustainability regulations, specifically the Taxonomy Regulation and the Sustainable Finance Disclosure Regulation, in order to avoid gaps or overlaps between different EU laws.

In order to also ensure greater reliability of sustainability information, the CSRD proposal introduces the obligation for companies to have their non-financial reports audited by a third party. Similar to

[36] The EFRAG is a private association created in 2001 under the suggestion of the European Commission, with the aim to serve the public interest: in this context, the role of EFRAG was to help and advise the Commission on the adoption of international reporting standards into EU law

financial reporting, the inclusion of the audit requirement was justified by the need to have external verification of the information's reliability. In contrast to the publication of financial data, however, the disclosure of non-financial information is still in its infancy and is not yet a practice that is well established. As a result, the Commission intends to take a "proportional" approach. This means that a 'limited' assurance[37] requirement rather than reasonable assurance (which is the one required for financial reporting) will be imposed on companies. Depending on the specific provisions adopted by each Member State, the audit procedure could be carried out by the regular auditors who presently conduct the financial audit or by new auditors.

Finally, going along with the wave of digitization that the European Union has been promoting for several years now, the Commission has envisaged the introduction in the CSRD of the obligation for companies to draw up sustainability reports in digital format, using a specific categorization system, in order to facilitate the collection and reading of such information for investors. Although the digital structuring of data could in the short term cause an increase in reporting costs for companies, in the medium to long term, the digitization of non-financial disclosure should make disclosure procedures easier for companies and facilitate the publication of information.

The EFRAG already published technical recommendations and a roadmap for the development of the EU reporting standards: however, it will take some time before the new reporting standards are adopted, as the European Commission will consult several European regulators and expert groups to ensure broad consensus on the content of the standards and to verify that they are consistent with other EU legislation and policies.

2.4 Financial market participants' disclosure on sustainability: SFDR

The set of Regulations and Directives providing for the disclosure of non-financial information by financial actors also includes the Sustainable Financial Disclosure Regulation (SFDR). As previously stated, the latter was introduced by the European Commission alongside the Taxonomy Regulation and the Low Carbon and Positive Impacts Benchmarks Regulation as part of a package of legislative measures arising from the European Commission's Action Plan on Sustainable Finance.
In particular, the SFDR lays down "harmonized rules for financial market participants and financial advisers on transparency with regard to the integration of sustainability risks and the consideration of adverse sustainability impacts in their processes and the provision of sustainability-related

[37] Limited assurance contrasts with reasonable assurance, which is much more complex and pervasive.

information with respect to financial products"[38]. The category of financial market participants (FMPs) includes insurance companies that sell insurance-based investment products, investment firms and credit institutions which provide portfolio management services and the managers of alternative investment funds, venture capital or social entrepreneurship funds and pension funds operating within the EU. The financial products covered by regulation are investment funds, professionally managed portfolios, and pension products.
The substantive provisions of the Sustainable Finance Disclosure Regulation came into effect on 10 March 2021 and although they apply to financial market participants and financial advisers offering ESG related financial products, they also have an impact on a wide range of financial institutions, products, and firms.

The SFDR is extremely structured, and it separates the information that FMPs and financial advisors are required to report into two levels: information at the level of the financial product that was released to the market (referred to as "product-level") and information at the level of the financial company (referred to as "entity-level"). Regarding the content of the documentation, it can easily be broken down into two key concepts: sustainability risks and Principal Adverse Impacts on Sustainability (PAIS). The term sustainability risks refers to environmental, social or governance events or conditions that could have a substantial negative impact on the value of an investment. For example, a real estate investment undertaken to purchase ownership of several buildings in a location with a high risk of monsoons and cloudbursts, might serve as a metaphor for a sustainability risk because it could limit the venture's potential by seriously damaging the structures. PAIS, on the other hand, refers to the negative effects that investments or advice could have on sustainability factors, i.e., environment and society. In this case, a suitable example could be an investment made in companies that have very severe levels of environmental pollution or that exploit child labor.
It is clear that the disclosure of information in the SFDR also abides by the double materiality principle, which continues to serve as the underpinning of all European sustainability legislation. The double materiality principle is demonstrated in this instance by the fact that, while sustainability risks show how the environment and society around a company can affect its economic activities in a relevant way, PAIS instead provide information on the potential effects, even the indirect ones, that a company's business could have on those same environment and society.

[38] Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector

Regarding the information that financial entities must disclose ('entity-level' information), Articles 3, 4 and 5 of the SFDR stipulate that financial companies must disclose on their websites and in their advertising statements:

- Information on the policies adopted for the integration of sustainability risks into investment decision-making or advice (Article 3);
- The potential negative effects that investment decisions may have on sustainability factors (PAIS) if these are taken into account, and a statement on due diligence policies with respect to those impacts. In the event that negative impacts are not taken into account, FMPs and financial advisers must give a clear justification for such non-consideration (Article 4);
- Information on how the remuneration policies adopted are consistent with the integration of sustainability risks (Article 5)

With regard to non-financial reporting on investment products ('product-level' information), the SFDR distinguishes between three main product categories, which are separately regulated:

- Products under article 6: generic financial products, not focused on sustainability, for which labels such as 'ESG' or 'sustainable' cannot therefore be used
- Products under article 8: 'light green' products that promote, among other features, environmental and/or social characteristics, provided that companies in which the investments are made follow good governance practices
- Products under article 9: 'dark green' products that have sustainable investments as their main objective, i.e., investments in companies that pursue an environmental objective and that do not significantly harm any other environmental objective and follow good governance practices

Source: Morningstar Research

For all listed types of financial products, FMPs and financial advisors must report sustainability-related information, however, for funds falling under the definitions of Articles 8 and 9, the SFDR requires a greater degree of detail in the information reported.

In particular, the SFDR stipulates that financial entities are required to disclose in pre-contractual and periodic documents relating to financial products:

- How sustainability risks are factored into investment decisions and the potential impacts of these risks on the performance of the financial products in question (this applies to all product categories)
- For financial instruments that fall under the definitions of Articles 8 and 9 (products classified as sustainable), what are the environmental and social characteristics (Article 8) and sustainability objectives (Article 9) pursued and how are they to be respected and achieved respectively.
- For non-ESG financial products (Article 6), a justification should be provided for why sustainability assessments are not taken into account when making investment decisions, and an explanation should be provided if sustainability risks are not thought to be pertinent for the financial product in question.

By obliging FMPs and financial advisors who decide not to consider sustainability factors in their investment or advisory activities to state their reasons, the SFDR in fact significantly entices such financial actors to invest in sustainable assets.

2.4.1 What happened in the financial markets one year after the introduction of the SFDR

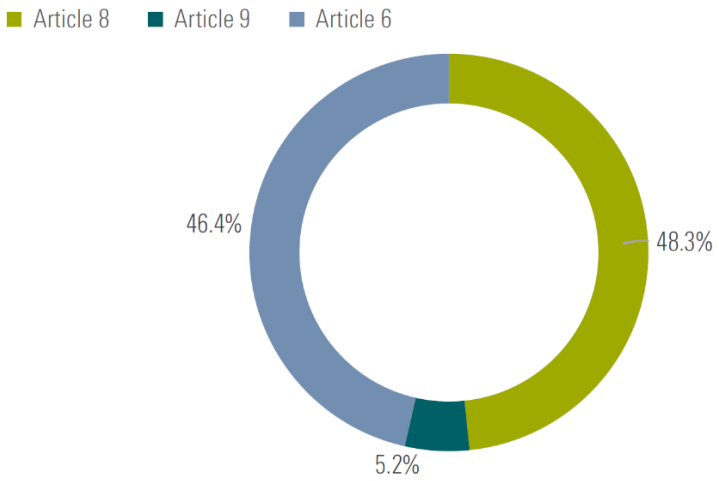
After the SFDR came into force in March 2021, all financial actors involved by the Regulation started to classify financial products into the categories outlined in Articles 6, 8 and 9. As a consequence, an unexpected high number of light and dark green products has risen.

To provide a more concrete idea, Morningstar's report carried out at the end of the third quarter of 2022[39] shows that the number of funds classified as Articles 8 and 9 at the end of the third quarter of 2022 constituted more than a third (37.8%) of the total overall EU fund universe. In terms of assets, at the end of September 2022, those with ESG characteristics reached more than EUR 4300 billion, accounting for more than a half of the total EU assets traded, namely 53.5%, distinguished between 48.3% of Article 8 assets and 5.2% of Article 9 products. As might be expected, the percentage of Article 9 products is much lower than Article 8 products, due to their more stringent characteristics. According to Morningstar data, the main asset class of sustainable funds would appear to be equity, with equity funds accounting for half of Article 8 offerings and two thirds of Article 9 products. On

[39] Morningstar, (2022), SFDR Article 8 and Article 9 Funds: Q3 2022 in Review: Managers downgrade more Article 9 funds ahead of 2023 enhanced disclosure regime

the other hand, fixed income products with ESG characteristics are less widespread but sufficiently present, while products for the remaining classes are scarce.

SFDR Fund Type Breakdown (by Assets)



Source: Morningstar Data. Data as of Sept. 30, 2022. Based on SFDR data collected from prospectuses on 97.4% of funds available for sale in the EU, excluding money market funds, funds of funds, and feeder funds.

Overall, following the introduction of the SFDR, investors' interest in sustainable financial products became significantly more concrete, resulting in high capital inflows for Article 8 and 9 funds compared to Article 6 funds. In the fourth quarter of 2021, article 8 and 9 funds captured 64% of total funds' flows, while article 6 fund flows declined by over 30%[40].

Following in the wake of investor enthusiasm for sustainable products, during 2021 many asset managers expanded the range of ESG financial products available to investors, in terms of asset class, investment style, market exposure and theme. As a result, during 2021 many funds were reclassified by asset managers, and due to the blurring margins of the definitions of ESG products in the SFDR, many funds that were initially delineated as Article 6 funds due to the absence of particular sustainability characteristics were reclassified as Article 8 funds. However, while for many funds, this reclassification was justified by the enhancement of their ESG integration processes and their investment policies, several funds switched classification and rebranded without any real change in their investment decision-making processes. This phenomenon was made possible by the lack of unambiguity and precision in the definitions of products falling under one or the other article introduced by the SFDR, which, due to their qualitative nature, generated a halo of uncertainty regarding classification, leaving room for improper and inaccurate classifications. Indeed, asset

[40] Morningstar, (2022), SFDR Article 8 and Article 9 Funds: 2021 in Review: A rapidly evolving landscape as assets hit EUR 4 trillion

managers "have taken different interpretations of the definitions, some opting for a softer approach than others"[41] . This phenomenon has legitimately raised concerns that investors could be misled by such funds improperly promoting ESG characteristics or sustainable goals, thus undermining the effectiveness of the SFDR and its good intentions.

In order to prevent such misbehavior and to leave no room for ambiguity and confusion, the European Commission provided for the drafting of SFDR implementation documents, called Regulatory Technical Standards (RTS), which contain clearer and more detailed guidance on the characteristics of Article 8 and 9 financial products, and on how to make disclosure regarding sustainability risks and PAIS. The requirements were introduced in the course of 2021 and came into effect in July of the following year. Since the entry into force of this technical documentation, it is expected that uncertainties regarding the classification of financial products will be greatly reduced, eliminating any opportunity for financial product issuers to use greenwashing techniques and hoping for the regulation's maximum effectiveness in conjunction with the other regulations that have been introduced that are part of the European sustainability strategy.

2.5 Future challenges for policymakers

The aforementioned legal reforms were implemented in order to create the institutional and political framework required to advance sustainable finance in Europe. A lot of progress has already been made in this continuous effort. However, because the reform process has been moving quickly, it is necessary to recognize and assess the current status of the legislation in this area. Numerous, intricate, and rapid changes have been made, they have been challenging to understand and contextualize, and they have made the already intricate EU legal and regulatory system even more complex (Mezzanotte, F. E, 2022).

As reforms begin to face and influence the reality of corporate activities, there are certain remaining issues to be thought about, most notably implementation obstacles. To mention a few, implementation issues affecting the EU Taxonomy Regulation will be how market participants will properly assess and report on the Key Performance Indicators such as Turnover, Capex and Opex.

Furthermore, with the future implementation of the EU social taxonomy[42], further difficulties will inescapably develop in the near future, as conceptualizing and evaluating social impact poses difficult

[41] Morningstar, (2022), SFDR Article 8 and Article 9 Funds: 2021 in Review: A rapidly evolving landscape as assets hit EUR 4 trillion

[42] The EU Platform on Sustainable Finance, Technical Workgroup No. 4 on Social Taxonomy, is currently working on policy regarding the EU Social Taxonomy to solve the problem that, at the moment, the taxonomy only focuses on climate issues
https://ec.europa.eu/info/business-economy-euro/banking-andfinance/sustainable-finance/overview-sustainable-finance/platform-sustainable-finance_en#subgroups

questions whose answers are yet unknown and evasive. Because of this, determining whether a particular economic activity is environmentally or socially sustainable is not and will not be a one-time effort. Instead, the classification effort will change over time along with the policy process and changes, necessitating a great deal of flexibility and possibly re-definitions. For this reason, it is crucial that the European regulatory framework that decision-makers have been developing is dynamic, pliable and has an eye on the future. In the same vein, it is pivotal that European regulators really show ambition on what is included in the regulation to keep up with the rapid development of the financial system in order to avoid being out of date as soon as a new regulations or directives come into effect. This may happen because by the time the regulations are fully laid down and being used, technology and the economic system as a whole will have advanced.

Thanks to the introduction of the new rules on sustainability information disclosure contained in the CSRD, SFDR and Taxonomy Regulation, greater and higher quality non-financial information are believed to be delivered soon in the market. However, despite these benefits, it is expected that adopting all these information disclosure standards will be a challenging process that has to be continuously supervised by the competent authorities. Indeed, the double-materiality principle has implications for corporate sustainability reporting in that financially immaterial information may still turn out to be socially or environmentally relevant information. This scenario will present significant hurdles to corporate teams, as companies have to implement due diligence procedures and other management processes to ensure that they make the right evaluations concerning the materiality of the information that they report. Indeed, divergent interpretations by companies might produce ambiguity in the determination of the materiality of social or environmental facts. Additionally, different stakeholder groups may exhibit perceptions about the degree of materiality of an item (e.g., employees, suppliers and investors may attribute a different level of materiality to the same sustainability item). Due to the hazy nature of non-financial information, the disclosure of this type of information is more likely to be marked by a higher risk of omissions and misinterpretations, as well as information overload, compared to financial information.

Furthermore, documenting a company's or product's PAIS is likely to be expensive and time-consuming for participants in the financial market. As the new regulations begin to be applied, the limited availability of information on the environmental and social impact as well as the poor quality of the available measurements and metrics will undoubtedly continue to be an issue, at least in the short term. A thorough and adequate information disclosure by investee firms is crucial to FMPs and investment advisors' ability to comply with the new reporting requirements required by the SFDR

and the EU Taxonomy Regulation. Indeed, FMPs and investment advisors will encounter enormous barriers in their effort to ascertain the sustainability traits and impact of their portfolios, particularly the degree to which their portfolios are Taxonomy aligned, without investee companies fulfilling this role. Therefore, the role that the investee firms play in the process of data origination, processing, and measurement is crucial, since the corporate sustainability reporting system is the essential source that generates sustainability data and disseminates these data throughout market participants and stakeholders. As a result, the EU sustainable finance policy will probably not succeed without the quality and quantity of corporate sustainability reporting. In light of this, it is crucial that corporate sustainability disclosure adhere to criteria that are standardized across the EU, compulsory, and independently audited.

Finally, the typically quick development of sustainable finance reforms has been hampered by significant external shocks. Evidently, at least temporarily, the Ukraine conflict has significantly changed Europe's geopolitical priorities and considerations. However, even at this challenging juncture, one must keep in mind that the issue of climate change and global warming is continuing to deteriorate at an alarming rate, as are social issues made worse by subsequent occurrences like COVID-19, migration brought on by conflict, pressures from price inflation, and slower economic growth.

CHAPTER 3: ESG RATING SYSTEMS

3.1 Existing rating systems

In view of the increasing attention, particularly institutional attention, to sustainability issues, it has become necessary to collect data on whether and how a corporation contributes to international climate and sustainability goals. However, as it has been discussed, despite the recent introduction of several European regulations and directives, the disclosure of non-financial data is still highly disorganized, and there are no standards that are universally agreed to which to refer. Nonetheless, there is an ever-increasing need for such data, particularly for the purpose of informing responsible, impact, or ESG investors. This increasing demand for non-financial data can be easily observed by looking at the amount of assets under management by signatories of UN Principles For Responsible Investment, which, according to the PRI Annual Report of 2022, is above 121 USD trillion dollars. As signing the PRI adds time consuming and costly duties to their commitments, asset managers who often lack the resources to perform in-house ESG research have turned to third-party ESG data providers to fill the void.

In fact, an ever-expanding universe of ESG standard-setting NGOs and commercial data providers seeks to accommodate the need of addressing the knowledge gap between corporations and investors regarding non-financial concerns by providing relevant data (Eccles R., and Stroehle, J., 2018): it is in this landscape that ESG ratings step in. ESG ratings are meant to assist investors in gaining a better understanding of the ESG-related risks and opportunities that companies face, by addressing information about companies that is not recorded in traditional accounting frameworks – information that is deemed significant for making informed investment decisions. Specifically, the ESG rating is a synthetic judgment verifying the ESG soundness of an issuer, a financial security, or a fund. The rating is the output of an evaluation framework that analyzes and measures the environmental, social, and governance elements of a company, issuer, fund, or country in a systematic manner. The ESG score is a result of the degree of conformity of the evaluated company with international sustainability norms, the environmental effect created by the economic activity, the respect for social values and the features of corporate governance, or the degree of risk a company faces in regard to these variables. The ESG rating is not intended to replace the traditional rating, but rather to augment the existing information and therefore improve investment assessments and decisions.

In response to investor demand and the increasing availability of data on sustainability issues, ESG ratings have evolved significantly during the past decade. Both the growth of the securities markets (as a result of the rapid shift from bank-based to market-based financial systems) and the increase in regulation pertaining to the disclosure of social, environmental, and corporate governance

information have driven the expansion of ESG rating agencies. Besides, the development of the ESG research industry over time reflects the influence of technology, as well as the changing opinions of investors on the importance of ESG concerns and the responsibility of businesses for their impact on local communities (BlackRock, 2018).

The first ESG rating agencies can be traced back in the late 1970s, when non-governmental organizations (NGOs) sought to inform investors about businesses' involvement in contentious areas like, for example, nuclear weapons development. Indeed, it was at that time that environmental and social issues started to be considered in the capital markets.

Nowadays, over a hundred organizations are currently accumulating data, analyzing information, and rating or ranking firms' ESG performance, as reported by the Global Initiative for Sustainability Ratings (GISR, 2018). In fact, there is a thriving and expanding number of companies dedicated to collecting and analyzing data on a wide range of environmental, social, and governance topics in order to provide a holistic assessment of a company's ESG performance, allowing investors to assess how a firm stacks up against its competitors in its "sustainable performance". Some of these firms narrowly focus on one aspect of ESG, such as climate (e.g., the former Carbon Disclosure Project, CDP), while others address the full scope of ESG.

In addition to selling data and researches to investors, data vendors are also increasingly branching out into other areas of service, such as consulting, by offering a wider range of technology and management solutions, such as application programming interfaces (APIs) that feed ESG data directly into corporate servers, or advising on ESG integration into broader investment strategies and engagement.

As investors and ESG data users want ever larger quantities of data to base their investment analysis on, the pressures on data suppliers to expand the universe of companies they cover, both domestically and internationally, increase. This dynamic has resulted in the enormous growth of the ESG rating sector over the past decade, through both merger and acquisition processes among existing rating agencies and the introduction of new agencies and data providers into the market. This process of consolidation has enabled the formation of larger, more market-connected corporations with greater resources: it has allowed for the development of broader and more comprehensive examinations of corporate sustainability, stopping ESG rating agencies from being isolated market actors focused on a limited financial market niche and transforming ESG rating agencies' business into a promising and dynamic activity for even "traditional" rating agencies (Olmedo et al., 2019).

Current ESG rating firms have incorporated specialized corporate governance, data management, risk, and communication teams into their organizations. The primary actors in the significant

consolidation processes addressed are listed below, and they constitute the most important ESG ratings providers:

- ASSET4 → REFINITIV
- EIRIS → FTSE Russell ESG Ratings 2
- KLD Research & Analytics Inc. → MSCI ESG Research
- Oekom → ISS-oekom
- SAM → RobecoSAM
- SIRI Company → Sustainalytics
- Vigeo → Vigeo EIRIS

3.1.1 How rating systems are built

ESG rating agencies use their own research methodology to monitor and assess corporate sustainability performance: the assessment may focus on the degree of alignment and compliance of a corporation with international sustainability plans and guidelines issued by entities such as the European Union, the United Nations, and OECD. Alternatively, the ESG rating can evaluate the extent to which a firm's economic value is at danger due to ESG variables or, more formally, the level of ESG risks not handled by a corporation, assigning higher ESG ratings the smaller the unmanaged risk is, as in the case of Sustainalitycs. Furthermore, as in the case of MSCI, not only the ESG threats that a firm and its industry face are computed in the rating, but also the opportunities: indeed, the rating quantifies a company's exposure to significant risks and opportunities, as well as how well the firm manages them relatively to its competitors.

Each agency's assessment is based on a range of distinct criteria and information sources. In general, public information contained in non-financial reports issued by the companies and confidential information gleaned via surveys and direct interactions with the companies are used to generate the ESG score. However, given the various information sources that rating agencies utilize, it is not uncommon for them to issue dissimilar final ratings to the same company. The reason for this is that, despite the fact that the scoring systems of various rating agencies are similar, there are important differences between them.

