DEPARTMENT OF BUSINESS AND MANAGEMENT

Chair of Equity Markets and Alternative Investments

Sustainable Investment: Analysis of the ESG factor impact on financial profitability

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I want to express infinite gratitude to my family and my closest friend that always give me the strength to face and surpass every obstacle in my life.

I dedicate this life goal to who unfortunately cannot witness it anymore.

ABSTRACT

This thesis begins with a focus on the changes that our world is facing both under positive and negative aspects. The biggest issue presented is the environmental crisis that deserve to be understand and contrasted by both new and old generations. In addition to the economic aspects, this work wants to launch an ethical message too. Finance is the key to move capitals and capitals involve economic changes that reshape the society. The first brick to enhance the actual situation are ideas but the realization of them needs actions that should pass mandatorily across economics and politics. Economy has generated progress for years and the importance of capitalism is out of discussion. Its correct use could repair the mistakes occurred and transform radically the negative consequences suffered by the society. For this reason, the main strategy to bring change is to invest in change. Sustainability is the key to catch this goal and investing in "green economy" is a duty for the youngest people. To contrast the old skepticism under which being sustainable means being less profitable, this work aims to show the financial advantages to choose ethical investments respect to the others. It will be illustrated how ESG factor is a common feature of better performing company in terms of stability, resilience and sometimes revenues. In contrast, it will be stressed also how non-sustainable companies may suffer in facing policy-risks, environmental risks and market downturns. The final part tries to provide evidence to these assumptions with personal development from the candidate.

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INTRODUCTION

Kyoto's Protocol, Paris Agreement and 2030's Agenda, are only three that the several initiatives behind the changing that the world is meeting. This change is triggered by a tragic environmental crisis generated by consumption. Consumption is the first pillar of economics and for this principle also financial actors and corporates have moved toward the direction of change. A lot of research provided by OWI and other environmental-agencies make clear the actual situation and suggest the urgence of a deep transformation in our economic system at a global level. Principles of Responsible Investing are one of the multitude of frameworks created to allow more sustainable finance and respond to the needs of the society. After analyzing the several frameworks and regulations related to sustainable economics in the first part of the study, the ESG concept will be introduced and deeply illustrated. ESG is the acronym of Environmental, Social, Governance and enclose all the corporate issue related to these topics. A high ESG score means a high ability to face these issues and the opportunity to be better rated by Agencies. ESG score methodologies are heterogeneous and some of the most adopted will be described in the first chapter of the dissertation. These scores are fundamental to judge a company for the investor that want support a sustainable and responsible investment approach and entrust their capitals to the "green innovation". There are different strategies for sustainable investing: among them the Best-in-class and the Portfolio Integration will be tested in the final chapter of the study. The aim of the dissertation is to give answer at the following questions: is sustainable investment profitable? Do investing in sustainability reduce profits? How much impactful is the ESG factor?

After a series of theories and historical evidence about the performances related to the high ESG companies and financial instruments under several aspects, the third chapter close the study with an analytical approach that uses average returns to verify the performances on a concrete basis and without any distortion. The approach uses established inputs and criteria but random samples to maximize the credibility of the results. The outcomes satisfy the theories and represent the candidate contribution to support the importance of sustainability and ethics in economics and finance.

CHAPTER 1

1. INTRODUCTION OF THE ESG TOPIC

1.1. Negative effects of capitalism and production on the world

World is changing, more quickly in the last two decades than in two entire centuries. Behind this incredible transformation there is the progress, more specifically speaking: the Great Industrial Revolution. From that moment, our ability to produce has extremely increased, bringing to an economic development never seen before, expanding capitals, wealth and access to products. People have begun to increase their status and quality of life is growth almost for everyone. More production needs more workforce that means more employment that means more people able to gain salaries. The spread of wealth is obviously related to a higher expenditure capacity, that must be absorbed by production to keep the entire process in function. Companies, in response, started to satisfy every possible need for their costumers and in certain cases, to create new ones for them to compensate the industrial growing trend. In this way started the actual society that has developed using the consumption as the principal source of life, transforming our lives, improving them, and pushing the level of science and technology at their best like never in history. This whole process has surely been positive, bringing to globalism and making access to data, human capital and financial resources, incredibly simple and fast. Being part of this generation is for several aspects a huge fortune and sort of privilege, but on the other hand, requires a new kind of responsibility and a bigger awareness of what this “power” is generating. Capitalism and industrial revolution indeed, have created as many benefits as terrible consequences. This statement does not set up a position against the capitalism itself, on the contrary recognize is value and is incredible transforming capacity in every field. It is not possible to refuse it, but it is necessary to believe in it shaping its direction using social responsibility and forward-looking choices. If it is true that capitalism can cause damages, it is also true that is the only effective instrument to fix them, in a way that would be explained by the next chapters of this work.

Level of consumption are not sustainable anymore for the society, and are spreading their costs in every aspects of the world. Differences between rich and poor are widening, rhythm of production is exploiting workforce at dramatical levels and resources are not enough to face the demographic expansions. The heaviest consequence however, is climate changing. Levels of pollution in the air

exponentially increasing due to the rising emissions observed in these decades carried by industrial production and individual consumption. In the *Figure 1*, is plotted the average annual concentration of CO2 (ppm) in the atmosphere.

[1]

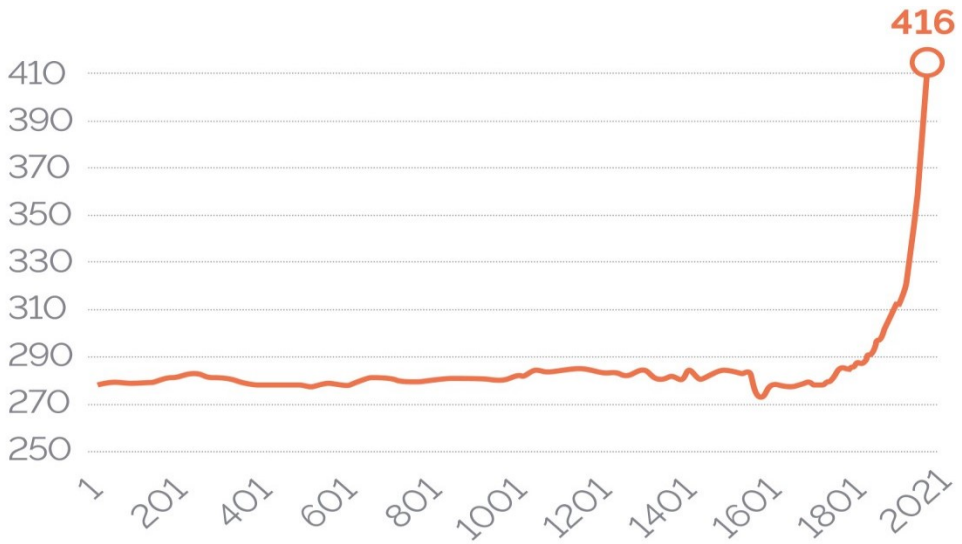


Figure 1 - Source: ISPI (Istituto per gli studi di Politica Internazionale)

[1] ISPI (2021) - https://www.ispionline.it/it/pubblicazione/fact-checking-i-cambiamenti-climatici-10-grafici-32170

From the graphical source is clearly showed how emissions have risen over the last two centuries, starting more specifically from the Industrial Revolution. In particular, it is between the 20th and the 21th century that the curve has become more and more steep, almost vertical. These data are dangerous and worrying for the actual generation as for the future ones, considering that the trend is not going to stop if no radical change happens. The figure below shows the CO2 emissions in billions of tons with a graphical stress on the huge concentration registered in the last three decades.