In general, the scoring procedure begins with the establishment of the elements to be examined within the dimensions of environment, social and governance in order to evaluate the ESG performance of a company: each assessment element is characterized through sub-components, and each sub-component is assigned a weight. The sub-elements are then aggregated first to determine the company's score for each dimension of interest and then followed by the aggregated result. Each rating agency presents its conclusion (the rating) to the investing public via a number scale, language,

or symbols and it can be presented in absolute terms or relatively to the competitors of the same industry.

Within this rating process, problems appear when rating agencies utilize diverse rating elements and assign them diverging weights (Olmedo et al., 2010). To get an idea of the extent to which ratings can diverge and consider very different elements to assess the ESG profile of companies, Doyle provides in his paper "Ratings that don't rate. The subjective environment of ESG rating agencies" (2018) an illustration of the scoring systems of four main rating organizations: **MSCI** rates 37 key ESG issues, which are divided into three pillars (environmental, social, and governance) and ten themes: climate change, natural resources, pollution and waste, environmental opportunities, human capital, product responsibility, stakeholder opposition, social opportunities, corporate governance, and corporate behavior; the rating scale ranges from the lowest score CCC to the highest AAA and it is delivered in absolute terms. **Sustainalytics** analyzes what it calls ESG indicators. It splits each industry into three pillars: environmental, social, and governance, and evaluates at least 70 indicators in each sector. Additionally, ESG indicators are separated into three main categories: preparedness, disclosure, and performance. The numerical rating scale spans from 0 to 100, with a minimum value of 0 and a maximum value of 100 for each company in comparison with the reference industry. **RepRisk** focuses on 28 ESG concerns relating to the Ten Principles of the UN Global Compact, categorizing each ESG concern in one of the following issues: environmental, community, employee relations, and corporate governance. RepRisk measures ESG risk exposure across two and 10 years covering not only the 28 ESG concerns but also 45 "hot topics". The scale spans from a minimum grade of D to a maximum grade of AAA. Lastly, the **ISS E&S Quality Score** assesses more than 380 elements (at least 240 for each industry), which are separated into environmental and social factors. These areas consist of environmental risk and opportunity management, human rights, waste and toxicity, as well as product safety, quality, and branding. The rating scale ranges from a minimum of zero to a maximum of ten.

A study carried out by Olmedo et al. (2010) confirms the existing divergence between rating systems in the choice of the elements to be considered for the ESG assessment of companies. In fact, the authors attempted to reconstruct what factors are utilized in the development of ratings by the major rating agencies and, in a second study conducted in 2018, they investigated how these criteria have evolved over time. The first study, titled "Socially responsible investing: sustainability indices, ESG rating agencies, and information providers" is based on a sample of 10 rating agencies (Accountability, ASSET4, ECP, EIRIS, Innovest, KLD, oekom, SAM, Siri, and Vigeo) in the period from September 2007 to February 2008. The sample is chosen based on the availability of information

regarding the publicity of the rating criteria, the agencies' market relevance, and the availability of information.

As indicated in the table below, the authors discovered that ESG rating firms evaluate CSR using distinct criteria. The researchers analyzed both positive and negative (exclusionary) screening criteria used by rating agencies, and a degree of diversity emerges when comparing the evaluation criteria used and the information contained in each of them. Nevertheless, rating agencies share certain measures. Environmental management is a prime example, as it is essential for all the agencies in the sample. In contrast, just two of the sampled agencies evaluate factors concerning the rights of indigenous peoples and corporate citizenship.

Exclusionary criteria (✓) and controversial business involvement (x)										
	Accountability	ASSET4	ECP	EIRIS	Innovest	KLD	oekom	SAM*	SiRi	Vigeo*
Abortion				x		✓	x			
Alcohol		x	x	x	✓	✓	x		✓	
Contraceptives		x	x	x	✓	✓				
Firearms		x		x	✓	✓			✓	
Military Weapons			x	x		✓	x		✓	
Nuclear power		x	x		✓	✓	x		✓	
Animal testing		x		x	✓				✓	
Extraction of uranium										
Genetic engineering				x						
Embryonic research							x			
Gambling		x	x	x	✓	✓	x		✓	
Anti-personnel landmines				x						
GMOs		x	x	x	✓		x		✓	
Fur				x			x			
Pornography		x	x	x	✓		x		✓	
Chemical industry										
Tobacco		x	x	x	✓	✓	x		✓	

**SAM e Vigeo do not apply any comapany's exclusion*

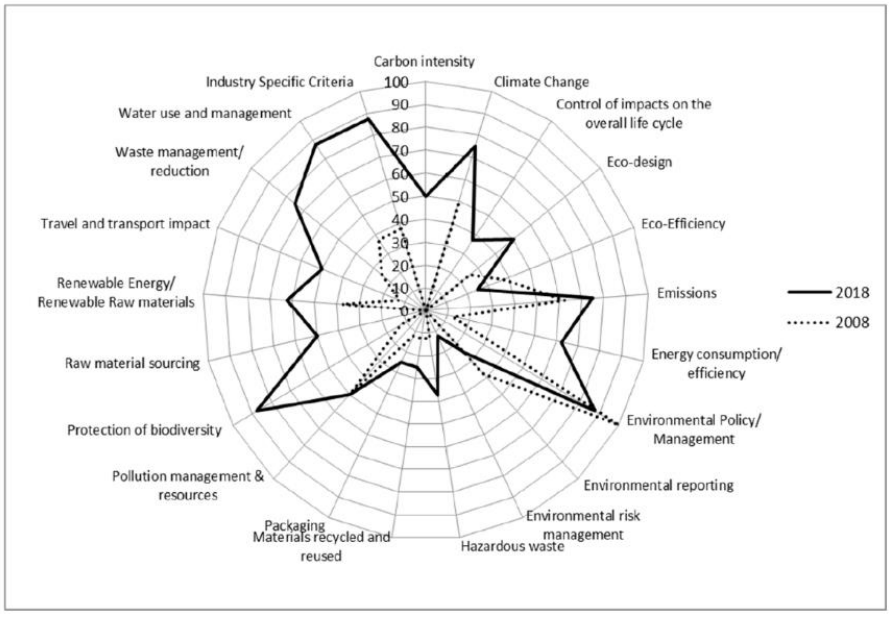
Source: Olmedo et al. (2010), Socially responsible investing: sustainability indices, ESG rating agencies, and information providers, Journal of Sustainable Economy, Vol. 2 (4)

	Positive evaluation criteria used in the main ESG agencies										
		Accountability	ASSET4	ECP	EIRIS	Innovest	KLD	oekom	SAM	SiRi	Vigeo
Corporate Governance	Corporate governance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Board structure		✓		✓		✓				
	Risk and crisis management								✓		
	Codes of conduct/compliance				✓				✓		
	Corruption and bribery				✓				✓		
	Industry specific criteria							✓			
Environment	Environmental management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Industry specific criteria				✓	✓		✓			
	Eco-efficiency							✓	✓		
	Climate change				✓		✓				
Social	Human capital development	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Labour practices indicators	✓	✓		✓	✓			✓		
	Supply chain labour standards criteria	✓		✓							
	Business behaviour	✓						✓		✓	✓
	Corporate citizenship/philantropy								✓		
	Community relations		✓	✓	✓	✓	✓	✓		✓	✓
	Social reporting (indicators on workforce, suppliers, etc.)	✓	✓		✓	✓		✓	✓	✓	
	Human rights criteria		✓	✓	✓	✓	✓				✓
	Rights of indigenous people										

	Product safety and impact		✓	✓	✓		✓	✓			
	Diversity	✓	✓	✓			✓				
	Industry specific criteria			✓	✓			✓			

Source: Olmedo et al. (2010), Socially responsible investing: sustainability indices, ESG rating agencies, and information providers, Journal of Sustainable Economy, Vol. 2 (4)

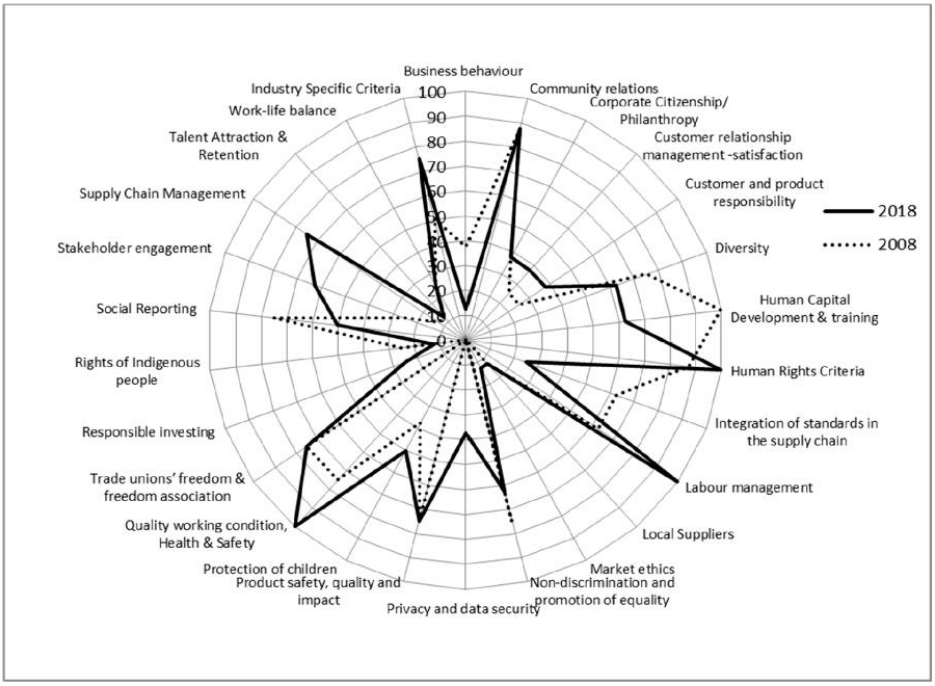
By analyzing the data by dimensions (environmental, social, and governance), in their second study titled "Rating the Raters: Evaluating how ESG Rating Agencies Integrate Sustainability Principles" (2019), Olmedo et al. demonstrate that, in regard to the evolution of environmental criteria, a shift in the screening criteria utilized by ESG rating providers can be detected. In particular, whilst the most prevalent analytical criteria in 2008 were environmental policy/management, emissions, and climate change, this scoreboard has been updated to include new criteria linked to companies' efforts to manage water consumption efficiently and reduce emissions. The results indicate a stronger concern for environmental issues than ten years ago. This increased focus on battling climate change and reducing greenhouse gas emissions demonstrates how the introduction of the Paris Agreements had a significant impact on the evaluation of businesses' sustainability performance.



Source: Olmedo et al. (2019), "Rating the Raters: Evaluating how ESG Rating Agencies Integrate Sustainability Principles", Sustainability, Vol. 11

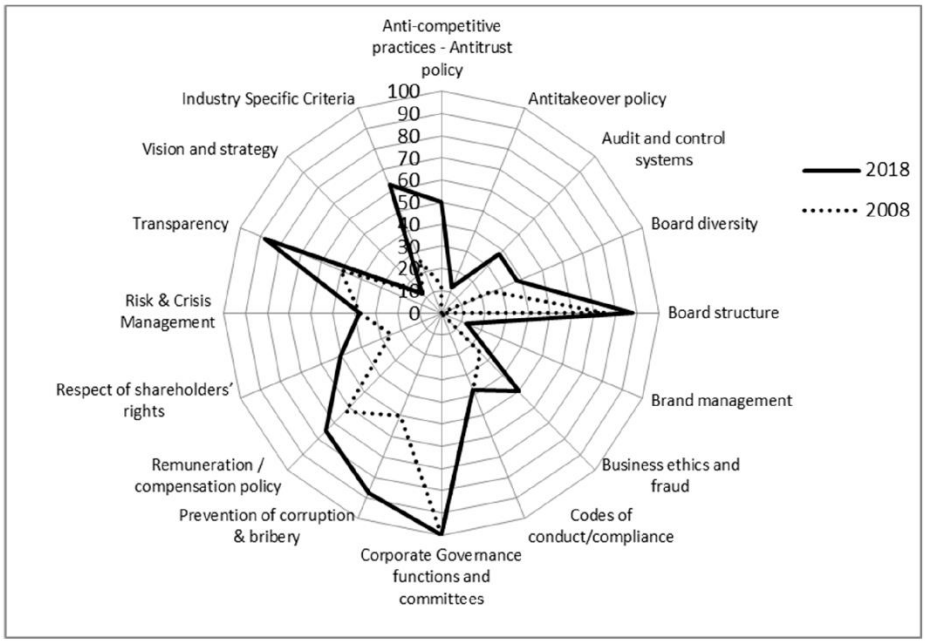
Concerning the social pillar criteria, the elements that have gained ground since 2008 are labor management, human rights, and quality working conditions, as well as health and safety. In fact, whereas in 2008 human capital development and training, human rights, and community relations

were the most relevant aspects observed, following the introduction of Sustainable Development Goals (SDGs), aspects related to the improvement of health and education, the reduction of inequalities, and the need to stimulate economic growth appear to be crucial for measuring how companies contribute to sustainable development. Moreover, as a result of modern trends in sustainability evaluation that emphasize increasingly complex and linked production configurations rather than independent firms, criteria relevant to supply-chain management, data protection, and security have emerged.



Source: Olmedo et al. (2019), "Rating the Raters: Evaluating how ESG Rating Agencies Integrate Sustainability Principles", Sustainability, Vol. 11

Finally, in terms of corporate governance elements considered by the majority of ESG rating and information providers in 2008, board structure, remuneration/compensation policy, and corporate governance responsibilities and committees were the most important. These remained the most crucial factors in 2018. Additionally, comparable to environmental concerns, components of corporate governance appear to be receiving increased consideration in evaluation frameworks, especially those connected to the avoidance of bribery and corruption.



Source: Olmedo et al. (2019), "Rating the Raters: Evaluating how ESG Rating Agencies Integrate Sustainability Principles", Sustainability, Vol. 11

3.1.2 MSCI- KLD

As MSCI and Refinitiv are two of the most prominent ESG rating providers, it is deemed relevant to present their ESG scoring procedures in order to properly comprehend how rating agencies formulate their assessments of organizations' sustainability. MSCI and Refinitiv are chosen due to the broader coverage of companies they are able to guarantee, with over 6.800 businesses covered by MSCI and 7.000 by Refinitiv. The methods are explained publicly on their individual websites[43].

MSCI bases its research on the observation of the intersection between the company and its core business, on the one hand, and the industry's critical factors, on the other. Specifically, the model seeks to address the following essential questions:

1. What are the most pertinent risks and opportunities that companies face in relation to ESG concerns for each relevant industry?
2. How vulnerable is each business to these risks and opportunities?
3. How does each organization manage these risks and opportunities?
4. What is the organization's overall image and how is it positioned in comparison to its competitors?

[43] https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf
https://www.msci.com/documents/1296102/21901542/ESG-Ratings-Methodology-Exec-Summary.pdf

Risks and opportunities

The examination of risks and opportunities associated to the most significant and/or relevant themes ("key issues") of corporate social responsibility is constructed according to a sectoral methodology, based on the GICS (Global Industry Categorization Standard) classification[44], and is based on the concept of weighting. Effectively, it seeks to identify, on the one hand, the negative externalities produced by enterprises in a certain industry that will become an unanticipated expense in the medium to long term, and, on the other hand, the opportunities that can be exploited in the same timeframe.

The respective weights of the key issues are set at the sub-industry GICS level, based on the usual externalities of each sector and the related time horizons. The weighting parameters are reformulated ad hoc if it is thought necessary to tailor the sector weights to a company's particularities. Governance is always deemed relevant, regardless of the industry under discussion, and is therefore a factor in the evaluation of all businesses. At the end of each calendar year, the relevant (material) factors and their corresponding weights undergo a formal assessment.

In order to assess the risks and opportunities associated with each key issue, the first step of the research is to determine which key issues are material to enterprises in a specific industry. A risk is material to an industry if firms in that industry are likely to suffer substantial expenditures as a result of it (e.g. a regulatory ban on a key chemical input, resulting in a need for reformulation) while a business opportunity is material to a sector when it is possible that enterprises in that industry can profit from it (e.g.: opportunity in clean technology for the renewable energy sector).

MSCI identifies 35 key issues, grouped into 10 themes and categorized into the three pillars environment, social, and governance.

[44] Morgan Stanley Capital International and Standard & Poor's created the Global Industry Classification System (GICS) in the late 1990s for the benefit of the global financial community. This classification is created on four levels of increasing granularity, with the most specific, so-called sub-industries, being utilized for ESG grading

MSCI ESG Key Issue Hierarchy

3 Pillars	10 Themes	35 ESG Key Issues	
Environment	**Climate Change**	Carbon Emissions	Financing Environmental Impact
		Product Carbon Footprint	Climate Change Vulnerability
	Natural Capital	Water Stress	Raw Material Sourcing
		Biodiversity & Land Use	
	Pollution & Waste	Toxic Emissions & Waste	Electronic Waste
		Packaging Material & Waste	
	Environmental Opportunities	Opportunities in Clean Tech	Opportunities in Renewable Energy
		Opportunities in Green Building	
Social	**Human Capital**	Labor Management	Human Capital Development
		Health & Safety	Supply Chain Labor Standards
	Product Liability	Product Safety & Quality	Privacy & Data Security
		Chemical Safety	Responsible Investment
		Consumer Financial Protection	Health & Demographic Risk
	Stakeholder Opposition	Controversial Sourcing	
		Community Relations	
	Social Opportunities	Access to Communications	Access to Health Care
		Access to Finance	Opportunities in Nutrition & Health
Governance	**Corporate Governance**	Ownership & Control	Pay
		Board	Accounting
	Corporate Behavior	Business Ethics	
		Tax Transparency	

Source: MSCI ESG Ratings Methodology (2022)

Following the selection of pertinent important elements for each sector, the weights for their contribution to the final score are determined. Each factor carries a weight between 5% and 30% of the overall rating and is weighted according to two axes of analysis: the contribution of the key factor under consideration to the socio-environmental impact generated by the sector, relative to all other sectors, and the timeframe over which the risks and opportunities of the key factor in question are anticipated to materialize.

On this basis, three levels of intensity ('High,' 'Medium,' or 'Low') are identified, corresponding to three weighting factors, as shown in the following figure: if a factor is attributed a high impact in the short term for a given sector, the relative weighting will be in a ratio of 1:3 compared to a factor with a low impact in the long term for the same sector.

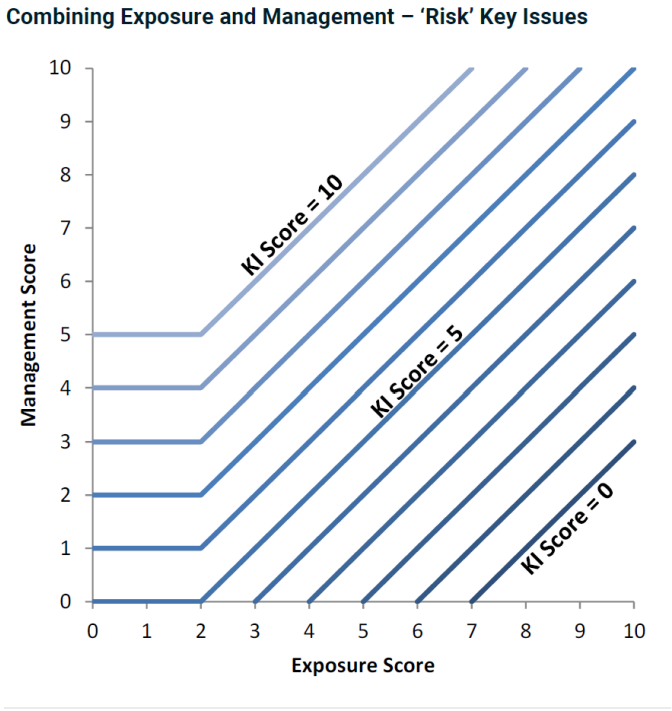
		Expected Time frame for Risk/Opportunity to Materialize	
		Short-Term (<2 years)	**Long-Term** (5+ years)
Level of Contribution to Environmental or Social Impact	Industry is **major** contributor to impact	**Highest Weight**	
	Industry is **minor** contributor to impact		**Lowest Weight**

Source: MSCI ESG Ratings Methodology (2022)

Since November 2020, the governance pillar weight for all GICS sub-industries has been calculated based on a "High Contribution/Long Term" and "Medium Contribution/Long Term" assessment of Corporate Governance and Corporate Behavior themes, respectively.

Key Issues valuation

In order to understand how a risk factor is managed by a company, the MSCI model values both the awareness of the organization about its exposure to the assessed risk and the manner in which the risk is handled. A company with a high level of exposure must be characterized by excellent management in order to get a good score, while a company with a lower degree of exposure can afford to devote fewer resources to the criticality in question in order to get a good score on a given key factor. Hence, in order to score high on a key factor, a company must implement a management strategy commensurate with the degree of intensity that the risk relative to the key factor in question assumes. If two firms manage a particular risk factor similarly and with the same level of intensity, the company with the largest exposure to the risk in question would receive a lower score than the company with the lowest exposure since, given its exposure, it should have managed the risk better. For instance, electricity companies are highly exposed to the water issue, but each company may be more or less exposed to water-related risks depending on the location of its plants: if they are located in water-scarce regions, they will need to implement appropriate measures to a greater extent than plants located in regions with an abundance of water. For instance, two companies in the same industry operating in Canada (water-rich) and Australia (with several arid regions) will be exposed differently to the unique risk associated with water use. The following figure represents the above discussed grading procedure for “risk” key issues:



$$Key\ Issue\ Score = 7 - (MAX(exposure, 2) - management)$$

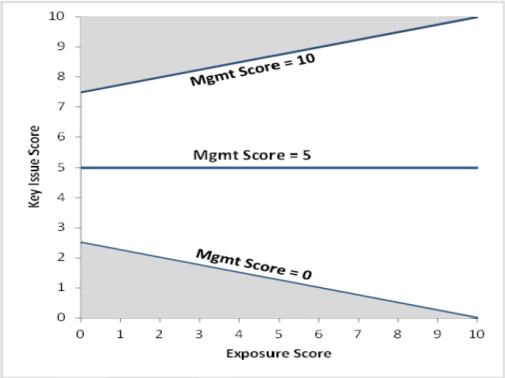
(Constrained 0-10, rounded to one decimal)

Source: MSCI ESG Ratings Methodology (2022)

MSCI's ESG rating approach evaluates each company's exposure to significant risk factors based on a comprehensive breakdown of its business, including its major product and business categories, location of operations, and other relevant criteria such as outsourcing of business lines or reliance on government concessions. The research then evaluates the scope and legitimacy of the company's strategies, as well as its track record. Disputes that have occurred within the past three years result in deductions to the overall management score for each of the key concerns.