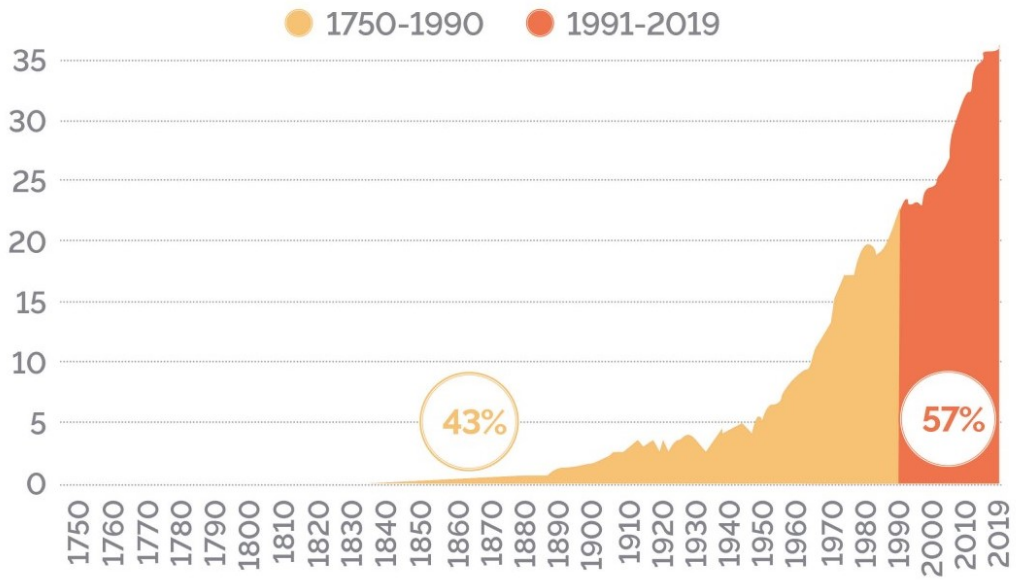


Figure 2 - Climate Watch Historical GHG Emissions

[2]

This phenomenon not only has devasting effects on general health for people and animals but contributes to the most critical issue that we are facing as society, that is global warming. Higher temperatures in fact, could lead to deep changes in the ecosystem which already shows terrifying damages, for example ice-melting, growing of natural disasters and episodes of extreme weather.

Figure 2 - Source: ISPI (Istituto per gli studi di Politica Internazionale)

[2] ISPI (2021) - https://www.ispionline.it/it/pubblicazione/fact-checking-i-cambiamenti-climatici-10-grafici-32170

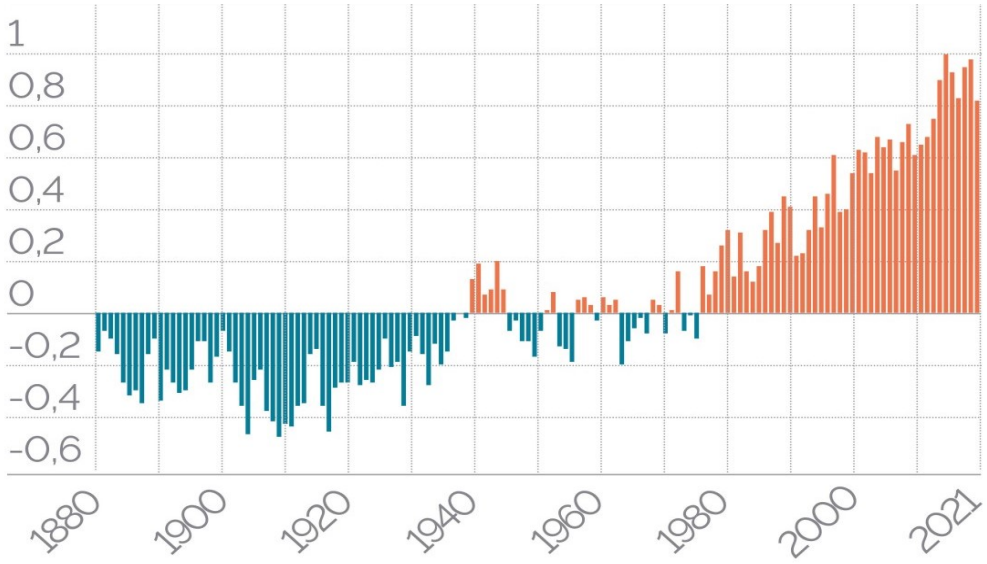
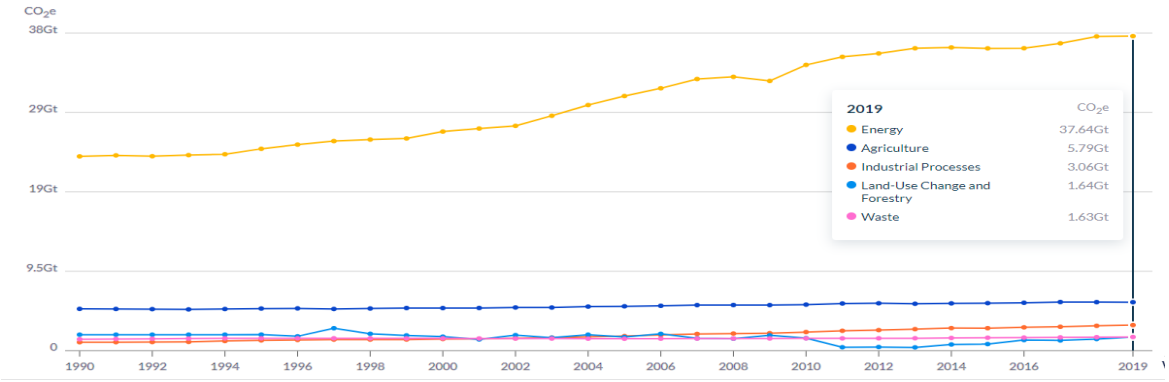