Opportunities are evaluated similarly to risks, but the way for integrating exposure and management is distinct. Exposure highlights the opportunity's applicability to a business based on its current business and geographical divisions. Management demonstrates the organization's ability to capitalize on the opportunity.

Combining Exposure and Management – 'Opportunities' Key Issues



Source: MSCI ESG Ratings Methodology (2022)

Controversies

The MSCI ESG Ratings incorporate controversies as they may signal systemic issues with a company's risk management capabilities. A controversial case is an event or ongoing circumstance in which firm's operations and/or products are believed to have a detrimental environmental, social, or governance impact. Typically, a case is a single event, such as an accident or regulatory action, or a series of closely related events or allegations, such as health and safety fines at the same facility or multiple allegations of anti-competitive behavior related to the same product line. A controversy case that indicates structural problems that could involve future material risks for the company results in a greater reduction to the key issue score than a controversy case that is deemed to be an important indicator of recent performance but not a clear signal of future material risk. Each dispute case is ranked according to the degree of its influence on society or the environment, with Very Severe (reserved for "worst-of-the-worst" cases), Severe, Moderate, or Minor grades.

Assessment of Controversial Cases

	Nature of Impact			
Scale of Impact	Egregious	Serious	Medium	Minimal
Extremely Widespread	**Very Severe**	Severe	Severe	Moderate
Extensive	**Very Severe**	Severe	Moderate	Moderate
Limited	Severe	Moderate	Minor	Minor
Low	Moderate	Moderate	Minor	Minor

Source: MSCI ESG Ratings Methodology (2022)

To arrive at the final rating, the weighted score is normalized by sector: the score obtained is reproportioned over an interval determined each year based on a rolling average of the scores

achieved in the last three years by companies belonging to the sector under review, establishing the minimum and maximum in a range between the two percentiles 2.5 and 97.5. Afterwards, the scale of normalized scores per sector is divided into 7 intervals of equal size, and the score is transformed based on the following transcoding:

Mapping the Industry Adjusted Company Score to Letter Ratings

Letter Rating	Leader/Laggard	Final Industry-Adjusted Company Score
AAA	Leader	8.571* - 10.0
AA	Leader	7.143 – 8.571
A	Average	5.714 – 7.143
BBB	Average	4.286 – 5.714
BB	Average	2.857 – 4.286
B	Laggard	1.429 – 2.857
CCC	Laggard	0.0 – 1.429

**Appearance of overlap in the score ranges is due to rounding imprecisions. The 0-to-10 scale is divided into seven equal parts, each corresponding to a letter rating.*

Source: MSCI ESG Ratings Methodology (2022)

It is essential to note a critical point in this context: MSCI's methodology focuses on analyzing how a firm can be affected (positively or adversely) by its surrounding environment and society. However, the rating methodology does not account for the impact that operating enterprises can have on the environment and society. As reported by Simpson, Rathi and Kishan (2021) in a Bloomberg article:

> *"BlackRock and other investment salesmen use these ESG ratings, as they're called, to justify a "sustainable" label on stock and bond funds. For a significant number of investors, it's a powerful attraction. Yet there's virtually no connection between MSCI's "better world" marketing and its methodology. That's because the ratings don't measure a company's impact on the Earth and society. In fact, they gauge the opposite: the potential impact of the world on the company and its shareholders. MSCI doesn't dispute this characterization. It defends its methodology as the most financially relevant for the companies it rates"*[45].

The authors use MSCI's ESG rating of McDonald's as an illustration: one of the world's major buyers of beef, McDonald's Corp., was responsible for more carbon dioxide emissions in 2019 than Portugal or Hungary. Emissions from McDonald's increased to 54 million tons that year, a rise of nearly 7

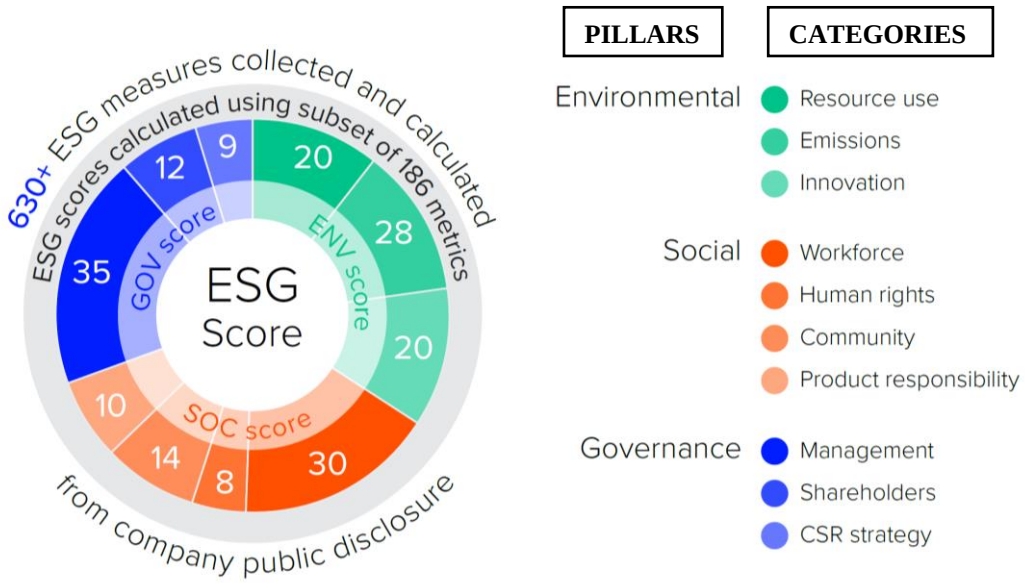
[45] Simpson, Cam, et al. (2021), "What is ESG Investing? MSCI Ratings Focus on Corporate Bottom Line." Bloomberg.com, https://www.bloomberg.com/graphics/2021-what-is-esg-investing-msci-ratings-focus-on-corporate-bottom-line/

percent over the previous four years. Nevertheless, McDonald's had its ESG rating raised by MSCI on April 23. Why? Because according to MSCI, climate change presents neither a threat nor any "opportunity" to the company's bottom line. Indeed, MSCI decided to ignore McDonald's carbon emissions when assigning its rating and factored in the rating McDonald's efforts to reduce "risks connected with packaging material and waste", adjusting the company's environmental score and giving it an edge over its competitors. Thus, in this evaluation, as in all others, MSCI considered simply whether environmental issues posed a threat to the company. Any minimization of environmental dangers was inadvertent.

3.1.3 Refinitiv – Asset4

To construct companies' ESG rating, Refinitiv relies on over 630 ESG indicators at the company level, including a subset of 186 metrics of the most relevant per industry, which contribute to the overall company evaluation and scoring process. The overall analysis is made with the intention of striking a balance between specificity and applicability, so as to ensure that the ESG aspects investigated are distinct and pertinent, while also being applicable to each firm evaluated.

The 186 metrics are organized into 10 categories, each of which receives a score: the categories scores are then aggregated into environmental, social, and corporate governance pillars grades. The ESG pillar score is the relative sum of the weights for the environmental and social categories, which vary by industry and the governance dimension, whose weights stay constant across all sectors. Finally, the pillar weights are normalized in a range of 0 to 100 percent.



Source: Environment, Social and Governance Scores from Refinitiv (2022)

The ESG grading mechanism of Refinitiv runs on two successive tiers. First, the research examines the corporate behavior and information available to evaluate the ESG performance of organizations (ESG score). The integrated ESG score is then calculated by deducting points for any controversies concerning the analyzed company (ESGC score). These scores are based on a simple percentile sorting, which is accessible both in percentages and in lettered classes ranging from D- to A+ according to the table below. The percentile sorting occurs inside benchmark classes that are industry peers based on the TRBC (Thomson Refinitiv Business Classification) for social, environmental, and country governance indicators.

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

Source: Environment, Social and Governance Scores from Refinitiv (2022)

As previously stated, the sectors designated by TRBC are utilized as benchmarks for calculating the scores for the socio-environmental categories and controversies, as the indicators of these pillars are comparable within the same sector. On the other hand, for the governance categories, the benchmark is identified in the country system (notice that in the case of multinationals, the country where the headquarters are located is taken into account), due to the homogeneity of governance best practices within the same country.

Categories weights and scores

Each category's weight is calculated by the proportion of the number of its metrics to the overall number of indicators. This means that categories with a greater number of material indicators are given a greater weight, as this is viewed as a signal of greater maturity and importance of the category in question within the ESG assessment.

The scoring technique used for each category is percentile-based, which is applied to each of the ten categories and controversies, and is, by its by nature, insensitive to extreme values.

The ranking algorithm is based on the following three factors:

- The number of firms in a worse position than the company in question
- The number of companies with identical ratings
- The total number of companies evaluated according to the measure in question and the benchmark class

$$score = \frac{no.\ of\ companies\ with\ a\ worse\ value + \frac{no.\ of\ companies\ with\ the\ same\ value\ included\ in\ the\ current\ one}{2}}{no.\ of\ companies\ with\ a\ value}$$

Source: Environment, Social and Governance Scores from Refinitiv (2022)

In the case of qualitative indicators, qualitative metrics take the form of Boolean questions, i.e., questions to which the answer can be either Yes or No. The mechanism behind converting Boolean results to numeric values for the calculation of percentile scoring is detailed in the table that follows:

Boolean Value	**Numeric Value**
Yes	1
No	0,5

Controversies

The score for ESG controversies is based on 23 ESG controversy themes. If a scandal arises during the course of the year, the affected company is penalized, which reduces its total score. Moreover, if there are fresh developments relating to the unfavorable event, such as litigation or ongoing legislative battles, the event may continue to have repercussions in the next year. As the controversy evolves, all fresh media materials are taken into account. Since large-cap corporations generally receive more media coverage than smaller-cap companies, the controversies score also accounts for this market capitalization bias.

Final ESG Score

Using the following rationale, the final score is derived from the ESG score and the controversies-related score.

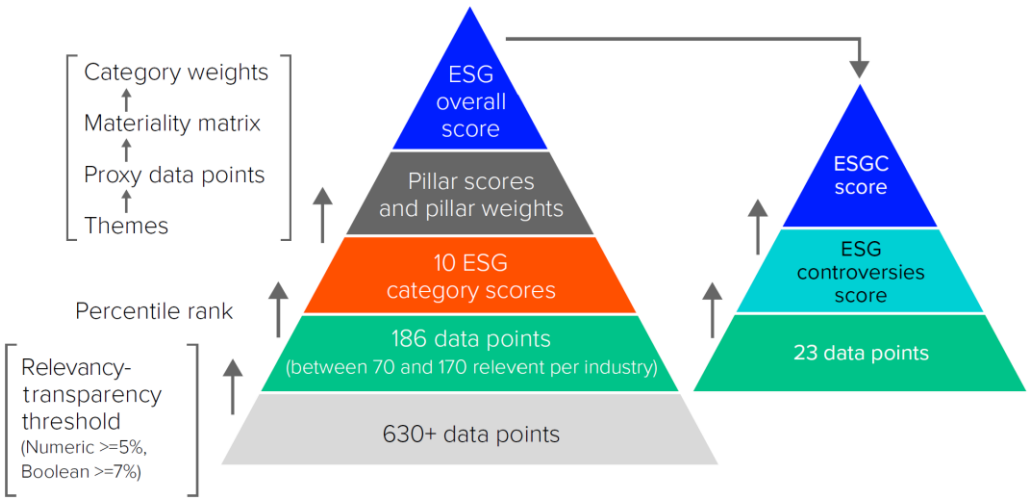
- If the controversy-related score is greater than 50 or less than 50 but greater than the ESG score, the Integrated Score is the same as the ESG score.
- If the lawsuit score is below 50 and below the ESG score, the Integrated Score is the average of the litigation score and the ESG score.

For example:

Controversies Score	*ESG Score*	*ESGC Score*
57	38	38
49	42	42
48	49	48,5

Source: Equita, (2020), Sostenibilità: una valutazione su misura per le PMI

Overall, the Refinitiv ESG scoring methodology can be summarised and illustrated by means of a five-step process flow:



Source: Environment, Social and Governance Scores from Refinitiv (2022).

3.1.4 Comparing MSCI and Refinitiv ESG rating methodologies

After both of MSCI and Refinitiv rating approaches have been broken down and examined, it is deemed valuable to make some observations regarding the distinctions that exist between the two rating models.

To begin, one aspect of differentiation that is readily apparent consists of the categories that are taken into consideration by rating providers in order to formulate ratings for the three pillars of environment, social, and governance.

PILLAR	**MSCI THEME**	**REFINITIV CATEGORY**
Environment	Climate Change	
	Natural Capital	Resource Use
	Pollution & Waste	Emissions
	Environmental Opportunities	Innovation
Social	Human Capital	Workforce

	Product Liability	Product Responsibility
	Stakeholder Opposition	
	Social Opportunities	Community
		Human Rights
Governance	Corporate Governance	
	Corporate Behaviour	Management
		CSR Strategy
		Shareholders

Source: Equita, (2020), Sostenibilità: una valutazione su misura per le PMI

Governance is the most distinguishing factor: in fact, while MSCI considers the most "classic" elements of the pillar in question, such as the composition of the board, the remuneration of managers, the controls on administration, and the code of ethical conduct, Refinitiv examines shareholder rights and the presence of Corporate Social Responsibility strategies adopted by the company in question in greater detail (Equita, 2020).

Second, there are substantial differences between how the scores per pillar and the total rating are evaluated by the two rating providers. In fact, while MSCI's method is evaluative in that it takes into account the risks and opportunities associated with the identified key issues and the company's efforts to address them, Refinitiv assigns scores based on 186 indicators, re-weighting them based on competitors' scores and determining a score that is never absolute but always in relative terms.

The relevance attributed to each category within the three pillars is another significant distinction between the two approaches. In fact, MSCI weights the ten themes based on the two dimensions of time ("materialization timing") and intensity ("Level of contribution to effect"), with industry-specific variations. Refinitiv, on the other hand, weights the different categories based on the number of indicators in each category, assuming that the bigger the number of indications defining a category, the more relevant it is.

These disparities provide a specific and clear explanation for why the issue of the divergence of ESG ratings and the uncertainty surrounding how they are generated has emerged, as well as why they are the subject of intense debate.

3.2 Criticalities of rating systems

As highlighted in the previous paragraphs, one of the greatest problems underlying the entire sustainability issue is that the existing discrepancies in the techniques employed by various ESG rating providers often result in conflicting outcomes. To understand the magnitude of this problem,

let us make a comparison with the credit ratings calculated by rating agencies. Since information on companies' financial structure is clear, unambiguous and leaves no room for interpretation, a rating agency that must evaluate the financial soundness of a firm analyzes numerical, quantitative data and determines with certainty the creditworthiness of the company (i.e., it verifies that the company will generate sufficient cash flows in the future to meet its obligations in due time and continue its normal business). Consequently, different rating agencies evaluating the financial stability of the same company, albeit employing different rating procedures, arrive at the same (or a very similar) conclusion. This is not the case for ESG ratings. Indeed, due to the difficulties of capturing nebulous ideas like sustainability, especially with regard to social and corporate governance factors, different rating systems from different data providers often lead to non convergent ESG ratings because of the differences in terms of indicators measured, methodology employed, and weights applied to compute the rating. Such variances are noteworthy because they might result in drastically different ratings and accompanying recommendations, so producing a confused data universe that may overwhelm and even misinform investors and weakens the credibility of ESG disclosure in general (Eccles, R. and Stroehle, J., 2018). In addition, unlike credit ratings, which are subject to regulation by supervisory authorities, ESG rating providers are not subject to any regulatory scrutiny yet over neither their process nor their outcomes (Simpson et al., 2021): this allows the differences between ESG rating providers to be substantial, and the underlying rationale of the rating methodology is still unclear. Consider the case of MSCI, for example: while it is certainly useful to inform investors about how companies may be affected by social and environmental risks, it seems to go off-axis with respect to the primary objective of ratings to identify companies that make real efforts to preserve and protect the environment and pursue sound social objectives.

The discrepancies between MSCI and Refinitiv's methodology provide a clear example of how significantly and in what respects the rating systems adopted by different raters might vary. The points of inconsistency identified in the previous paragraph correspond with those analyzed by the authors Berg, Kolbel e Rigobon (2022) in their paper "Aggregate Confusion: the Divergence of ESG Ratings". The purpose of their analysis is to investigate what drives the existing heterogeneity among ESG ratings from different rating providers and to what extent each driver contributes to this divergence. Indeed, the authors analyzed the ESG ratings provided by six of the most important ESG raters, namely KLD, Sustainalytics, Eiris, RobecoSAM, Refinitiv and MSCI, and they found a significant low correlation between their ratings, ranging from 0.38 to 0.71.

The researchers identify 3 main drivers of divergence between ESG ratings:

- *Scope divergence*, meaning that the ratings are constructed taking into consideration different set of attributes. For instance, a rating may include lobbying activities while another may not

- *Measurement divergence*, which implies that the same attribute considered by distinct rating agencies is defined through different indicators, e.g., labor practices of a company that are defined by looking at factors such as the employee turnover rate or the number of labor-related lawsuits filed against the company
- *Weight divergence*, which emerges when ESG raters assign different weights to the same attribute according to different views on the relative importance of the indicator

According to the authors, the driver that involves the greatest difference between ESG ratings is the measurement divergence, contributing 56% of the divergence. Secondly, scope divergence also plays a significant role in explaining the heterogeneity among ratings, contributing 38%, while weight divergence only accounts for a mere 6%. Furthermore, a "rater effect" has been detected by the authors, which is responsible for the measurement divergence among ESG scores. Indeed, Berg et al. found that a company evaluated positively in one category is more likely to receive high scores in all other categories from the same rater. Actually, this phenomenon prompts inquiries into the economics of the ESG ratings market, including the potential existence of structural causes or incentives that may affect the grade given to a company or category.

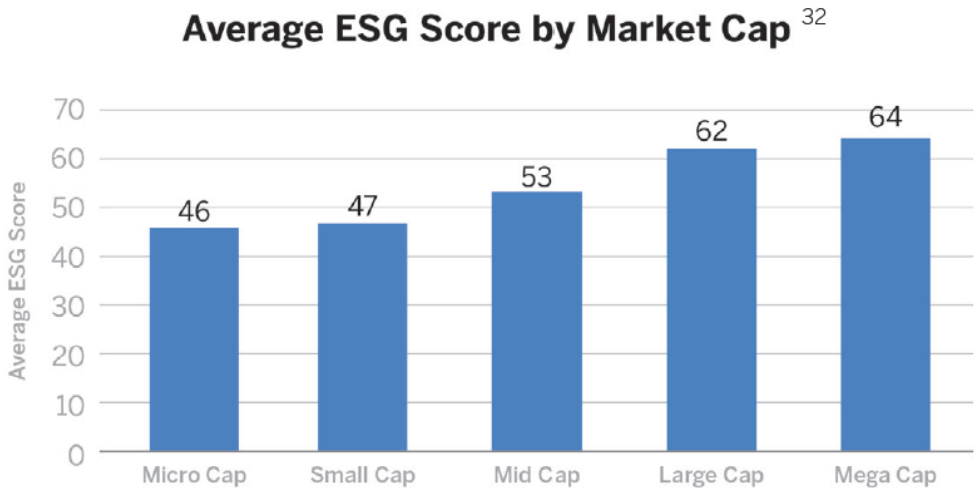
In addition to the issue of misalignment between existing ratings, which creates considerable confusion within the sustainability universe and thus hampers and prevents the consistent application of sustainable investment practices, a further problem lies in the presence of numerous implicit 'biases' in the rating systems adopted by the most well-known rating providers. The American Council for Capital Formation criticized ESG rating agencies, as reported by the author Doyle T.M. in the report 'Raters that don't rate. The subjective world of ESG rating agencies' (2018), highlighting the key shortcomings of ESG ratings that make them unreliable as a basis for investment analysis. Indeed, the author reports three primary biases in the rating systems utilized by various agencies in his analysis, namely, dimensional bias, geographical bias, and sector bias.

The dimensional bias is the tendency for larger corporations to get higher ESG ratings than small-cap enterprises. This was determined by analyzing over 4.000 Sustainalytics ESG ratings, which revealed a strong correlation between large-cap firms and above-average scores. The question that arises in this setting is whether this is due to the fact that larger companies have more resources and can therefore invest more in innovation and the adoption of sustainable practices, or whether since large companies have more resources at their disposal, they devote more effort to the publication of non-financial information in order to obtain higher ratings. To attempt a response, the author provides two examples: the first one is of a multinational pharmaceutical company, Bristol-Myers Squibb, which received an ESG rating of 73 from Sustainalytics, around 20 points above the industry average. However, recent events (in 2016) involving the company in controversial experimental tests and

violations of corruption laws appear to be in stark contrast to this rating. On the other hand, Phibro Animal Health, a small pharmaceutical company, has a sustainability rating of 43, placing it below the industry average. Despite having a corporate mission that is entirely focused on product sustainability and initiatives aimed at increasing customers' awareness of animal health issues and problems related to the irresponsible use of antibiotics, Phibro Animal Health's sustainability rating is below the industry average. Doyle concludes that this comparison demonstrates that ESG rating systems sometimes operate in contradiction to their original purpose of providing accurate risk and opportunity assessments, rewarding larger companies that are able to prepare and publish better annual ESG information while penalizing smaller companies that can devote fewer resources to it.

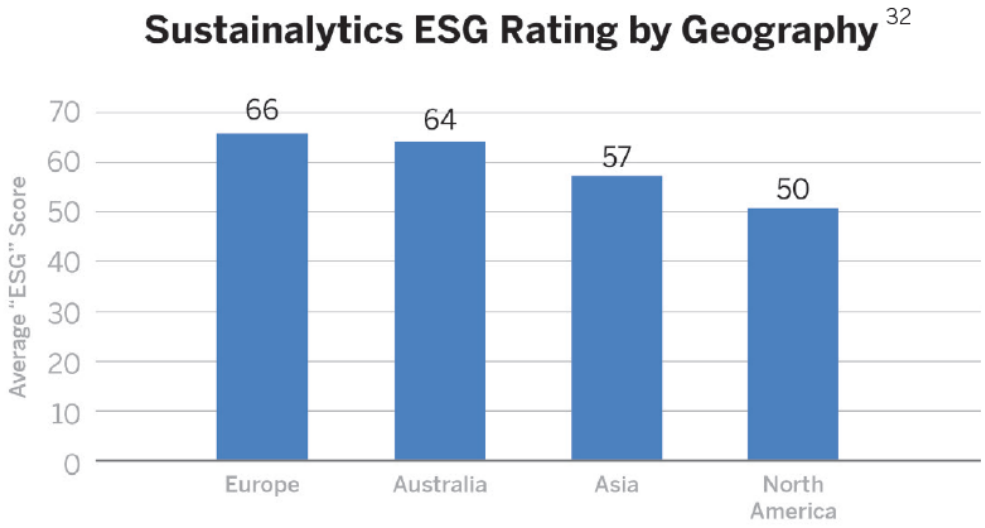
Thus, despite being exposed to a greater total ESG risk, it is plausible for companies with historically weak ESG procedures but strong disclosure to score the same or even higher than their competitors. As another illustration, Doyle provides the ESG rating assigned by Sustainalytics to Goodyear Tire & Rubber, a corporation with a robust CSR disclosure system. The rating is 15 points higher than the average for the industry, despite the fact that the company was subject to ESG issues in the years prior to the rating (e.g., fines from the US Government Occupational Safety and Health Agency - OSHA) and was involved in litigation in 2015 for illegal profits related to corruption, for which it was fined $16 million.

Dimensional bias is strongly influenced by the one-size-fits-all approach adopted by ESG rating companies. Indeed, with the adoption of a standardized rating methodology, raters tend to ignore industry and company specific relevant differences in risk profiles therefore creating consistently skewed benefits for large-multinational companies.



Source: Doyle T.M., (2018), Ratings that don't rate. The subjective world of ESG rating agencies", American Council for Capital Fromation

A second critical issue highlighted by the author is the so-called geographical bias. In fact, it is believed that the ESG assessments carried out by rating providers are affected by differences between the degree and severity of disclosure requirements in different countries. The bias, therefore, is substantiated by the fact that companies based in countries subject to more stringent ESG regulation, such as Europe, obtain better ratings than companies operating in countries with relatively lower levels of non-financial disclosure. This is because the greater the amount of information that rating companies have at their disposal to construct their analysis, the more consistent the companies' commitment to sustainable practices appears.



Source: Doyle T.M., (2018), Ratings that don't rate. The subjective world of ESG rating agencies", American Council for Capital Fromation

Lastly, the sector bias consists of the distortion of the ESG ratings as a result of their normalization by industry. In fact, as we have seen for MSCI and Refinitiv rating methodologies, raters frequently assign relative weights to the E, S, and G pillars based on the firms' reference industry, without taking company-specific risks into account. Although there is a valid reason for diversifying E, S, and G weights by industry, standardizing industry weighting can introduce bias into ratings and mislead investors. Sector bias is an important aspect of ESG ratings since it can lead portfolio managers and investors to underweight or overweight a firm or an entire sector by miscalculating the implicit bias in the ratings.

The critical issues reported so far have major implications for the evolution of sustainable finance and its future research. Theory predicts that investors' preferences for ESG have an effect on asset prices (Berg et al., 2022). In fact, investment decisions are heavily influenced by ESG ratings, making the creation of and disagreement among these ratings a major issue. Researchers also should be cautious when choosing data suppliers and should not put all their trust in one individual rater. Nonetheless, divergence in ESG ratings does not imply that assessing firms' ESG performance is

pointless. However, it emphasizes the difficulty of measuring environmental, social and governance dimensions and hence the importance of paying close attention to the underlying data and the need to carefully consider the use of ESG ratings and metrics for each application.

3.3 Measuring ESG factors for SMEs

Until now, a multitude of ESG scores issued by numerous global rating agencies have mostly benefited large-cap, publicly traded corporations. In fact, the rating systems assessed so far have mainly been adopted for listed companies, of which information on their sustainability is available as they are subject to non-financial reporting obligations. However, as individual investors grow more demanding with regard to sustainability, climate, and value investing, ESG rating providers are expanding their coverage to include smaller companies and even emerging markets.

Including SMEs in the ESG ratings range is of crucial importance for the development of economic sustainability as SMEs' economic, social, and environmental relevance makes them a central element in achieving the sustainability goals set by the European Union. In fact, small and medium-sized enterprises are the backbone of Europe's economy as they account for more than 25 million companies, or 99% of all businesses in the EU and, due to their widespread presence throughout Europe, SMEs, on aggregate, have a high environmental footprint since they are responsible for almost 70% of industrial pollution in Europe (Koirala, 2018). Moreover, SMEs' importance in the sustainability agenda is also due to their extensive participation in national and international value chains, where the biggest opportunities for breakthroughs in sustainability performance arise[46]. In this landscape, SMEs can strongly contribute to the sustainability profile of the value chains they are involved in, and they are of paramount importance for the achievement of European sustainability objectives.

However, although many small and medium sized enterprises are actively engaging in sustainable initiatives, their approach to sustainable innovation is still informal and unstructured. According to a recent survey on European SMEs[47], only one third of European SMEs has a well-defined strategy to approach sustainable actions, while just 13% has implemented it and 21% seem to be in the process of implementing one, although they haven't yet done so. As a result, traditional ESG performance assessment methods, in the form of ratings or integrated reports of a typically quantitative nature, cannot be automatically implemented for start-ups and SMEs, since they are far more complicated realities that frequently defy common logic. In fact, SMEs' development and implementation of

[46] A 2016 McKinsey study shows that most of the environmental impact associated with the consumer sector is embedded in supply chains, yet few companies work with their suppliers to manage environmental risks.

[47] European Commission (2020), SMEs, start-ups, scale-ups and entrepreneurship Flash Eurobarometer 486 https://data.europa.eu/euodp/en/data/dataset/S2244_486_ENG

policies and actions with socio-environmental impact are frequently tacit and not codified, making it difficult to measure the phenomenon itself. Besides, the assessment of sustainability performance requires the disclosure of non-financial information and a pool of technical-operational capabilities that are frequently absent in SMEs' environments.

Scientific literature and national observations show that SMEs' sustainability approach is not as well-thought-out as that of large firms, mainly because of the presence of several barriers that prevent SMEs from approaching sustainability issues in an organized and efficient way. Although each SME's business is peculiar and unique, and so are its barriers to sustainability (Bakos et al., 2020), many studies find recurring obstacles for SMEs in implementing sustainable practices. These barriers consist first and foremost in the lack of internal resources, i.e., specialized human capital possessing both the necessary technical and administrative skills for the start-up of sustainable activities (García-Quevedo et al., 2020 and De Jesus et al., 2018). Another relevant barrier to SMEs' sustainable business model is the access to the financial resources needed to afford innovation costs, i.e., expenses for the initial implementation of sustainability measures (De Steur et al., 2020; Alvarez Jaramillo et al., 2019; Rizos et al., 2016). Indeed, due to SMEs' greater riskiness compared to large firms, their access to bank credit (SMEs' primary source of capital) is often difficult and it comes at higher costs. As of now, the banking industry is moving towards the integration of the ESG factors into the credit analysis implemented to assess the creditworthiness of their clients. This could be an opportunity for SMEs to exploit by appropriately disclosing ESG-related information: however, from a survey conducted on Italian SMEs by the Forum for Sustainable Finance[48] involving 415 SMEs from various economic sectors, appears that the majority of SMEs is unaware of the role that ESG factors will play into the credit analysis performed by banks and financial institutions. As a result, only less than 10% of surveyed SMEs is actually disclosing ESG related information to external stakeholders.

Nonetheless, the complexity of administrative and legal procedures and the costs of complying with national and international regulations and standards (García-Quevedo et al., 2020; De Jesus et al., 2018; Bakos et al., 2020) are also crucial barriers for SMEs, which are unable to keep up with the rapidly evolving regulatory framework and therefore run the risk of either not being compliant or missing out new opportunities. From the above-mentioned survey by Forum of Sustainable Finance appears that nearly all of the surveyed SMEs (91%) claim to be unaware of the content of the Corporate Sustainability Reporting Directive, although they would be affected because they operate within the value chain of CSRD-affected companies. This indicates a relatively low degree of information and expertise on the side of SMEs, 86% of which claim to be unaware also of the EU Taxonomy.

[48] Forum for Sustainable Finance, (2020), Italian SMEs and ecological transition. ESG profiles and sustainable finance

Given the unstructured approach of SMEs towards sustainability, the development of sustainability ratings for SMEs should seek to define a differentiated and dynamic ESG measure, calibrated to the local specificities of companies and allowing for a differentiated and contingent measurement of their environmental and social impact rather than an abstract measure or one that responds to generalist logic. Consequently, analysts should not blindly apply the same methodology used for non-financial evaluations of large caps to small caps. This is because the relative importance of different evaluation criteria changes as firm size increases or decreases, especially in areas like governance, which are inextricably linked to the capitalization of a business and its ownership structure.

A study undertaken by Equita in partnership with ALTIS[49] (*Alta Scuola Impresa e Società dell'Università Cattolica*) examined the adaptability of ESG grading systems to SMEs. The research, derives from the belief that enterprises with medium-low market capitalization possess characteristics that necessitate an ad hoc approach in order to be accurately reflected by an ESG rating. The study consisted of a series of interviews with six small and medium-sized Italian companies operating in four different sectors (multi-utility, construction, financial/banking, and manufacturing) in order to investigate, on the one hand, the involvement methods implemented by the rating providers towards the companies and the process followed for the ESG assessment and, on the other hand, the opinion of the companies on the actual rating model, with particular attention to any corrective measures suggested by them.

The interview questions of the companies pertained to three primary areas:

1. Which rating agencies evaluated the ESG performance of the company
2. What was the degree of involvement of the company in the rating process (e.g. offices or functions involved, tools used to communicate with the rating agency, requests for documentation, etc.)
3. Overall opinion on the rating model used (consistency of the final rating with the company's opinions of its own sustainability, benchmarking with competitors, more or less effective metrics for identifying the company's level of sustainability, etc.)

As a result of the interview, three points worthy of consideration have emerged. First, there was a failure on the part of rating agencies to effectively communicate with the organization, for example, by referring frequently ambiguous queries or requests for data to the incorrect departments or functions of the company. This inevitably slowed down the rating process and produced obvious inefficiencies. Secondly, some of the interviewed organizations noted that rating agencies are sometimes unable to incorporate internal procedures and informal norms that are not documented in

[49] Equita, (2020), Sostenibilità: una valutazione su misura per le PMI

public records. The corporations described this as penalizing, as it did not recognize their genuine sustainability efforts; nevertheless, in many cases, this penalization does not result in the publishing of more information due to internal cost/benefit analyses. A final consideration concerns the excessive standardization of the contact process between company and rating agency, about which companies have complained. In addition, it has been highlighted a lack of continuity in the discussion between the rated company and the analysts, who were also subject to rostering and consequently had no means of obtaining a comprehensive understanding of the organization in issue.
In general, what firms demand most is greater participation by rating agencies in the rating process, as well as greater clarity and openness with regard to the established approach and the return of feedback.

3.3.1 Case study: Modefinance

In order to see in practice the methodology, approach and main impressions of a company that deals specifically with sustainable rating for SMEs, we chose to analyze the Modefinance case by conducting an interview with Dr Stefania Latin, analyst in the company's ESG team. Modefinance is a fintech company specialized in issuing ratings for the analysis, economic-financial assessment and credit risk management of companies. Founded in 2009 from an entrepreneurial idea of its two founding partners, Mattia Ciprian and Valentino Pediroda, the company has been authorised by ESMA since 2015 to issue public and/or distributed credit and is part of the TeamSystem group, an emerging Italian player in the market of digital solutions for business management.
The core of the rating solutions offered by Modefinance is its assessment methodology MORE (Multi Objective Rating Valuation), the multi-objective rating valuation methodology based on Data Science & Artificial Intelligence algorithms. Based on public data and statistics, MORE is able to assess the insolvency risk of any company or credit institution, without geographical limits and without distinction of sector and size. This proprietary assessment methodology is the distinguishing feature of Modefinance, which mixes state-of-the-art data collection and processing technology with traditional analysis work, thus providing the highest possible level of detail of a company, both quantitatively and qualitatively. Furthermore, the digital approach of the model makes it possible to apply it to both large companies and SMEs.
Given the enormous relevance that SMEs play within the Italian and European economic and social landscape and given the ever-increasing importance of ESG factors for businesses, Modefinance has recently (in 2022) introduced to the market a proprietary business sustainability profile assessment methodology for application to SMEs. Modefinance's proprietary modelling, based on Artificial Intelligence and Machine Learning principles, is built on two strands - statistical (quantitative) and

analyst research (qualitative) - and leads to the analysis of the company's ESG performance against key sustainability indicators. The company is assessed according to whether or not it is aware of the risks it is facing and, consequently, according to its framework of active policies established to manage risky issues and circumstances: an approach defined by Modefinance as 'Exposure vs. Management'.

Once the company's risk management and performance indicators have been assessed, a Report is issued that provides the ESG valuation of the entity under analysis on a scale of 7 rating classes (S1 to S7, from best to worst, respectively) that defines the company as dynamic, aware or fragile.

The interview conducted with Dr. Stefania Latin was aimed at understanding how the entire ESG rating process for SMEs works, from the request for the rating to the issue of the rating. The interview can therefore be divided into three macro-areas: first, the understanding of what factors the sustainability assessment is based on, the so-called KPIs (Key Performance Indicators). Secondly, the actors from which the rating process originates (i.e. whether are the companies themselves that request the rating or intermediaries such as banks and other financial companies) and how this process is concluded. Finally, how the rating process for SMEs differs from that of public companies, and what Modefinance's perception is of the engagement of SMEs in the world of sustainability.

First of all, a premise must be made: when we use the term “rating” in the field of sustainability, we are referring to an “assessment” of a company's sustainability. In fact, using the term assessment is certainly more accurate, as a consequence of the limited amount of information available on sustainability, and therefore the type of judgement on the sustainability of a company that emerges from the assessment process, which is mainly qualitative. This, as mentioned, is due to the fact that SMEs are still in a primordial state of the development of sustainability and the disclosure of information about it. An assessment can result in a *score* when sufficient quantitative information about the company under review is available and, therefore, the assessment process can be all or at least partly standardized or automated, without the need for analyst intervention. This is usually the case for financial ratings, but not yet possible for sustainability ratings. In fact, since almost all available information on the sustainable profile of companies is of a qualitative nature, in order to generate an assessment, it is necessary for the rating agency to interface with the rated company at all times, and the information declared by the company regarding its sustainability is not sufficient to be able to give an actual assessment. As mentioned in the previous chapter, at this point in time, SMEs are not yet subject to mandatory disclosure of non-financial information; therefore, much information that is needed for ESG assessment is not publicly available. For this reason, direct contact with the company being assessed is of fundamental importance, as is the figure of the analyst, who, based on his or her experience and human sensitivity, carries out the assessment and determines the findings.

Going into the substance of the sustainability assessment, during the interview, the different KPIs taken into account for each ESG pillar, i.e., Environment, Social, and Governance, were analyzed.
As far as the **environmental pillar** is concerned, the main reference from which the KPIs are extrapolated is, on the one hand, the EU Regulation 2020/852 ("Taxonomy"), which classifies economic activities and defines the guiding criteria for measuring the degree of sustainability of a company, and on the other hand, the six main environmental objectives defined by the European Commission. The KPIs are intended to capture a complete and comprehensive picture of everything that concerns the energy policy, if any, of a company. They are as follows:

- The presence or absence of an energy policy
- The amount of carbon dioxide emissions
- The energy mix used and the path to energy self-sufficiency
- Information regarding the use and consumption of raw materials, e.g., whether there are practices to reduce water consumption, adoption or not of practices to measure and monitor the firm environmental, water or carbon footprint, etc.
- Indicators pertaining to the sphere of circular economy, i.e., presence or absence of a waste exchange platform (e.g., practices to sort the waste produced to other companies that can reuse the waste within their own production processes)

As mentioned, these measures are aimed at capturing information on the entire environmental sphere of the company, thus also the company's sensitivity to environmental issues. The evaluations are always relative to the type of company evaluated; therefore, it is expected that a company that works in the industrial sphere will have a more accurate and structured energy policy than a company that deals with logistics. Obviously, this does not mean that the company that deals with logistics should not have a concern for the environment, but certainly the materiality (hence the sensitivity) of the environmental issue differs depending on the company in question.
To give an example: imagine a company that only has offices, such as a service company. A banal initiative, which is an example of a virtuous practice to be environmentally aware, would be to introduce timers to switch lights on and off, or reduce electricity consumption in the offices, perhaps trying to concentrate activity only in the rooms used, to save energy.

As far as the **social pillar** is concerned, the information that is taken into account is that relating to the world of stakeholders, both internal (employees) and external (customers, suppliers, local community, public administration). A key point of the social pillar analysis is the observation of how the company relates to its stakeholders, i.e., whether or not it pays attention to the needs of its stakeholders also at the level of value creation. For example, a company that deals with training is by

its very nature a company that adds value to the territory. It is therefore assessed whether the company makes donations, for example, and in general activities that can have a positive impact on the surrounding community, in addition to the sale of goods or services carried out by the company.

At the normative level, the *Universal Declaration of Human Rights* and the *International Labour Organization's Declaration on Fundamental Principles and Rights at Work* are taken into consideration when choosing KPIs. The latter can be divided into two main categories:

1. KPIs concerning internal Stakeholders (employment): the presence of decent working conditions, equal opportunities, diversity and equality, respect for human rights, social dialogue (atmosphere within the company) and training opportunities, employee remuneration, benefits and company welfare initiatives are evaluated
2. KPIs concerning external Stakeholders:
    - *Supply Chain*: Although SMEs are not yet obliged to report on their sustainability, it is very likely that they are embedded in the supply chain of a larger company, which is subject to non-financial reporting obligations. The analysis of the SME's behaviour in the supply chain is therefore relevant as it can be a source of much information and evidence regarding the SME's attitude to environmental, social and governance issues. In this context, factors such as the selection of suppliers that maintain environmental and social standards are assessed, i.e., whether the supplier is chosen solely on the basis of economic logic (best price for quality) or also according to a sustainability perspective. In the opinion of Modefinance's ESG team, "*Although SMEs are beginning to do so in relation to their structure and dimension, they are still quite far from these types of choices: the assumption is that companies primarily aim to generate profits. It is necessary, however, to start balancing economic and sustainable factors, also in view of the whole green wake coming from the European Union. It is therefore necessary for SMEs to start paying attention to these aspects, because they run the risk of arriving late and then being excluded from the market*".

      In addition to the choice of suppliers, other factors such as access to economic infrastructure and the traceability, safety and quality of products/services along the entire value chain are also considered.
    - *Clients*: the initiatives taken to protect clients' personal data and in general the impact of the work on clients, suppliers, workers and the community are considered.
    - *Community*: the impact of the company's activity on the territory is assessed, also in terms of added value for the surrounding society

Lastly, as far as the **governance pillar** is concerned, it is, in the words of Dr Latin, a very hot topic in Italy, especially at the level of small and medium-sized enterprises, which make up more than 90% of our corporate structure and which have always historically been linked to family control, from the largest companies to the smallest. This means that there is more and more overlap between the management figure and the ownership figure of the company, a condition that could hinder the ability of the companies themselves to keep up with the evolution of sustainable directives and thus limit their ability to seize new opportunities. The importance of governance should not be underestimated. Indeed, although until recently the world of sustainability always referred to the world of the environment, with the introduction of the three ESG dimensions, governance has assumed a central and equal role with respect to the other two pillars. Governance, in fact, not only represents the head of the company, but is also transversal to the other two pillars since, for example, it influences energy policy, personnel policies, environmental and social choices, etc.

Underlying the choice of governance KPIs are many variables, mainly of a quantitative nature, which are also examined during the creditworthiness assessment:

- Presence of a sole director or Board of Directors (BoD)
- Numerousness of the Board of Directors
- Presence or absence of a Supervisory Board, and the composition (one-person or multiple members)
- Presence or absence of an external statutory auditor
- Number of independent members on the BoD
- Percentage of women on the BoD
- Board members' term of office

All this information must obviously be calibrated to the size and structure of the SME. A small company with, for example, less than ten employees cannot be expected to have a particularly structured internal organization. Therefore, the materiality of ESG factors must always be considered, depending on the case of the company being assessed.

There are also qualitative aspects regarding governance that are considered:

- Quantity and quality of sustainable choices within the Board, i.e., how often and how decisions are made and whether they are taken with reference to sustainability factors
- Presence of committees dealing with sustainable development (e.g., nomination transparency committees, remuneration committees, etc.). This must always be tailored to the structure of the SME.