Figure 3 - ISPI (Istituto per gli studi di Politica Internazionale)

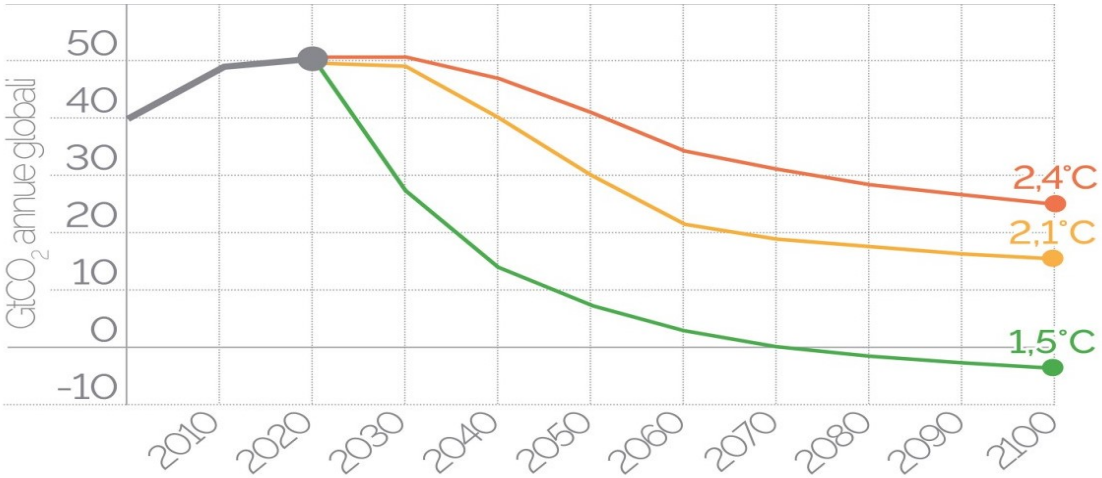
World is warming by 0,2 degrees Celsius every 10 years (as showed above) and general temperature has risen by about 1 degree since the 19th century. The next step, without any change, could bring an increase up to 2,7 degrees within the end of the 2100. It is interesting also to see what are the sectors which provide more pollution and how their emissions are growing every year. The graph answer clearly to this question:



Energy has the record in spreading GHG emissions over the other sectors, with almost 40 Gt detected in 2019. Agriculture is following with about 6 Gt, and Industrial Processes in the third position (about 3 Gt). Energetic sector could be defined the engine of the entire production in the world, the pillar of all the modern processes that involves technology and consumption, so trying to limit or stop this industry is just utopic. On the contrary, what is necessary to do is reshaping and transforming it in a virtuous process. The good aspect is that Governments have a