All information relating to the three ESG pillars is collected through an interview that takes place either by telephone or in person with the company being evaluated. Obviously, the ease with which this data is found always depends on the type of company being evaluated. For example, a company that works in the industrial sector compared to one that operates in the consulting sector will be more energy-intensive, therefore, from an environmental point of view it will have a different materiality so that it will be expected (in relation to its structure) to use processes for measuring, monitoring and limiting emissions, unlike companies that do not operate in the same "sector". In view of this, a checklist is constructed prior to each interview, identifying the documents and information needed to construct the rating, taking into account the company to be assessed. The approach adopted is therefore tailor-made, not standardized, and varies depending on the company being rated. Once the issues of greatest interest and criticality for the assessment of the individual company have been identified, calls (interviews) are conducted from which the results to be assessed are derived.

Once all the necessary data have been obtained, the rating process is always structured in consideration of the 'exposure vs. management' model. That is, a prospective approach is adopted in which the risks and opportunities generated by the strategic choices made by governance and their consequent management are considered. Risk management is assessed both from an internal point of view, i.e., by considering how the company manages the risks that may impact the company from the outside, and from an external point of view, i.e., by assessing how the company manages the risks that may impact the surrounding environment. At the end of the rating process, the assessed company obtains a snapshot of the current situation of its sustainability. Moreover, following the issuance of a rating, there is usually a monitoring phase, in which it is ascertained whether the sustainability commitment of the rated company is increasing, worsening or remaining static over time.

Modefinance adopts a rating scale, from S1 to S7, which indicates the level of initiatives taken and engagement in sustainability and how committed it is to this direction. Following the assessments made by Modefinance, companies are classified into three types:

- Dynamic companies: have undertaken sustainability practices and are pursuing them (e.g., non-financial reporting, ESG management policies, materiality matrices)
- Aware companies: have already started to consider adopting sustainable practices but have not undertaken them
- Fragile companies: have neither considered sustainability factors nor taken action in this regard

The main categories of customers that Modefinance addresses are SMEs and financial companies (e.g. banks): these economic entities are approaching the world of sustainability and, therefore, in

addition to requesting a rating on their creditworthiness, they have also started to request assessments of their own degree of sustainability. In particular, banking/financial companies are driven by the recent regulations introduced in relation to the degree of sustainability of their portfolios/assets and are therefore interested in presenting an ESG assessment to measure their performance in terms of social responsibility. At the same time, SMEs, in order to be more attractive to investors, require a non-financial assessment to enhance their corporate strategy by disclosing sustainability information. According to Modefinance analysts, a frequent flaw among businesses is that they are sustainable without realizing it. Frequently, small and medium-sized businesses execute procedures that are considered sustainable and that may serve as a competitive advantage. However, because external stakeholders are unaware of these practices (as a result of a lack of companies' disclosure), firms do not benefit from them. In this environment, organizations would benefit greatly from having an ESG evaluation in order to acquire understanding of their sustainable reality, convey it externally, and become more attractive.

A further aspect frequently encountered when assessing SMEs is precisely the lack of data and knowledge of the company's own sustainable profile. Moreover, SMEs are often unable to embark on a sustainability journey and take it forward following a structured approach with clear and defined strategic guidelines. This represents a first major point of differentiation of the sustainable rating process of SMEs from that carried out for larger companies. In fact, since the latter are already subject to European regulations and directives, and have more resources at their disposal, they have already introduced processes for acquiring ESG information that facilitate the rating process. In contrast, SMEs are at a disadvantage as they are still at an early stage of the journey towards sustainability.

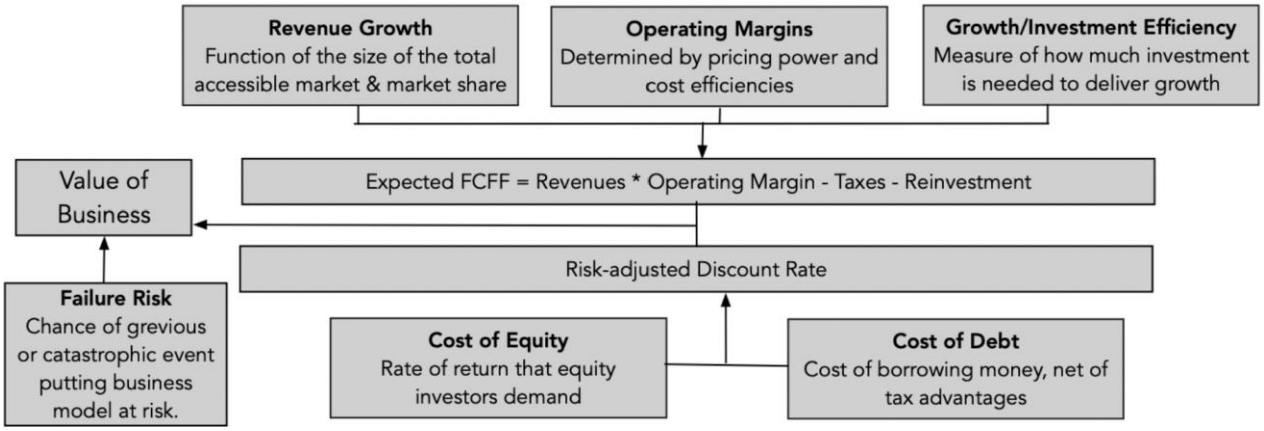
According to the Modefinance analysts, and as also analyzed in the previous sections, SMEs still perceive 2026, the year in which they will have to compulsorily publish sustainability reporting, as a long way off, and see this new reporting responsibility merely as a burden rather than as a tool that can bring benefits and new opportunities. In this regard, Dr Latin comments that "*it is advisable for small and medium-sized enterprises to start thinking about what they need to do to keep up with the new market requirements and not be unprepared in 2026. SMEs must therefore have the readiness to anticipate, to use this transition time as an exercise, and to arrive in 2026 prepared and able to cope with all the ESG data requests that will come*".

CHAPTER 4: ESG AND COMPANIES' FINANCIAL PERFORMANCE: LITERATURE REVIEW

4.1. ESG and companies' value

Whether companies' ESG performance is a driver of firms' value creation — that is, whether implementing ESG practices raises the market value of companies — is a major study subject for many academics. In fact, if this is the case, investors who invest in companies with high ESG performance should be rewarded with a "green premium," which is an increase in the value of the investee company due to its performance in the environmental, social, and governance domains. Since the relationship between ESG and business value is a very interesting point of research, there are numerous studies and theoretical elaborations in the literature, which however presents contrasting results and opinions.

The starting point is to first understand how companies' implementation of sustainable practices could affect their market value. It is necessary to point out that, as extensively discussed in the previous chapter, a problem underlying any ESG valuation lies in the lack of a standardized measure of such factors. In fact, determining whether sustainability, measured in ESG terms, has an effect on the value of a firm requires a clear understanding of what "sustainability" means and a commonly accepted standard of how it is measured. This is not the case, however. Therefore, it must always be remembered that any assertions that can be made regarding the relationship between ESG and corporate value, company returns, etc. are always dependent on the methodology used to quantify ESG aspects.



The figure above briefly represents all the factors that influence the valuation of any business as they contribute to determining the variables of one of the main models used to estimate the value of a business, known as the Discounted Cash Flow model (DCF). According to the DCF, in fact, the market value of a firm is equal to the sum of the expected free cash flows that will be produced by

the company in the future, discounted back to today's value, using a discount rate which accounts for the riskiness of the valued company.

$$EV = \sum_{i=1}^{n} \frac{FCFF_i}{(1 + WACC)^i}$$

The expected Free Cash Flows (FCFF) are a function of three main variables, namely the operating margin of the company, the growth rate of the revenues produced by the company, and the growth/investment efficiency of the company, i.e., its ability to generate a profit, and thus growth, for the investments made. In this framework we focus on revenue growth rather than the growth in operating or net income as revenue growth is a direct function of the products or services sold by companies. In general, revenue growth could also be driven by growth in the market in which a company operates, but in order to avoid excessive complications, it is deemed useful (and equally effective) to focus on the revenue growth. The operating profit margin gives a measure of a company's profitability, determined as the ratio between the after taxes operating income to revenues. Companies' investment / growth efficiency represents the delivered growth in revenues for every dollar of capital invested by a company.

The rate at which expected FCFF must be discounted must be "risk-adjusted", i.e. it must take into account the riskiness of the business operated by the company and thus the uncertainty concerning revenues and operating income produced by the company in the future. The rate commonly used within the DCF model is known as Weighted Average Cost of Capital (WACC) and it is a function of the cost of equity (Re) and the cost of debt (Rd) of a company, as shown in the equation below:

$$WACC = R_e \times \frac{E}{D + E} + R_d \times (1 - t) \times \frac{D}{D + E}$$

Where E and D are Equity and Debt respectively, and t is the tax rate

As the cost of capital increases, the present value of the business decreases.

Analysing therefore whether a company's implementation of ESG practices brings more value to a company means examining whether, and if so how, ESG factors have an impact on each of these variables.

Research by Henisz, Koller and Nuttall (2019) for McKinsey Quarterly shows that the main way in which ESG factors can affect companies' value is through the expansion of companies' operating margins (either increase revenues or decrease costs, affecting the numerator of the DCF formula). Indeed, in their report, Henisz, Koller and Nuttall identify the so-called "five links of value creation" inherent with sustainability practices that can either increase firms' revenues or decrease costs, thereby generating an increase in corporate value. The five links are named as follows: top-line

growth, cost reductions, reduced regulatory and legal interventions, employee productivity uplift and investment and asset optimization.

Top-line growth refers to the fact that a solid ESG performance facilitates companies' entry into new markets and the growth of their market share within the markets they already cover. This is especially valid for example for companies that need approvals and licenses to manufacture and market their products or services: if they are characterized by a very good reputation in terms of sustainability they can more easily be trusted by governing authorities and get what they need to run their business. As an illustrative example, the authors report the case of the massive public-private infrastructure project in Long Beach, California, where the companies that participated to the tender were screened on the basis of their performance in sustainability. Also, business growth linked to sustainability can be driven by consumers' preferences for green products, for which they are willing to pay more than ordinary products. A prior survey conducted by McKinsey on a sample of consumers investigated the purchasing preferences of the consumers in multiple industries (automotive, building, electronics and packaging categories). The results revealed that more than 70 per cent of the respondents would be willing to pay 5 per cent more on the price of a product if it were a green product with the same performance standards.

Sustainability practices can also help companies in reducing their costs significantly, by combating the rise of operating expenses due to increases in raw-material costs, which can hardly impact on operating profits. Cost reductions can be achieved, for instance, by limiting the environmental impact of manufacturing processes, recycling and reusing waste from production, preventing pollution, tackling energy consumption, etc. As a primary example, Henisz, Koller and Nuttall (2019) highlight the case of 3M, a company that introduced a pollution prevention system through which it saved up to 2.2$ billion. Therefore, although being good may higher companies' expenses in the short-term due to costs of compliance and other operating expenses, companies' cost structure may benefit from ESG practices in the long run.

Concerning the third link of value creation, i.e., reduced regulatory and legal interventions, according to the authors, a strong sustainability performance can ease regulatory pressure on companies and enable them to move more freely within the market when implementing their business strategies. Intuitively, this holds true to a greater extent for specific industries, such as banks, transports and infrastructures, aerospace and defense, tech, energy and healthcare, where regulation has historically had a heavy impact and role. Take banks, for example: nowadays a discussion is undergoing concerning the introduction of ESG indicators within the framework that determines banks' minimum capital requirements. This means that those banks that are not prepared for the risks associated with ESG factors will find themselves having to set aside higher capital reserves and thus suffer a major

slowdown in their business. Banks, on the other hand, that have long since started to implement sustainable practices will be at an advantage and will not incur any increased costs due to the introduction of new regulations.

The last two factors listed within the report that can generate value for companies are both related to increasing companies' returns. Indeed, on the one hand the authors argue that companies that use their efforts to promote initiatives to limit their environmental impact and social initiatives to increase the well-being of their employees tend to attract and retain high quality employees and boost employees' engagement in the company's business and increasing the productivity overall, which in turn leads to higher shareholder returns. On the other hand, a strong ESG proposition can push companies to seize the most promising and sustainable opportunities and avoid investments that might not be profitable in the long run due to the potential materialization of environmental issues.

In the analysis carried out by Cornell and Damodaran (2020), as an alternative to the benefits related to the expansion of companies' operating margins, companies with a high ESG focus can gain more value by lowering their cost of capital (namely, affecting the denominator of the DCF formula). This can happen if equity investors that value firms' social responsibility invest their money toward good companies, leading to a decrease in the cost of equity, or if lenders provide money to high ESG firms at lower interest rate, because of corporates' social or environmental mission.

As previously mentioned, the empirical evidence on how ESG factors affect the value of a business is very ambiguous and no real answer exists yet to the question whether high ESG companies create more value than "bad companies".

As we said at the beginning, in order to state that good companies are also more profitable there must be evidence that ESG factors affect one or more companies' value drivers, i.e., revenue growth, investment efficiency, operating margins or the cost of capital, in a way that either increases the expected free cash flows or reduces the discount rate. Actually, there is evidence on both sides but the one on the discount rate front seems to be stronger.

There are several studies that find a positive correlation between ESG rating and companies' profitability, however, most of them fail to find a causal relationship between the two (Damodaran, 2021). This means that it is actually not clear weather are good companies more profitable or more profitable companies that find it easier to look good as they have more resources at their disposal to be invested into sustainable innovation ("reverse causality" issue). If this were the case, in fact, the implementation of sustainable practices would not actually be a driver of value but rather a privilege 'for the few', i.e. for those companies with sufficient resources to be able to invest in sustainable activities and improve their reputation.

A recent research performed by Deloitte (2022) finds the existence of a positive influence of ESG factors on the value of a company, measured using the EV/EBITDA multiple (where EV stands for Enterprise Value while EBITDA is the gross operating margin of the company). The analysis was performed on a set of 300 listed companies across four industries (Basic Materials & Energy, Consumer Goods, Industrials and Services), with ESG data taken from the Refinitiv database. The results reveal that a 10-point difference in the ESG score of two companies is associated approximately with a 1.2x higher EV/EBITDA multiple. However, two main limitations are highlighted: the first concerns the lack of a causal relationship between ESG score and multiple EV/EBITDA. In fact, it is explicitly emphasized that the research work identifies the presence of a "simple correlation" between sustainability and companies' value. The second limitation concerns the possibility that the regression model used to do the analysis did not consider all the factors that might have influenced a difference in value between two companies with two different ESG ratings. Indeed, it is possible that the difference in value attributed to the difference in ESG rating between the companies analyzed is instead due to other drivers that were not considered in the analysis. Schreck (2011) tried to address the reverse causality issue and show the causal relationship between high ESG and profitability. The analysis considered a sample of 294 companies with ESG rating available from Oekom Research AG, operating in 13 industries and 24 countries in 2006 but any causal relationship was detected between ESG scores and companies' profitability measures.

A further problem that emerges from the empirical analyses carried out by various researchers is that the results do not hold across different methodologies used to measure ESG factors. Margolis, Elfenbein and Walsh (2011) performed a meta-analysis of 251 studies from 214 manuscripts and found a positive, though weak, relationship between corporate social performance (CSP) and CSR. However, their results are relative to the CSP measure they utilize and they are not robust to different ESG measures. In the same vein, Pedersen, Fitzgibbons and Pomorski (2019) also find a positive correlation between good governance practices and accounting rates of return, yet these results do not hold when other ESG measures are employed.

From the point of view of the discount rate, on the other hand, stronger evidence can be found in the literature that low ESG companies are characterized by greater discount rates due to their higher cost of funding and major exposure to disaster risks and costs spikes. To give few examples, firms that have a high environmental impact in terms of emissions produced during their manufacturing process may incur in high costs due to the introduction of a potential future legislation which imposes a carbon tax. Alternatively, firms that treat poorly their employees or suppliers may face a sales plummet as a consequence of a backlash from their customers (Dunn, Fitzgibbons and Pomorski, 2018). A

McKinsey report from 2020[50] highlights that there is growing evidence that companies with above-average ESG rating, due to their lower risks, have lower cost of capital, approximately by 10%. According to Geise et al. (2019) a lower discount rate for high ESG companies would be justified by the fact that companies with a strong sustainable profile put in place more accurate risk control and compliance processes, both within the firm and across the entire supply chain. As a result, high ESG companies are less exposed to incidents that could harm their value and lower their stock prices, such as fraud, embezzlement, corruption or litigation cases. Hoepner et al. (2017) define this an "insurance-like protection of firm value against negative events". Dunn, Fitzgibbons and Pomorski (2018) showed empirically that stocks with worst ESG scores face a major systematic risk, with betas up to 3% higher than strong ESG companies. Since the beta is accounted in the computation of the cost of equity[51] which in turn is a cost of capital's component, a higher beta implies a higher cost of capital and therefore lower business value. However, the authors acknowledge that while this pattern is statistically strong, its economic importance is somehow limited, possibly because of the noisy measurement of companies' ESG data or the relatively short sample period (from January 2007 to December 2015) in which this trend has been analyzed. Geise et al. (2019) also detect a correlation between companies' ESG exposure and value due to lower discount rate, demonstrating that strong ESG companies presents higher business value. However, when it comes to assess causality in this relationship, the authors highlight that a greater time period of analysis is necessary[52] to derive economically and statistical more significant results. Thus, future research is needed in order to assess with certainty whether firms' ESG exposure actually has an impact on companies' discount rate.

4.2. ESG and financial returns

If we assume that markets are efficient, it is clear that the way ESG factors influence the value of a business should then be reflected in the share price of that business. However, as we are in a transition phase towards sustainability, it is possible that there may be movements within markets that are not justified by the underlying securities. In fact, one of the major discussed topics in sustainable finance is whether investors make excess returns on ESG stocks, that is, whether investing into high ESG stocks reward investors with greater risk-adjusted returns. Indeed, a large branch of literature is investigating how financial performance of sustainable assets differs from the traditional ones in order to assess whether sustainability comes at a higher, lower or zero cost for investors. Empirical evidence

[50] McKinsey, 2020, Why ESG is here to stay
https://www.mckinsey.com/~/media/mckinsey/business%20functions/strategy%20and%20corporate%20finance/our%20insights/why%20esg%20is%20here%20to%20stay/why-esg-is-here-to-stay-vf.pdf?shouldIndex=false

[51] $R_e = R_f + \beta \times (R_m - R_{f)}$ where R_m is the return from the market portfolio and R_f is the risk-free rate

[52] Their sample period spans from January 2007 to May 2017

concerning this topic is highly ambiguous and no unique and exhaustive answer exists yet. Most evidence in literature suggests that high ESG securities do not generate superior risk-adjusted returns. However, the opposite evidence is also found, as the transition is still in its infancy and there is no universally accepted measure of ESG; therefore it is not possible to definitively answer the question of whether sustainable companies generate superior risk-adjusted returns.

According to Cornell (2021), there are two main drivers that can affect high ESG stocks returns and make them diverge from low ESG stocks: investors' preferences and risk. Both influence the cost of equity of companies. Indeed, on the one hand, as mentioned above, investor preferences can influence the cost of equity. On the other, the risk of the business can influence the beta of the company, and thus the cost of equity and hence the cost of capital.

When the financial performance of green assets is analyzed, it is important to make a distinction between the short-term and the equilibrium (long-term) condition. In the short term, given the tremendous increase of demand for ESG investments, prices of green assets may increase, involving higher risk-adjusted returns for investors. Several scholars argue that ESG screening on returns is highly dependent on the time period (Bennani et al., 2018) and it is heavily driven by supply or demand imbalances of green assets in the market. This result is also supported by Van der Beck (2021), who demonstrated the presence of a strong price pressure arising from flows toward sustainable assets. According to academics, strong social preferences of a subset of investors drive the demand for socially responsible (SR) investments (Riedl and Smeets, 2017, Bauer et al., 2021). This implies that, as the population of investors with social preferences continues to grow, their demand for socially responsible products may influence assets prices in the short term. According to Cornell and Damodaran (2020), "as the market adjusts to incorporate ESG information, and assuming that the information is material to investors, the discount rate for highly rated ESG companies will fall and the discount rate for low rated ESG companies will rise". Consequently, during the adjustment phase, the high-rated ESG stocks will outperform the low-rated ESG stocks, but this advantage is only transitory. In fact, in the long run, "if a subset of investors prefers to invest in green companies, the expected return from investing in companies that are greener will be lower, with the magnitude of the effect depending on the amount of money invested by the subset investors" (Cornell, 2021). This assertion is based on the framework developed by Fama and French (2007) which shows that investors preferences for good companies (embedded in their utility function) affect stocks' expected returns in a way that results in lower expected return on socially responsible companies. Hence, under market equilibrium conditions, the price of highly rated ESG stocks will be higher and, therefore, the expected returns associated with them will be lower.

4.2.1 Novel investors' preferences

As previously stated, investor preferences can influence stock returns, and their influence increases as the number of investors who favor a particular type of financial asset, in this case high-sustainability securities, increases.

In order to study whether and to what extent socially responsible investors (SRI) and conventional investors differ in their investment decisions, academics extensively use to investigate how SRI funds' inflows or outflows are affected by funds' past returns compared to conventional funds (so-called flow-return or flow-performance relationship). It may be disputed the validity of this analysis as evidence on the persistence of funds' past performance is not unambiguous. However, since past returns are still an aspect that investors evaluate in their investment choices, the flow-performance relationship is considered an effective tool to observe investors' behaviour (Benson and Humprey, 2008).

Bollen (2007) is one of the first researchers to investigate whether SRI investors value extra-financial factors for their capital allocation decisions: to this end, the author explored the flows volatility and the flow-returns relationship of US SRI and conventional funds in the period from 1991 to 2002. If ethical, environmental, and social values matter to investors, and therefore their utility function incorporates nonfinancial factors, one should expect that SRI investors are more (less) sensitive to positive (negative) past returns of SRI funds compared to conventional funds and, therefore, the volatility of fund flows for SRI funds is lower than conventional funds. These results are indeed those found by Bollen. In other words, the author finds that the positive performance of SRI funds attracts more capital than conventional funds and poor financial returns of SRI funds do not involve as much outflows as conventional funds do. As a result of the analysis, Bollen asserts that indeed the choices of SRI investors may follow different logics from the purely rational ones based on financial valuations, due to the presence of non-financial factors in the utility function of SRI investors.