Figure 4 - ISPI (Istituto per gli studi di Politica Internazionale)

great control on energy industries, often with state-owned percentage, and regulation can act in a strong way to modify its negative features. In this sense in fact, global politics is moving setting a lot of different strategies and rules in order to avoid the worst effects forecasted by the scientific community. If these decisions are respected ad applied in a diligent way, climate change run could be slowed, giving time to the "progress" to find new solutions. The most influential Countries in the world, in order to embrace this duty and starting the change of direction, have formed the G20 taking several decisions and initiatives for the planet. These Countries generate the 80% of the global PIL, represent 2/3 of the total population, and are responsible for the 80% of the total emissions at the same time. The commitments they have initially taken and the criteria they are actually respecting, are important to lower the forecasted warming but still not enough. Through this strategy the temperature rising could reach 2,4 out of 2,7 degrees Celsius of the worst scenario, and also with the new proposed strategies the result would not be satisfactory. These are the trends based on the different studied developments, linking emissions and temperature:



1.2. Frameworks and actions to drive the change

1.2.1. Global Regulation and Governments' actions: The UNFCC

The most important action taken in a global sense is the program promoted by the United Nations that has evolved in different treats and agreement until the last years and has new development in program. UN had created indeed the widest framework globally recognized concerning climate change and environmental care: the

UNFCCC Secretariat (United Nations Framework Convention for Climate Change). *The UNFCCC secretariat (UN Climate Change) is the United Nations entity tasked with supporting the global response to the threat of climate change. UNFCCC stands for United Nations Framework Convention on Climate Change. The Convention has near universal membership (197 Parties) and is the parent treaty of the 2015 Paris Agreement. The main aim of the Paris Agreement is to keep the global average temperature rise this century as close as possible to 1.5 degrees Celsius above pre-industrial levels. The UNFCCC is also the parent treaty of the 1997 Kyoto Protocol. The ultimate objective of all three agreements under the UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system, in a time frame which allows ecosystems to adapt naturally and enables sustainable development*.[3]

It was established in 1992 firstly located in Geneva, now takes place in Bonn, Germany. *The ultimate objective of the Convention is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system." It states that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner."* [4] According to the convention, the most industrialized countries that have contributed the most since the past years in the GHG emissions, have to put stronger effort in order to reduce air pollution. These countries are categorized together under the name “Annex 1” and belong to the Organization for Economic Cooperation and Development (OECD). They include 12 countries with "economies in transition" from Central and Eastern Europe. Annex I countries were expected by the year 2000 to reduce emissions to 1990 levels. Other ones are “Non-Annex 1” countries. Main tasks of UNFCCC include:

- *Industrialized countries (Annex I) have to report regularly on their climate change policies and measures, including issues governed by the Kyoto Protocol (for countries which have ratified it).*

[3] United Nations Climate Change - https://unfccc.int/about-us/about-the-secretariat
[4] United Nations Climate Change - https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change

- *They must also submit an annual inventory of their greenhouse gas emissions, including data for their base year (1990)and all the years since.*
- *Developing countries (Non-Annex I Parties) report in more general terms on their actions both to address climate change and to adapt to its impacts - but less regularly than Annex I Parties do, and their reporting is contingent on their getting funding for the preparation of the reports, particularly in the case of the Least Developed Countries.*[5]

From this original historical decision, a strong international response to industrial damages was born, giving form to new and strengthen agreements year after year in order to enhance the commitment in reshaping the productive progress and avoid the worst effects of climate change. The first and most relevant act was the "Kyoto Protocol" established in 1995. The entity recognizes as supreme decision-making body the COP (Conference Of the Parties) that meets every year, unless the Parties decide otherwise. The first COP meeting was held in Berlin, Germany in March, 1995. The COP meets in Bonn, the seat of the secretariat, unless a Party offers to host the session. COP 3 and COP 21 have been very relevant for the institution of the Kyoto Protocol and the Paris Agreement respectively.