Benson and Humprey (2008) build on Bollen (2007)'s paper, and they analyze US SRI and conventional equity funds' performances from 1999 to 2005. The authors extend Bollen (2007)'s work by analyzing not only current annual funds' returns (those investigated by Bollen, 2007) but also current and lagged monthly and annual returns and controlling also for funds' size, age and expenses. Their results are similar to Bollen (2007)'s: they find that, although SRI investors do use returns to undertake their investment decisions, they are less concerned with SRI funds' current performance than conventional investors, i.e., they care less about returns than their conventional counterparts[53]. "This result is consistent with SRI investors gaining additional utility from their non-

[53] The authors regress the monthly and annual flow of each fund on monthly current returns, monthly lagged returns (up to 3 lags), annual current returns and lagged annual returns (1 lag) respectively. They find that the coefficient on the

financial criteria" (Benson and Humprey, 2007). The same conclusions emerge from Bialkowski and Starks (2016), who find a greater persistence of US SRI funds flows compared to conventional funds as a result of investors' nonfinancial considerations.

Despite the significance of the results elucidated by the cited scholars, they could be somehow limited as they are focused on the US market only. In fact, depending on the country's cultural values, international investors may value some ethical issues more than others, and this could in turn affect the SRI fund flows dynamics in an international setting, involving different flow-return sensitivities that are specific to a country or region. To address this limitation, further evidence on SRI investors incorporating nonfinancial attributes in their utility function is given by Renneboog et al. (2011). The researchers studied whether, in a cross-border context, investors that choose SRI mutual funds are so interested in ethical, social, environmental, or corporate governance factors that they care less about funds' financial performance; a positive answer to this question would signal the presence of a nonfinancial attribute in the utility function of SRI investors which in turn affects SRI funds' money flows and their flow-return relationship. To provide results as accurate as possible, the authors also controlled whether their findings hold for different types of investor clientele who may choose different types of SRI funds, depending on the method of SRI screen used by the funds. Overall, they find that US, UK, Continental Europe and Asia and Pacific regions all present a weaker sensitivity of SRI investors to past poor SRI funds' performances than conventional funds' investors, especially when "negative screens or screens based on specific sin/ethical issues" (Renneboog et al., 2011) are used. This result holds also when risk-adjusted returns are used to carry out the analysis. Following the same vein but adopting a different methodology, a more recent study from Hartzmark and Sussman (2019) highlights that investors value sustainability and are somehow compensated by nonfinancial attributes. To find these results, instead of analyzing flow-performance relationship of mutual funds, the authors observed the fund flows dynamics of more than 20.000 mutual funds prior and after the publication of ESG ratings by Morningstar in 2016. They found that, while fund flows before the rating publication were similar, as a result of the publication and for the next 11 months, funds with maximum ESG rating experienced inflows of about 4% (between USD 12 and 15 billion) while funds with the lowest rating experienced outflows of roughly 6% (between USD 24 and 32 billion).

This empirical evidence suggests that the hypothesis that some investors do value sustainability and therefore are not indifferent to non-financial factors holds. This, as we mentioned in the previous section, has implications for the risk-adjusted returns dynamics of high ESG securities, which are

current monthly return is negative and significant, as well as the coefficient on the current annual return variable. This indicates that SRI investors are less concerned about past returns when they choose to invest in SRI funds.

expected to be higher in the short-term, as investors' social preferences drive up the prices of high ESG stocks, while the discount rate adjusts more slowly. However, in the long run, investors' preferences for highly rated companies may lower high ESG companies' cost of capital (through lowering the cost of equity), and given the higher price of the securities, social investors should not earn higher risk-adjusted returns from high ESG stocks.

4.2.2 ESG Risk

It is plausible that ESG factors may affect stocks' risk and therefore their risk-adjusted returns. Financial theory generally distinguishes between two categories of risk that characterize any financial security: systematic risk and specific risk, which combined determine the total risk of a security as measured by its volatility, or standard deviation. Systematic risk is the type of risk that cannot be diversified away (it is measured by the beta) and is dependent on the sensitivity of a company to general and wide market movements that are common to all businesses. Specific risk (also known as "idiosyncratic" risk), on the other hand, is the risk caused by firm-specific features and is a residual risk component that does not depend on market portfolio return fluctuations and may therefore be diversified away.

Sassen, Hinze and Hardeck (2016) sought to examine the influence of ESG variables on business risk in Europe. They studied the influence of ESG on the three distinct risk measures: total, systematic, and idiosyncratic risk, using a large panel dataset containing 8752 firm-year observations over the period 2002–2014. The risk ratios used to perform the analysis were computed based on the Thomson Reuters Datastream database while ESG measures were taken form the Thomson Reuters Asset4 database. The authors found the existence of a negative relationship between ESG level and stocks' total and idiosyncratic risk, namely, stocks with higher aggregated ESG score have lower total and idiosyncratic risk. Systematic risk is also found to be lower for high ESG stocks but this relationship is weaker: the authors believe that this might be due to the fact that the beta "is driven more by industry-specific than by firm-specific characteristics and is therefore less responsive to the individual ESG performance than the other risk measures" (Sassen, Hinze and Hardeck, 2016). In analyzing the three ESG pillar scores and their impact on the risk measures in greater detail, the authors found evidence that the social pillar is a powerful risk-reduction driver, since it reduces total, systematic, and idiosyncratic risk. Specifically, scores relating to external stakeholders, such as society as a whole and customers, have the greatest impact on the riskiness of equities. Concerning environmental performance, it has been discovered that it reduces idiosyncratic risk in general, and has a significant impact on systematic risk but only in environmentally sensitive businesses. This result is also confirmed by Damodaran (2021), who concludes that the strongest evidence for ESG influencing the

systematic riskiness of financial securities is found among enterprises that are highly exposed to environmental concerns, such as energy companies.

As major limitation of the empirical analysis conducted by the Sassen, Hinze and Hardeck (2016), the authors present the one related to the measurement of ESG factors. In fact, it may be plausible that the results do not hold if different rating scale from different data providers are used to measure ESG. However, by relying on a different dataset, i.e., MSCI ESG database, Dunn, Fitzgibbons and Pomorski (2018) reach the same conclusion. They investigate the relationship between ESG exposure and risk of individual firms and they also find that ESG exposure and firms' riskiness are negatively related. The researchers analyzed companies' data over the period of January 2007 to December 2015, covering stocks in the US, international developed, and emerging markets. The authors found that low ESG stocks have up to 10-15% higher specific risk than high ESG stocks and betas (systematic risk) up to 3% higher. The results are robust across several control variables and consistent both globally as well as in individual regions.

The findings of Sassen, Hinze, and Hardeck (2016) and Dunn, Fitzgibbons and Pomorski (2018) are consistent with the risk management theory proposed by Godfrey (2005), which states that a high ESG company that meets the needs of various stakeholders make these stakeholders more loyal to the company. Consequently, loyal stakeholders may be less likely to overreact to negative company news, which makes the business of high ESG companies less volatile and characterized by lower market risk metrics.

In line with the risk management theory, extensive literature has found that ESG funds tend to be more resilient than conventional funds as they are characterized by a weaker flow-performance relationship. Capota et al. (2022) showed that during March 2020, at the beginning of the pandemic, the outflows experienced by ESG funds, both equities and bonds, have been 3% and 4% respectively lower than that of non-ESG peer funds. According to Riedl and Smeets (2017), this resilience could be a signal for sustainable investors' greater stability and commitment to long-term investments: investors may pose lower risk to short-term demand volatility in favor of perceived greater future stability. Further evidence of sustainable funds resilience is gathered observing ESG funds' performance during crisis periods. Looking at the performance of US and European global green funds, Florinda and Cortez (2016) found that, on average, green funds, especially the European ones, tend to underperform the benchmark, yet they perform better during periods of market turmoil. This suggests that green funds may offer some downside-risk protection in times of financial distress. In the same vein, a study conducted by the European Central Bank (2020)[54] demonstrated the resilience

[54] European Central Bank. (2020). The performance and resilience of green finance instruments: ESG funds and green bonds, URL: https://www.ecb.europa.eu/pub/financialstability/fsr/focus/2020/html/ecb.fsrbox202011_07~12b8ddd530.en.html

of ESG funds showing that in the first quarter of 2020, during the first wave of Covid pandemic, euro financial institutions and household decreased their share in non-ESG fund holdings (by 1-8%, depending on the sector) in favor of ESG funds (which increased by 4-10%).

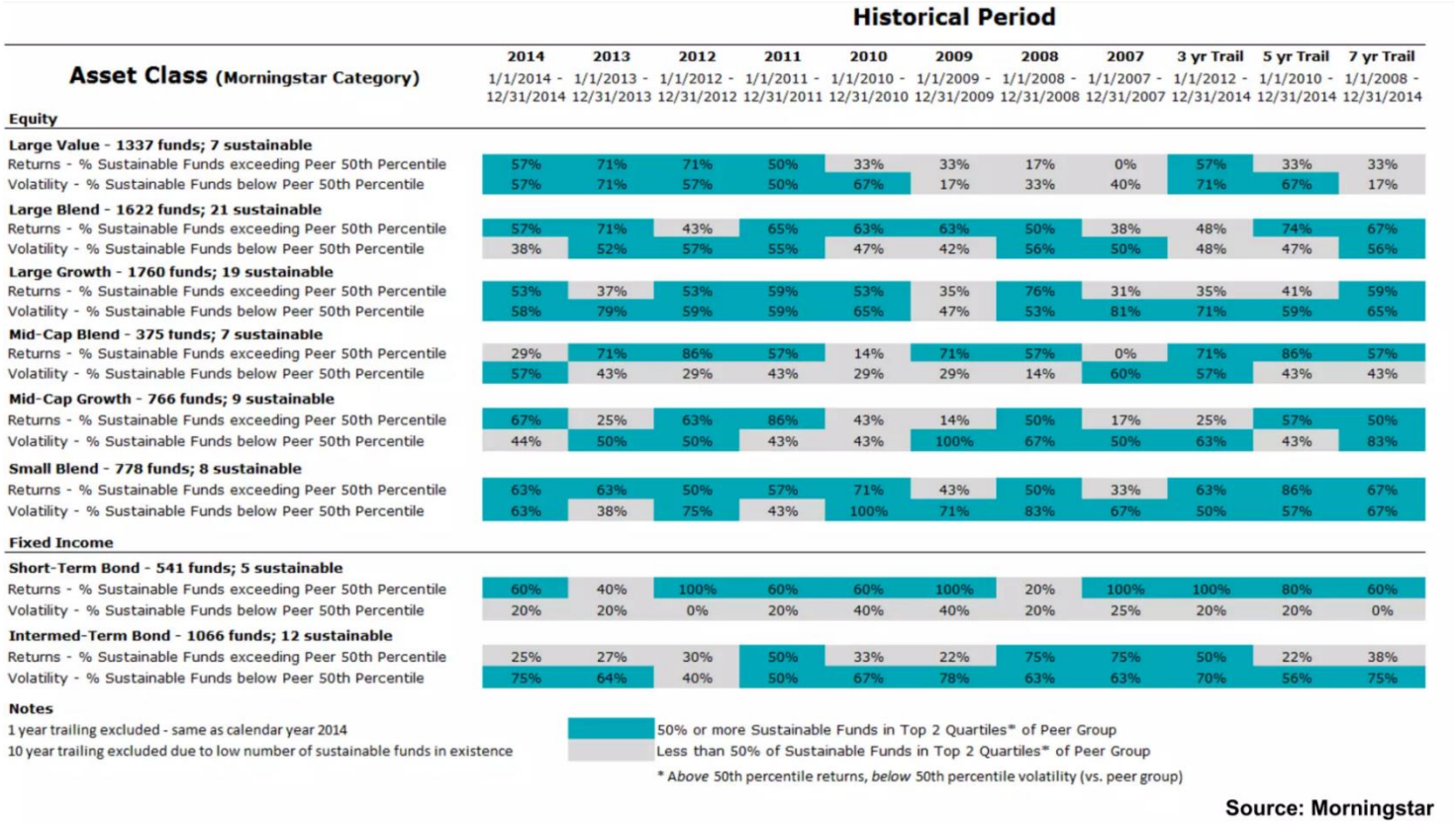
4.3 Empirical evidence supporting a positive impact of ESG on companies' risk and return

The Morgan Stanley Institute for Sustainable Investing undertook a study in 2015 to compare the financial performance and risk profile of sustainable and traditional investments. In order perform the investigation, 10.228 US open-end active mutual funds and 2.874 Separately Managed Accounts (SMAs) both equity and fixed income were selected and analyzed in the period from 2007 to 2014 to determine whether sustainable funds and SMAs have outperformed traditional funds on an absolute and risk-adjusted basis. To assess funds and SMAs performance publicly-available data from Morningstar and Informa PSN respectively were used: among the identified mutual funds, 118 were sustainable equity funds and 31 sustainable fixed income funds while 102 SMAs out of 2.874 were considered sustainable. Mutual funds performance was computed using total returns while gross returns were taken into consideration for SMAs; risk was measured through the standard deviation of the returns for both mutual funds and SMAs. The aim of the research was to detect how well highly sustainable funds were in the top two quartiles of return and risk for their peer group: the authors established that "sustainable funds met or exceeded their peer group in performance if:

- Returns. 50% or more sustainable funds appeared in the top half of returns for their peer group
- Volatility. 50% or more sustainable funds appeared in the bottom half of volatility (standard deviation) for their peer group"[55]

[55] Morgan Stanley, (2015), "Sustainable Reality: Understanding the Performance of Sustainable Investment Strategies."

Sustainable vs. Traditional Mutual Fund Performance



Historical Period

Asset Class (Morningstar Category)	2014 1/1/2014 - 12/31/2014	2013 1/1/2013 - 12/31/2013	2012 1/1/2012 - 12/31/2012	2011 1/1/2011 - 12/31/2011	2010 1/1/2010 - 12/31/2010	2009 1/1/2009 - 12/31/2009	2008 1/1/2008 - 12/31/2008	2007 1/1/2007 - 12/31/2007	3 yr Trail 1/1/2012 - 12/31/2014	5 yr Trail 1/1/2010 - 12/31/2014	7 yr Trail 1/1/2008 - 12/31/2014
Equity											
Large Value - 1337 funds; 7 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	57%	71%	71%	50%	33%	33%	17%	0%	57%	33%	33%
Volatility - % Sustainable Funds below Peer 50th Percentile	57%	71%	57%	50%	67%	17%	33%	40%	71%	67%	17%
Large Blend - 1622 funds; 21 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	57%	71%	43%	65%	63%	63%	50%	38%	48%	74%	67%
Volatility - % Sustainable Funds below Peer 50th Percentile	38%	52%	57%	55%	47%	42%	56%	50%	48%	47%	56%
Large Growth - 1760 funds; 19 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	53%	37%	53%	59%	53%	35%	76%	31%	35%	41%	59%
Volatility - % Sustainable Funds below Peer 50th Percentile	58%	79%	59%	59%	65%	47%	53%	81%	71%	59%	65%
Mid-Cap Blend - 375 funds; 7 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	29%	71%	86%	57%	14%	71%	57%	0%	71%	86%	57%
Volatility - % Sustainable Funds below Peer 50th Percentile	57%	43%	29%	43%	29%	29%	14%	60%	57%	43%	43%
Mid-Cap Growth - 766 funds; 9 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	67%	25%	63%	86%	43%	14%	50%	17%	25%	57%	50%
Volatility - % Sustainable Funds below Peer 50th Percentile	44%	50%	50%	43%	43%	100%	67%	50%	63%	43%	83%
Small Blend - 778 funds; 8 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	63%	63%	50%	57%	71%	43%	50%	33%	63%	86%	67%
Volatility - % Sustainable Funds below Peer 50th Percentile	63%	38%	75%	43%	100%	71%	83%	67%	50%	57%	67%
Fixed Income											
Short-Term Bond - 541 funds; 5 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	60%	40%	100%	60%	60%	100%	20%	100%	100%	80%	60%
Volatility - % Sustainable Funds below Peer 50th Percentile	20%	20%	0%	20%	40%	40%	20%	25%	20%	20%	0%
Intermed-Term Bond - 1066 funds; 12 sustainable											
Returns - % Sustainable Funds exceeding Peer 50th Percentile	25%	27%	30%	50%	33%	22%	75%	75%	50%	22%	38%
Volatility - % Sustainable Funds below Peer 50th Percentile	75%	64%	40%	50%	67%	78%	63%	63%	70%	56%	75%

Notes

1 year trailing excluded - same as calendar year 2014

10 year trailing excluded due to low number of sustainable funds in existence

50% or more Sustainable Funds in Top 2 Quartiles* of Peer Group

Less than 50% of Sustainable Funds in Top 2 Quartiles* of Peer Group

* *Above* 50th percentile returns, *below* 50th percentile volatility (vs. peer group)

Source: Morningstar

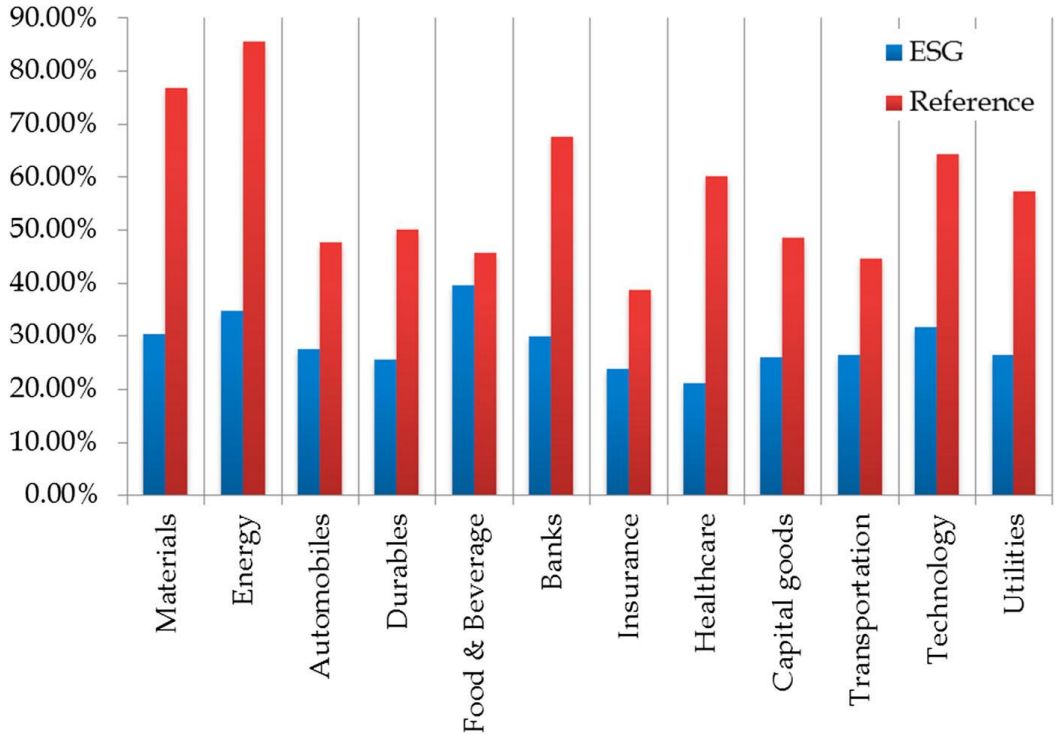
Source: Morgan Stanley, (2015), "Sustainable Reality: Understanding the Performance of Sustainable Investment Strategies."

Overall, among mutual funds, sustainable funds performed equally or better than traditional funds for 64% of the periods examined and they also met or fell below the median volatility of traditional funds for the same percentage of the considered periods.

From the risk side, similar results to mutual funds are obtained by SMAs which performed better than their traditional counterparts, with equal or lower volatility for 72% of the periods examined. However, considering gross returns, SMAs exceeded their traditional counterparts only for 36% of the periods examined, therefore, on a risk-adjusted basis, sustainable SMAs' performance did not differ significantly from traditional SMAs. The results of this study represent evidence in favor of sustainable financial instruments, which would represent not only morally but also economically convenient instruments, without entailing any financial sacrifice for investors. However, it should again be noted that the correlation between sustainability and higher returns does not necessarily imply a causal link. Furthermore, it is not certain that there are other factors besides the sustainable profile of companies that can influence the risk and return profile of the companies under investigation and determine these results.

Since the scope of the study conducted by Morgan Stanley was limited to mutual funds and SMAs and only to the US, authors Kumar et al. (2016) extend the work conducted by Morgan Stanley (2015) by focusing on publicly listed equity stocks. According to the study conducted by Kumar et al. (2016), there is evidence that high ESG stocks exhibit lower volatility than normal or low ESG stocks in the same industry, and that this decreased risk does not translate into lower returns but rather the same or greater financial performance. Such evidence would go against the classical financial theory according to which a lower risk must correspond to a lower return. The analysis carried out by the authors took into consideration a two-year time span from 1 January 2015 to 31 December 2015, in which the financial performance of 157 companies listed on the Dow Jones Sustainability Index (DJSI) and 809 companies that are not listed on the DJSI were analyzed. The DJSI is recognized as one of the main indices that brings together all the large cap companies that implement best market practices in relation to ESG aspects: hence, these are the 'best-in-class' and are selected through the rating agency RobecoSAM, which carries out the sustainability assessment. The remaining 809 companies identified for the analysis can be considered as representative of the average market performance. The materiality of ESG factors obviously takes into account the industry to which the companies under analysis belong, therefore, the entire research is conducted by distinguishing 12 industries, and also considering the geographic location and the level of market development (developed vs. emerging). The authors analyzed the annualized weekly returns and the annualized volatility of the weekly returns over the considered period and they found that ESG companies exhibit lower volatility in their stock performances that their peers in the same industry, as shown in the graph below.

Annualized volatility comparison between ESG and reference companies

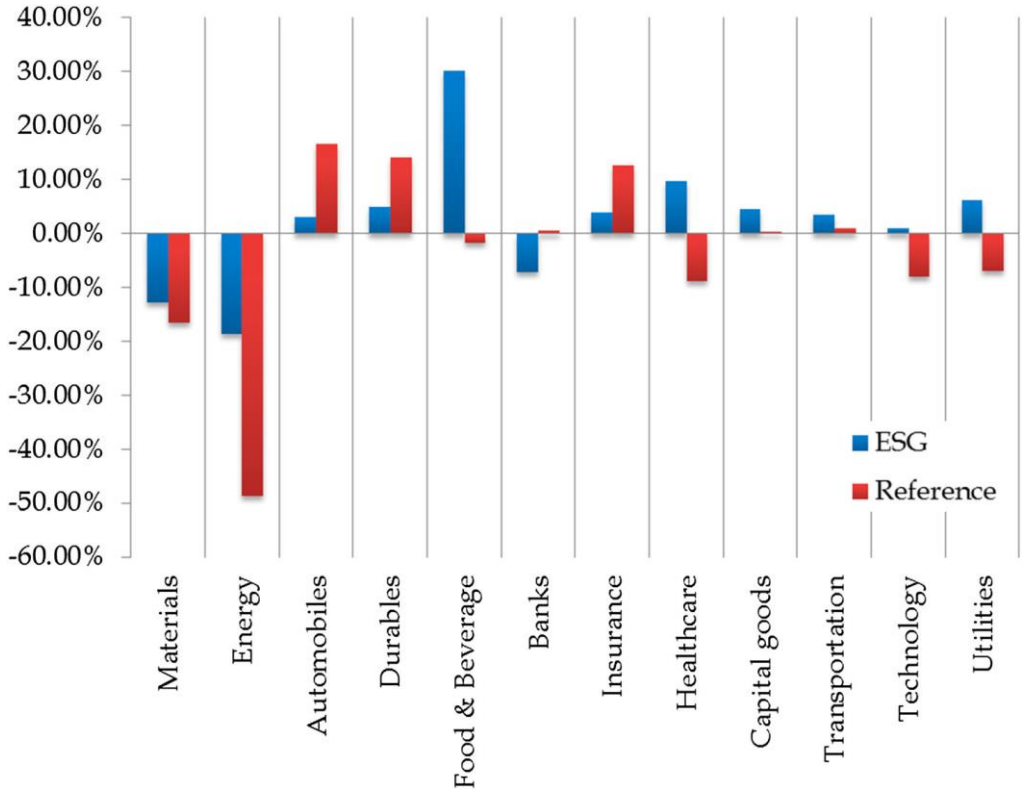


Source: Kumar, A., Smith, C., Badis, L., Wang, N., Ambrosy, P., and Tavares, R., (2016), ESG factors and risk-adjusted performance: a new quantitative model, Journal of Sustainable Finance & Investment

The graph clearly shows that for each industry analyzed, companies with high ESG levels are characterized by lower volatility - on average by 28.67% - and thus lower risk. This relationship is especially valid in the materials, energy, banking and technology industries.

At the same time, when analyzing stock returns, it can be seen from the graph below that for all industries except banking, insurance, durables and automobiles, lower risk does not correspond to lower return but, on the contrary, to a better performance of ESG stocks of 14.08% on average.

Annualized return comparison between ESG and reference companies



Source: Kumar, A., Smith, C., Badis, L., Wang, N., Ambrosy, P., and Tavares, R., (2016), ESG factors and risk-adjusted performance: a new quantitative model, Journal of Sustainable Finance & Investment

As a result, the argument made by the authors is that investing into high ESG companies leads to higher risk-adjusted returns.

However, it needs to be pointed out again that such promising results for the sustainable investors audience may not be true for ESG measures other than RobecoSAM. Furthermore, as the period of analysis considered is very short (only two years), these results may not reflect the long-term behaviour of ESG securities, reflecting instead short-term dynamics, which, as we have previously discussed, can strongly influence the performance of sustainable securities.

The research conducted by Eccles, Ioannou, and Serafeim in 2012 addresses the limitation of the short time frame: the authors analyzed a matched sample of 180 companies, divided into *High Sustainability* (90 companies) and *Low Sustainability* (90 companies) groups (both value-weighted and equally-weighted), in order to investigate potential performance differences between the two groups. The researchers tracked the stock market performance of companies in both categories from 1993 to 2010, a lengthy period of time that may reveal some long-term trends of sustainable versus conventional financial assets. Eccles et al. found that *High Sustainability* companies had a higher

annual abnormal returns[56] compared to *Low Sustainability* companies by 4.8% on a value-weighted base and by 2.3% on a equal-weighted base. The abnormal returns were computed using a four factor model that controls for the market, size, book-to-market, and momentum factors. In addition to a superior financial performance, the *High Sustainability* group of companies exhibits lower volatility (measured by the standard deviation) over the considered period. Indeed, the standard deviation of abnormal returns for the *High Sustainability* group on value-weighted and equal-weighted base is 1.43% and 1.72% respectively, while for the *Low Sustainability* group the corresponding estimates are 1.72% and 1.79%. In particular, the better performance of high-sustainability companies compared to traditional companies is found in relation to three factors: the target market, i.e., B2B (business to business) or B2C (business to consumers), the brand value and reputation within the target sector and the production/extraction by the company in question of large amounts of natural resources such as oil and gas, industrial materials, etc. In fact, according to the authors, B2C business is where the individual consumers are the customers and therefore the "sensitivity of individual consumers to the company's public perception is higher and, as a result, the link between sustainability and greater customer satisfaction, loyalty, and buying decisions should be stronger" (Eccles et al., 2012). Moreover, when competition in a specific sector is driven by brand and reputation, companies usually face continuous investment in rapid innovation and select high-quality human capital to develop new products and implement well-targeted marketing campaigns. Therefore, it is expected that sustainability can play a valuable role in these sectors, in the sense that companies that, by virtue of their high sustainable profile, attract better employees, manage reputational risk more accurately and achieve high levels of innovation will perform better than their peers. Finally, given the rising pressure and public scrutiny to which companies with high environmental footprint have been subjected, it can be easily expected that in sectors where companies make large consumption of natural resources, sustainable companies will benefit in a stronger fashion from the implementation of sustainable practices and reach higher financial performances. The authors tested all these hypothesis empirically and found reliance in the data: "*High Sustainability* firms in B2C or Brand sectors outperform their counterparts in 13 out of 18 calendar years whereas *High Sustainability* firms in the Natural Resources sectors outperform their counterparts in 11 out of 18 years" (Eccles et al., 2012).

In order to verify that the higher financial performance of *High Sustainability* firms compared to *Low Sustainability* companies was not driven by the price pressure caused by the rapid spread and growth of Socially Responsible Investing (SRI), Eccles et al. also analyzed accounting measures of the two

[56] The abnormal return is generically reffered to as "alpha" and it is a risk-adjusted performance measure that represents the average return on a portfolio or investment, above or below that predicted by the risk-factor model. This risk-adjusted performance measure only accounts for systematic risk

groups of companies. Again, they found that *High Sustainability* companies' accounting rates of return were higher than *Low Sustainability* firms' in 14 out of 18 years examined.

4.4 Empirical evidence supporting a neutral or negative impact of ESG on companies' risk and return

Although there are a number of studies showing that sustainable investments result not only in higher returns but are also less risky, this would seem to be a condition that is too good to be true, and which goes against the most historic established law within the financial markets: lower risk, lower return. Overall, most of the empirical findings suggest that risk-adjusted returns do not differ significantly between SRI and conventional types of investments, meaning that sustainable investing does not seem to compensate investors neither with greater financial returns nor with lower (Renneboog et al., 2008, Saur, 1997, Rivelli and Viviani, 2015, Auer and Schuhmacher, 2016). Furthermore, Auer and Schuhmacher (2016) outline that there are some combinations among certain regions and types of screening that lead to underperformances of SRI funds, therefore, only investors that are willing to pay for environmental and social impact would invest there. Barber et al. (2021) also show that SRI funds significantly underperform traditional funds, even after controlling for funds' geography and industry which may affect the variation in performance between impact and conventional funds.

The study conducted by Auer and Schuhmacher (2016) was aimed at detecting whether investing into high ESG portfolios or low ESG portfolios produced greater risk-adjusted returns compared to investing into a passive market index. The authors also studied the relative performance of high ESG portfolios compared to low ESG ones. In order to run their analysis, Auer and Schuhmacher selected 632, 914 and 572 companies from the Asia-Pacific region, the United States and Europe respectively, distinguished in four broad industries: production / supply capital (e.g., automobiles, construction, machinery), consumption (e.g., food producers, retailers, media), financial (e.g., banks, insurance, real estate) and other / miscellaneous goods or services (e.g., chemicals, pharmaceuticals, commodities). After selecting the companies, the authors constructed two equally weighted portfolios of high ESG and low ESG companies by relying on ESG score data from Sustainalytics and by setting different cut-off rate, from 5% to 25%. Due to the availability of the data, the monthly sample used for the analysis ranges from August 2004 to December 2012: to construct the portfolios, at the end of each month, the authors ranked the stocks according to their ESG rating and selected the best 5% of the stocks to form the high ESG equally-weighted portfolio. The same procedure was repeated with the others cut-off rates. Besides, the benchmark portfolios were simply equally weighted portfolios representing the relevant stock universe. In contrast with the study conducted by Eccles et al. (2012),

in this case the portfolios' risk-adjusted performance was measured using the Sharpe Ratio, which is a common measure of companies' risk-adjusted performance that accounts for both the systematic and the idiosyncratic risk of the firm. In fact, the authors believe that using the alpha as a risk-adjusted performance measure is not entirely correct, due to the fact that the alpha only accounts for the systematic risk of a company and therefore it is appropriate only for well diversified portfolios that are solely concerned with their exposure to market (systematics) risk. However, "if SRI screens restrict the investment universe, investors may inadvertently subject themselves to otherwise diversifiable (unsystematic) risk. In this case, it is more reasonable to use a performance measure based on total risk, rather than market risk" (Auer and Schuhmacher, 2016).

Overall, the authors found that no significant difference can be detected between the risk-adjusted performance of high ESG portfolios and the benchmarks. In fact, only 15 out of 60 constructed high-rated portfolios showed higher Sharpe ratios than their respective benchmarks. Also, when we look at the relative performance of high and low ESG portfolios, only 18 out of 60 high-rated portfolios have outperformed the low-rated counterparts. The results are also highly influenced by the geographic and industry focus of the portfolios. Indeed, while in the Asia-Pacific and the US regions there is no significant difference between the risk-adjusted performance of high (low) ESG stocks and the benchmarks, for some specific industries in Europe, high ESG portfolios significantly underperform the passive benchmarks, achieving lower risk-adjusted returns.

Negative results in terms of relationship between sustainability and financial returns are also obtained by the study carried out by Barber, Morse and Yasuda in 2021. The study, examines the financial performance (measured in terms of internal rate of return, IRR) of impact funds compared to traditional funds, over the period from 1995 to 2014. In order to carry out the analysis, the authors selected a sample of funds, namely venture capital and growth equity funds, referred to as VC, of which 4.500 were traditional funds and 159 impact funds, selected according to the criterion that a fund is considered an impact fund if it states "the dual objectives of generating a positive externality in addition to earning financial returns" (Barber et al., 2021). To measure the difference in financial performance between impact and traditional VC funds, Barber et al. adopted reduced-form regressions of fund performance:

$$IRR_j = \alpha + \beta IMP_j + X\Gamma + \varepsilon_j$$

Where the dependent variable is the Internal rate of return of the fund j, and the independent variables are IMP_j, which is a dummy variable that takes the value on 1 if the fund is an impact fund and 0 otherwise, and X, a matrix that contains control variables that may affect the IRR of the fund, such as size, fund sequence number, vintage year[57], fund industry and geography. The authors run six different variations of the previous regression, in order to accurately control for any variable that may capture some effect on funds' IRR:

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: IRR						
Impact	−7.890***	−9.937***	−4.701**	−4.898**	−4.652*	−5.359**
	[2.548]	[2.386]	[2.282]	[2.440]	[2.555]	[2.520]
Observations	1283	1252	1252	1252	1252	1252
R-squared	0.004	0.146	0.166	0.288	0.19	0.274
Panel B: Value multiple						
Impact	−0.403***	−0.465***	−0.361***	−0.265*	−0.228*	−0.194*
	[0.124]	[0.107]	[0.137]	[0.141]	[0.122]	[0.103]
Observations	1456	1417	1417	1417	1417	1417
R-squared	0.002	0.117	0.125	0.184	0.122	0.204
Panel C: Percentile rank						
Impact	−0.149***	−0.158***	−0.089**	−0.093**	−0.083**	−0.078*
	[0.037]	[0.037]	[0.040]	[0.045]	[0.040]	[0.040]
Observations	1505	1465	1465	1465	1465	1465
R-squared	0.014	0.027	0.068	0.17	0.121	0.164
Controls for all panels in column						
Vintage year FE	NO	YES	YES	NO	NO	NO
Log(fund size)	NO	YES	YES	YES	YES	YES
Log(fund sequence)	NO	YES	YES	YES	YES	YES
Fund geography FE	NO	NO	YES	NO	YES	NO
Fund industry FE	NO	NO	YES	YES	NO	NO
Vintage group*Geography	NO	NO	NO	YES	NO	NO
Vintage group*Industry	NO	NO	NO	NO	YES	NO
Vintage grp.*Industry*Geography	NO	NO	NO	NO	NO	YES

Source: Barber, B. M., Morse, A. and Yasuda, A., (2021), Impact Investing, Journal of Financial Economics, Vol. 139 (1), 162-185

As shown in the figure above, they found that impact funds reliably underperform traditional VC funds. In fact, in the first regression, when no controls are added, impact funds underperform traditional VC funds by 7.89 percentage points. When controls for vintage year, fund size, fund sequence, geography and industry are added, they capture part of the variation in IRR, yet impact funds still show an IRR lower by 4.7 percentage points than traditional funds, and the underperformance remains robust even when finer controller are added in the regressions 4, 5 and 6. The authors comment that these results are consistent with the argument that impact funds generate below-average returns because they put a constraint on the investment opportunity set, namely the development of positive externalities, which hinders performance.

[57] Vintage year refers to the year in which the first influx of investment capital is delivered to a project or company: this marks the moment when the capital is committed by investors to the fund.

A potential counterargument that could be advanced to contrast the theory of limited diversification is that “by diversifying internationally, socially responsible funds may increase their investment opportunity set and overcome this potential limitation” (Cortez et al., 2012). Consequently, Cortez et al. (2012) test whether socially responsible funds that invest globally can achieve superior financial performance compared to traditional funds. Their results also support the theory that the risk-adjusted performance of sustainable funds does not differ significantly from that of traditional funds. Specifically, the authors analyzed the performance of 46 funds from the USA, Austria, Belgium, France, Germany, Italy, Netherlands and the UK over the period from August 1996 to August 2008 and found that there are certain regions where sustainable funds reliably underperform traditional funds. Indeed, the authors demonstrate that “global socially responsible funds in most European markets do not exhibit significant performance differences in comparison with both conventional and socially responsible benchmarks. On the contrary, US funds, and to a lesser exten, Austrian funds, show evidence of underperformance” (Cortez et al., 2012).

4.5 Open questions

Several reasons may have contributed to the lack of unanimity and inconsistent empirical outcomes concerning the differences between sustainable and traditional investments. There is a wide range of geographies covered by the studies, and some SRIs even include more than one country's economy, which can affect the results of the empirical analyses due to different investors’ and companies’ behaviors in different countries. Furthermore, investment horizon unquestionably affects SRIs' financial performance. Indeed, if the period of observation is short, it becomes challenging to identify the specific effect of CSR on performance, “as the outcomes could be due to transitory factors or the correlation of SR characteristics with other elements that explain stock performance in a particular period” (Revelli and Viviani, 2015). Additionally, the impact of the financial performance measure needs to be taken into account. Researchers use a wide variety of metrics, that can range from straightforward assessments based on raw returns to single-factor models derived from portfolio theory or the capital asset pricing model, and even complex multifactor models. Finally, as repeatedly stated, the choice of provider for ESG data is of no less importance, as it can strongly influence the results of the analysis performed, which may not hold up if a different data set is used.

All these factors mean that there is still very little certainty and strong ambiguity about the influence that ESG factors have on the financial performance of companies and the cost-effectiveness of sustainable versus traditional investments. Ultimately, a more thorough examination will yield more robust and reliable results. To obtain more insights, it will be necessary for more empirical evidence to become available for analysis in order to assess, also in the light of the new regulations issued by

the European Union, whether and how sustainable investments differ from traditional investments and how, if at all, the sustainable performance of a company directly or indirectly influences its financial performance.

Conclusion

Thanks to the numerous global initiatives in the field of sustainability such as the Paris Agreement, the introduction of the 2030 Agenda and the SGDs, and the very strong regulatory push by European regulatory authorities towards sustainability through the adoption of the Action Plan for Sustainable Finance, the pressing need to revisit business operations in a sustainable way has become real and even imperative for companies to remain competitive within the market in the long run. Consumers' growing awareness of the importance for companies to undertake economic choices that do not have negative impacts on the surrounding social and environmental spheres strongly contributes to urging companies to adopt internal systems and processes to monitor their environmental impact and implement social initiatives in line with those promoted by the SDGs. At the same time, not only consumers but also investors have gradually realized the need to direct their capital towards companies that also pay attention to social and environmental issues, in order not to incur potential losses due to the materialization of environmental and social risks. Investors' increased focus on social and environmental issues has made sustainable finance a global phenomenon, as evidenced by the number of sustainable AuM that has reached $41 billion and is expected to reach up to $50 billion by 2025, about one-third of the projected $140 global AuM according to Bloomberg Intelligence. The introduction of the Principles for Responsible Investment and the exponential growth in the number of signatories (now 4,683) are also strong evidence of the magnitude and importance of the sustainable wake that is sweeping the entire financial world. The financial industry is the economic engine of the sustainable transition, which, together with the work of policymakers, will enable the sustainable economic development of the coming years.

European sustainability regulation has evolved very rapidly in recent years, with the introduction in 2018 of the package of regulations and directives contained in the Action Plan for Sustainable Finance. This new package of regulatory initiatives fits within a very ambitious goal on the part of the EU, namely, to achieve climate neutrality by 2050. The European regulatory system regarding sustainability that has been built up so far is basically aimed at directing investors' investment choices towards financial products and economic activities that can be considered sustainable. To achieve this aim, the European Union has acted on two fronts: on the one hand, it has introduced a common

sustainability alphabet for all economic actors, defining what 'sustainable economic activity' means and under what conditions a business can be considered as such. On the other hand, the European Commission has outlined a system of disclosure of non-financial information by companies, financial advisers and financial market participants, in order to increase transparency within the market and to provide investors with the necessary information to make investment choices that take sustainability aspects into account. The Taxonomy Regulation, the Sustainable Finance Disclosure Directive and the recently introduced Corporate Sustainability Reporting Directive are the reference regulatory texts for the pursuit of European sustainability goals. Thanks to the introduction of these new legislations, greater and higher quality non-financial information are believed to be delivered soon in the market. However, it is expected that adopting all these information disclosure standards will be a challenging process that has to be continuously supervised by the competent authorities. European policymakers will have the task of constantly verifying that the regulatory framework they have developed is dynamic and responsive to current and future market needs, and they will have to keep up with the rapid development of the financial system in order to avoid being out of date as soon as new regulations or directives come into effect. Furthermore, since the definition of sustainable economic activity in the Taxonomy now only covers environmental sustainability, it is expected that the European authorities will legislatively supplement the concept of sustainability by also including the social dimension. This is intended to broaden the scope of regulations, which up to now have focused on the environmental dimension, and extend it to what is actually required by financial market participants, also in line with the goals of the 2030 Agenda. It will therefore be the task and challenge of policymakers to keep pace with the evolution of financial markets and not to create inconsistencies between European regulations and the needs of non-financial information of financial market participants.

Within the world of sustainability, a central issue is that of ESG ratings, which represent the biggest hurdle to overcome for the successful implementation of the transition. In fact, although European regulations for sustainability are aimed at drastically increasing the amount of information on the sustainable profile of companies and financial players within the market, this information is still not declared in a standardized way, and not all companies, especially small and medium-sized companies, are subject to the disclosure obligation. As a result, over the past decade, investors have turned to third party data providers, such as rating agencies, to acquire such information and bridge the knowledge gap between corporations and investors regarding non-financial concerns. Consequently, rating agencies and ESG data providers have acquired a central role within the transition, acting as a hub within the exchange of non-financial information between investors and corporations and thus

greatly influencing investors' investment choices. However, the issue that arises in this circumstance concerns the fact that ESG ratings produced by rating agencies differ substantially and in many respects from each other. Indeed, the study conducted by Berg et al. (2022) shows a low correlation between ESG ratings of between 0.38 and 0.71. This means that two different rating agencies assessing the sustainability of the same company can arrive at two very different and conflicting results. Clearly, this generates enormous confusion among the investing public, and makes the sustainability of a company a concept entirely relative to the methodology used to measure ESG factors. The discrepancies between the ratings produced by different agencies may arise from differences in the choice of indicators used to measure the E, S, G components, or from differences in the measurement of each indicator or the weight assigned to it. In addition, several recurring biases in the measurement of ESG factors are noted, such as the dimensional bias, whereby larger companies are more likely to receive higher ESG ratings than smaller companies, or the geographical bias, whereby companies operating in geographic areas that are more regulated on sustainability, such as Europe, are more likely to receive higher ESG ratings than other companies. These critical issues have major implications for the evolution of sustainable finance and its future research. In fact, as investment decisions are heavily influenced by ESG ratings, the disagreement among those could undermine the realization of the transition. What is hoped for the future is that the introduction of the new European regulations, which more clearly define the criteria for deeming a business to be sustainable, will help bring about a greater degree of standardization in the measurement of ESG factors. In addition, the more orderly and digitized disclosure of non-financial information that will be implemented by companies thanks to the entry into force of the CSRD may facilitate the collection of such information for investors and also for rating agencies, which will then start from a more homogenous information base for the composition of their ratings, generating more aligned sustainability judgements.

The rating issue becomes more challenging when it comes to small and medium-sized enterprises. Including SMEs in the ESG rating range is of crucial importance for the development of economic sustainability as SMEs account for more than 99% of all businesses in EU, and they are responsible, on aggregate, for almost 70% of industrial pollution in Europe. The main concern with ESG ratings for SMEs is that on average, SMEs approach to sustainable innovation is still informal and unstructured and rating agencies are often unable to incorporate SMEs' internal procedures and informal norms that are not documented by public records in their sustainability analysis. Lack of data, and the presentation of non-financial information in an unstructured manner due to SMEs' still low awareness of international sustainability norms are the main problems inherent in the world of SMEs, and the major differentiator of SMEs compared to listed companies. In fact, information about

the sustainable profile of SMEs is often difficult to find for the companies themselves, and it is sometimes the case that it is the companies themselves that are unaware that certain implemented practices would be considered as elements of sustainability by an evaluator. This can be seen both in the data from McKinsey's 2016 and Equita's 2020 surveys, and also in the testimony of Dr Latin, who works in Modefinance's ESG team. In the words of Dr Latin, in order to be prepared for 2026, SMEs should start acting by taking a long-term approach to all sustainability issues. This translates into the establishment of internal processes and dedicated teams to carry out the reporting of non-financial information and an increased awareness of sustainability issues, in order to be prepared in 2026 and take advantage of the competitive benefit provided by sustainability.

The uncertainty generated by the lack of an unambiguous methodology for measuring ESG factors is also reflected in the empirical analyses carried out by scholars to determine the impact of ESG factors on corporate financial performance. Indeed, a problem underlying any ESG assessment lies in the lack of a standardized measure of such factors. As a result, the empirical evidence on how ESG factors influence the value of a company is very ambiguous, and there is still no unique answer to the question of whether high ESG companies create more value than 'bad companies'. In recent years, there has been a growing strand in the literature aimed at identifying the existence of a link between the sustainable (qualitative) and financial (quantitative) spheres of companies. However, the empirical findings of the studies carried out are highly fragmented and conflicting. Theoretically, in order to determine whether the degree of sustainability of a company has an impact on its financial performance, it must be shown that ESG factors influence one or more of the company's value drivers, i.e. revenue growth, investment efficiency, operating margins or cost of capital, in a way that either increases the expected free cash flows or reduces the discount rate. Reasons that would justify an increase in free cash flows for high ESG companies are, for instance, increased revenues due to a greater ability of companies to attract and retain customers, accrued productivity of employees justified by their deeper engagement in company activities or an increased ability to attract high quality employees. Alternatively, strong sustainability performance can reduce firms' costs by easing regulatory pressure on firms and allowing them to move more freely in the market, facing fewer regulatory and legal costs. Cost reduction can also be achieved by counteracting the increase in operating expenses due to rising raw material costs. From the point of view of the cost of capital, a high degree of sustainability of companies can lead to a reduction in their cost of capital by reducing the cost of equity or the cost of debt. This can happen if equity investors who value corporate social responsibility invest their money in virtuous companies, leading to a decrease in the cost of equity,

or if lenders provide money to high ESG companies at a lower interest rate because of the social or environmental mission of the companies.

The main empirical evidence shows that ESG factors influence the value of a company mainly through the reduction of the risk (and thus the cost of capital) associated with the company's business. In fact, although several studies find a positive correlation between ESG rating and firm profitability, two main issues are identified: first, most studies fail to find a causal relationship between ESG rating and firms' profitability. This means that it is not clear whether it is the good companies that are more profitable or the more profitable companies that find it easier to look good because they have more resources available to invest into sustainable innovation. If this were the case, the implementation of sustainable practices would not actually be a driver of value, but rather a privilege 'for the few', i.e. for those companies with sufficient resources to be able to invest in sustainable activities and improve their reputation. Secondly, a further problem that emerges from the empirical analysis conducted by several researchers is that the results are not homogeneous among the different methodologies used to measure ESG factors. This obviously undermines the robustness of the results of the empirical analysis and weakens the evidence supporting a positive correlation between sustainability and increased profitability. From a discount rate perspective, stronger evidence can be found in the literature that companies with a high ESG content are characterized by lower discount rates due to their lower financing cost and limited exposure to environmental catastrophe risks and cost spikes. Such limited exposure to environmental and social risks may be justified by the fact that companies with a strong sustainable profile put in place more accurate risk control and compliance processes, both within the firms and across the entire supply chain. As a result, high ESG companies are less exposed to incidents that could harm their value and lower their stock prices, such as fraud, embezzlement, corruption or litigation cases. Several empirical studies conducted by researchers have found a negative correlation between the degree of sustainability of companies and their specific and systematic risk. In fact, most studies find that low ESG companies are characterized by higher beta and idiosyncratic risk than high ESG companies. In line with risk management theory, this would also be justified by the fact that high ESG companies, by meeting the needs of different stakeholders, make the latter more loyal to the company and hence less inclined to overreact to negative company news. This makes the business of sustainable companies less volatile and characterized by lower market risk metrics. In particular, the social pillar seems to be a powerful risk-reduction driver as scores relating to external stakeholders, such as society as a whole and customers, have the greatest impact on the riskiness of equities. The environmental performance also has an impact on the riskiness of a stock, yet this impact is stronger and significant only in environmentally sensitive businesses.

The way ESG factors influence the value of a company should immediately be reflected in the returns obtained by investors who have invested their capital in the company in question. However, as we are still at an early stage of the transition, it is possible that there may be movements within markets that are not justified by the underlying securities. In fact, one of the major discussed topics in sustainable finance is whether investors make excess returns on ESG stocks, that is, whether investing into high ESG stocks reward investors with greater risk-adjusted returns. Empirical evidence concerning this topic is highly ambiguous and no unique and exhaustive answer exists yet. There are several studies that support the argument that investing into high ESG stocks yields a higher return and simultaneously bears less risk. However, this seems a condition that is too good to be true, which may be driven by short-term dynamics but that cannot hold in the long run, as it goes against the most historic established law within financial markets: lower risk, lower return. Overall, most of the empirical findings suggest that risk-adjusted returns do not differ significantly between SRI and conventional types of investments, meaning that sustainable investing does not seem to compensate investors neither with greater risk-adjusted financial returns nor with lower. This would seem to be in line with studies that show a lower riskiness of companies with a high degree of sustainability.

In conclusion, the analysis of the present literature on the topic of sustainability leads us to conclude that firms' engagement in sustainable activities would seem to involve a reduction in business riskiness. In fact, companies' awareness of the risks related to the environment and surrounding society and the introduction of internal systems and processes to monitor and manage these risks suggest that companies are more 'protected' from the occurrence of environmental or social events that may harm their profitability. Certainly, additional empirical evidence is needed to shed more light on how ESG factors are able to influence the risk-return profile of companies. As repeatedly stated, the non-standardization of ESG factor measurement systems and the early stage of the economic transition do not allow for unambiguous answers. However, as the transition progresses and European regulations introduce greater transparency and homogeneity of non-financial information, it will be possible to shed light on the unclear issues present today, and thus give a strong impetus to the evolution of the economic transition towards sustainability.

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Executive Summary

Long-term structural issues of climate change and the growing social inequalities are deeply affecting both the real economy and the financial system that underpins it. As a result, the term 'sustainable development' has progressively become established in economic and everyday language to indicate the need to move economic activities towards a business model that better respects and preserves the environment and society. Customers' awareness of environmental and social issues has risen exponentially over the past decade and new market opportunities in the light of sustainability are soaring. Companies are fostering their sustainable profile and investors from all the globe are moving their capitals towards high sustainable companies. In fact, the financial industry is acting as a catalyst for advancing sustainability by providing funding for economic activities, which in turn have a tangible effect on climate and social issues. At the same time, European policymakers are setting the normative landscape of the transition, by outlining a regulatory framework for sustainable development, i.e., a clear and transparent set of rules, standards and guidelines for investors and market participants aimed at effectively steering financial flows into relevant economic activities. The transition toward a sustainable economy is estimated to be extremely costly and it presents no small challenge to the political parties charged with leading it. However, inaction would entail even greater costs caused by, for instance, the occurrence of numerous natural disasters that would damage many productive activities. These costs are estimated to account for about 10% of global GDP. In contrast, the intervention to promote the transition would entail significative yet lower costs of around 2% of global GDP.

This paper has the aim to provide a comprehensive view of the phenomenon of sustainable development that is taking place within our economic system and which represents one of the most far-reaching phenomena of recent decades. Being a highly topical and evolving issue, there is a great deal of literature on the subject, but it is still highly fragmented. Therefore, the objective and also the challenge that the author of the paper has set herself is precisely that of gathering together in a single text the most relevant aspects concerning sustainable development, and going over, adopting a critical approach, the evidence and discordances present in the literature, grasping the points of greatest interest.

Thanks to the numerous global initiatives in the field of sustainability such as the Paris Agreement, the introduction of the 2030 Agenda and the SGDs, and the very strong regulatory push by European regulatory authorities towards sustainability through the adoption of the Action Plan for Sustainable

Finance, the pressing need to revisit business operations in a sustainable way has become real and even imperative for companies to remain competitive within the market in the long run. Consumers' growing awareness of the importance for companies to undertake economic choices that do not have negative impacts on the surrounding social and environmental spheres strongly contributes to urging companies to adopt internal systems and processes to monitor their environmental impact and implement social initiatives in line with those promoted by the SDGs. At the same time, not only consumers but also investors have gradually realised the need to direct their capital towards companies that also pay attention to social and environmental issues, in order not to incur potential losses due to the materialisation of environmental and social risks. Investors' increased focus on social and environmental issues has made sustainable finance a global phenomenon, as evidenced by the number of sustainable AuM that has reached $41 billion and is expected to reach up to $50 billion by 2025, about one-third of the projected $140 global AuM according to Bloomberg Intelligence. The introduction of the Principles for Responsible Investment and the exponential growth in the number of signatories (now 4,683) are also strong evidence of the magnitude and importance of the sustainable wake that is sweeping the entire financial world. The financial industry is the economic engine of the sustainable transition, which, together with the work of policymakers, will enable the sustainable economic development of the coming years.

European sustainability regulation has evolved very rapidly in recent years, with the introduction in 2018 of the package of regulations and directives contained in the Action Plan for Sustainable Finance. This new package of regulatory initiatives fits within a very ambitious goal on the part of the EU, namely to achieve climate neutrality by 2050. The European regulatory system regarding sustainability that has been built up so far is basically aimed at directing investors' investment choices towards financial products and economic activities that can be considered sustainable. To achieve this aim, the European Union has acted on two fronts: on the one hand, it has introduced a common sustainability alphabet for all economic actors, defining what 'sustainable economic activity' means and under what conditions a business can be considered as such. On the other hand, the European Commission has outlined a system of disclosure of non-financial information by companies, financial advisers and financial market participants, in order to increase transparency within the market and to provide investors with the necessary information to make investment choices that take sustainability aspects into account. The Taxonomy Regulation, the Sustainable Finance Disclosure Directive and the recently introduced Corporate Sustainability Reporting Directive are the reference regulatory texts for the pursuit of European sustainability goals. Thanks to the introduction of these new legislations, greater and higher quality non-financial information are believed to be delivered soon in the market. However, it is expected that adopting all these information disclosure standards will be a challenging

process that has to be continuously supervised by the competent authorities. European policymakers will have the task of constantly verifying that the regulatory framework they have developed is dynamic and responsive to current and future market needs, and they will have to keep up with the rapid development of the financial system in order to avoid being out of date as soon as new regulations or directives come into effect. Furthermore, since the definition of sustainable economic activity in the Taxonomy now only covers environmental sustainability, it is expected that the European authorities will legislatively supplement the concept of sustainability by also including the social dimension. This is intended to broaden the scope of regulations, which up to now have focused on the environmental dimension, and extend it to what is actually required by financial market participants, also in line with the goals of the 2030 Agenda. It will therefore be the task and challenge of policymakers to keep pace with the evolution of financial markets and not to create inconsistencies between European regulations and the needs of non-financial information of financial market participants.

Within the world of sustainability, a central issue is that of ESG ratings, which represent the biggest hurdle to overcome for the successful implementation of the transition. In fact, although European regulations for sustainability are aimed at drastically increasing the amount of information on the sustainable profile of companies and financial players within the market, this information is still not declared in a standardised way, and not all companies, especially small and medium-sized companies, are subject to the disclosure obligation. As a result, over the past decade, investors have turned to third party data providers, such as rating agencies, to acquire such information and bridge the knowledge gap between corporations and investors regarding non-financial concerns. Consequently, rating agencies and ESG data providers have acquired a central role within the transition, acting as a hub within the exchange of non-financial information between investors and corporations and thus greatly influencing investors' investment choices. However, the issue that arises in this circumstance concerns the fact that ESG ratings produced by rating agencies differ substantially and in many respects from each other. Indeed, the study conducted by Berg et al. (2022) shows a low correlation between ESG ratings of between 0.38 and 0.71. This means that two different rating agencies assessing the sustainability of the same company can arrive at two very different and conflicting results. Clearly, this generates enormous confusion among the investing public, and makes the sustainability of a company a concept entirely relative to the methodology used to measure ESG factors. The discrepancies between the ratings produced by different agencies may arise from differences in the choice of indicators used to measure the E, S, G components, or from differences in the measurement of each indicator or the weight assigned to it. In addition, several recurring biases

in the measurement of ESG factors are noted, such as the dimensional bias, whereby larger companies are more likely to receive higher ESG ratings than smaller companies, or the geographical bias, whereby companies operating in geographic areas that are more regulated on sustainability, such as Europe, are more likely to receive higher ESG ratings than other companies. These critical issues have major implications for the evolution of sustainable finance and its future research. In fact, as investment decisions are heavily influenced by ESG ratings, the disagreement among those could undermine the realization of the transition. What is hoped for the future is that the introduction of the new European regulations, which more clearly define the criteria for deeming a business to be sustainable, will help bring about a greater degree of standardization in the measurement of ESG factors. In addition, the more orderly and digitized disclosure of non-financial information that will be implemented by companies thanks to the entry into force of the CSRD may facilitate the collection of such information for investors and also for rating agencies, which will then start from a more homogenous information base for the composition of their ratings, generating more aligned sustainability judgements.

The rating issue becomes more challenging when it comes to small and medium-sized enterprises. Including SMEs in the ESG rating range is of crucial importance for the development of economic sustainability as SMEs account for more than 99% of all businesses in EU, and they are responsible, on aggregate, for almost 70% of industrial pollution in Europe. The main concern with ESG ratings for SMEs is that on average, SMEs approach to sustainable innovation is still informal and unstructured and rating agencies are often unable to incorporate SMEs' internal procedures and informal norms that are not documented by public records in their sustainability analysis. Lack of data, and the presentation of non-financial information in an unstructured manner due to SMEs' still low awareness of international sustainability norms are the main problems inherent in the world of SMEs, and the major differentiator of SMEs compared to listed companies. In fact, information about the sustainable profile of SMEs is often difficult to find for the companies themselves, and it is sometimes the case that it is the companies themselves that are unaware that certain implemented practices would be considered as elements of sustainability by an evaluator. This can be seen both in the data from McKinsey's 2016 and Equita's 2020 surveys, and also in the testimony of Dr Latin, who works in Modefinance's ESG team. In the words of Dr Latin, in order to be prepared for 2026, SMEs should start acting by taking a long-term approach to all sustainability issues. This translates into the establishment of internal processes and dedicated teams to carry out the reporting of non-financial information and an increased awareness of sustainability issues, in order to be prepared in 2026 and take advantage of the competitive benefit provided by sustainability.

The uncertainty generated by the lack of an unambiguous methodology for measuring ESG factors is also reflected in the empirical analyses carried out by scholars to determine the impact of ESG factors on corporate financial performance. Indeed, a problem underlying any ESG assessment lies in the lack of a standardized measure of such factors. As a result, the empirical evidence on how ESG factors influence the value of a company is very ambiguous, and there is still no real answer to the question of whether high ESG companies create more value than 'bad companies'. In recent years, there has been a growing strand in the literature aimed at identifying the existence of a link between the sustainable (qualitative) and financial (quantitative) spheres of companies. However, the empirical findings of the studies carried out are highly fragmented and conflicting. Theoretically, in order to determine whether the degree of sustainability of a company has an impact on its financial performance, it must be shown that ESG factors influence one or more of the company's value drivers, i.e. revenue growth, investment efficiency, operating margins or cost of capital, in a way that either increases the expected free cash flows or reduces the discount rate. Reasons that would justify an increase in free cash flows for high ESG companies are, for instance, increased revenues due to a greater ability of companies to attract and retain customers, accrued productivity of employees justified by their deeper engagement in company activities or an increased ability to attract high quality employees. Alternatively, strong sustainability performance can reduce firms' costs by easing regulatory pressure on firms and allowing them to move more freely in the market, facing fewer regulatory and legal costs. Cost reduction can also be achieved by counteracting the increase in operating expenses due to rising raw material costs. From the point of view of the cost of capital, a high degree of sustainability of companies can lead to a reduction in their cost of capital by reducing the cost of equity or the cost of debt. This can happen if equity investors who value corporate social responsibility invest their money in virtuous companies, leading to a decrease in the cost of equity, or if lenders provide money to high ESG companies at a lower interest rate because of the social or environmental mission of the companies.

The main empirical evidence shows that ESG factors influence the value of a company mainly through the reduction of the risk (and thus the cost of capital) associated with the company's business. In fact, although several studies find a positive correlation between ESG rating and firm profitability, two main issues are identified: first, most studies fail to find a causal relationship between ESG rating and firm profitability. This means that it is not clear whether it is the good companies that are more profitable or the more profitable companies that find it easier to look good because they have more resources available to invest in sustainable innovation. If this were the case, the implementation of sustainable practices would not actually be a driver of value, but rather a privilege 'for the few', i.e. for those companies with sufficient resources to be able to invest in sustainable activities and improve

their reputation. Secondly, a further problem that emerges from the empirical analysis conducted by several researchers is that the results are not homogeneous among the different methodologies used to measure ESG factors. This obviously undermines the robustness of the results of the empirical analysis and weakens the evidence supporting a positive correlation between sustainability and increased profitability. From a discount rate perspective, stronger evidence can be found in the literature that companies with a high ESG content are characterised by lower discount rates due to their lower financing cost and limited exposure to environmental catastrophe risks and cost spikes. Such limited exposure to environmental and social risks may be justified by the fact that companies with a strong sustainable profile put in place more accurate risk control and compliance processes, both within the firms and across the entire supply chain. As a result, high ESG companies are less exposed to incidents that could harm their value and lower their stock prices, such as fraud, embezzlement, corruption or litigation cases. Several empirical studies conducted by researchers have found a negative correlation between the degree of sustainability of companies and their specific and systematic risk. In fact, most studies find that low ESG companies are characterised by higher beta and idyiosyncratic risk than high ESG companies. In line with risk management theory, this would be justified by the fact that high ESG companies, by meeting the needs of different stakeholders, make the latter more loyal to the company and hence less inclined to overreact to negative company news. This makes the business of sustainable companies less volatile and characterised by lower market risk metrics. In particular, the social pillar seems to be a powerful risk-reduction driver as scores relating to external stakeholders, such as society as a whole and customers, have the greatest impact on the riskiness of equities. The environmental performance also has an impact on the riskiness of a stock, yet this impact is stronger and significant only in environmentally sensitive businesses.

How ESG factors influence the value of a company should immediately be reflected in the returns obtained by investors who have invested their capital in the company in question. However, as we are still at an early stage of the transition, it is possible that there may be movements within markets that are not justified by the underlying securities. In fact, one of the major discussed topics in sustainable finance is whether investors make excess returns on ESG stocks, that is, whether investing into high ESG stocks reward investors with greater risk-adjusted returns. Empirical evidence concerning this topic is highly ambiguous and no unique and exaustive answer exists yet. There are several studies that support the argument that investing in high ESG stocks yields a higher return and simultaneously bears less risk. However, this seems a condition that is too good to be true, which may be driven by short-term dynamics but that cannot hold in the long run as it goes against the most historic established law within financial markets: lower risk, lower return. Overall, most of the

empirical findings suggest that risk-adjusted returns do not differ significantly between SRI and conventional types of investments, meaning that sustainable investing does not seem to compensate investors neither with greater risk-adjusted financial returns nor with lower. This would seem to be in line with studies that show a lower riskiness of companies with a high degree of sustainability.

In conclusion, the analysis of the present literature on the topic of sustainability leads us to conclude that firms' engagement in sustainable activities would seem to involve a reduction in business riskiness. In fact, companies' awareness of the risks related to the environment and surrounding society and the introduction of internal systems and processes to monitor and manage these risks suggest that companies are more 'protected' from the occurrence of environmental or social events that may harm their profitability. Certainly, additional empirical evidence is needed to shed more light on how ESG factors are able to influence the risk-return profile of companies. As repeatedly stated, the non-standardisation of ESG factor measurement systems and the early stage of the economic transition do not allow for unambiguous answers. However, as the transition progresses and European regulations introduce greater transparency and homogeneity of non-financial information, it will be possible to shed light on the unclear issues present today, and thus give a strong impetus to the evolution of the economic transition towards sustainability.