1.2.2. The Kyoto Protocol

The Kyoto Protocol was adopted on 11 December 1997 and it entered into force on 16 February 2005 after a complex process of ratification. It includes 192 Parties formed by different countries all around the world. In short, the Kyoto Protocol operationalizes the United Nations Framework Convention on Climate Change by committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically. The Kyoto Protocol is based on the principles and provisions of the Convention and follows its annex-based structure. It only binds developed countries, and places a heavier burden on them under the principle of "common but differentiated responsibility and respective capabilities", because it recognizes that they are largely responsible for the current high levels of GHG

[5] United Nations Climate Change - https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change

emissions in the atmosphere. In its Annex B, the Kyoto Protocol sets binding emission reduction targets for 37 industrialized countries and economies in transition and the European Union. Overall, these targets add up to an average 5 per cent emission reduction compared to 1990 levels over the five year period 2008–2012 (the first commitment period). During the second commitment period, Parties committed to reduce GHG emissions by at least 18 percent below 1990 levels in the eight-year period from 2013 to 2020; however, the composition of Parties in the second commitment period is different from the first. One important element of the Kyoto Protocol was the establishment of flexible market mechanisms, which are based on the trade of emissions permits. Under the Protocol, countries must meet their targets primarily through national measures. However, the Protocol also offers them an additional means to meet their targets by way of three market-based mechanisms:

- International Emissions Trading
- Clean Development Mechanism (CDM)
- Joint implementation (JI)

These mechanisms ideally encourage GHG abatement to start where it is most cost-effective, for example, in the developing world. It does not matter where emissions are reduced, as long as they are removed from the atmosphere. This has the parallel benefits of stimulating green investment in developing countries and including the private sector in this endeavor to cut and hold steady GHG emissions at a safe level. It also makes leap-frogging—that is, the possibility of skipping the use of older, dirtier technology for newer, cleaner infrastructure and systems, with obvious longer-term benefits—more economical. The Kyoto Protocol also established a rigorous monitoring, review and verification system, as well as a compliance system to ensure transparency and hold Parties to account. Under the Protocol, countries' actual emissions have to be monitored and precise records have to be kept of the trades carried out. Registry systems track and record transactions by Parties under the mechanisms. The UN Climate Change Secretariat, based in Bonn, Germany, keeps an international transaction log to verify that transactions are consistent with the rules of the Protocol. Reporting is done by Parties by submitting annual emission inventories and national reports under the Protocol at regular intervals. A compliance system ensures that Parties are meeting their commitments

and helps them to meet their commitments if they have problems doing so. The Kyoto Protocol, like the Convention, is also designed to assist countries in adapting to the adverse effects of climate change. It helps the development and deployment of technologies that can help increase resilience to the impacts of climate change. The Adaptation Fund was established to finance adaptation projects and programs in developing countries that are Parties to the Kyoto Protocol.[6]

1.2.3. The Paris Agreement

In 2015, UNFCCC supplied other instruments to enforce the fight against global warm: The Paris Agreement. The intention was to create a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century. The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects. Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. The Paris Agreement works on a 5- year cycle of increasingly ambitious climate action carried out by countries. By 2020, countries submit their plans for climate action known as nationally determined contributions (NDCs). In their NDCs, countries communicate actions they will take to reduce their Greenhouse Gas emissions in order to reach the goals of the Paris Agreement. Countries also communicate in the NDCs actions they will take to build resilience to adapt to the impacts of rising temperatures. To better frame the efforts towards the long-term goal, the Paris Agreement invites countries to formulate and submit by 2020 long-term low greenhouse gas emission development strategies (LT-LEDS). LT-LEDS provide the long-term horizon to the NDCs. Unlike NDCs, they are not mandatory. Nevertheless, they place the NDCs into the context of countries' long-term planning and development priorities, providing a vision and direction for future development.

[6] United Nations climate change, What is Kyoto Protocol? (2022) - https://unfccc.int/kyoto_protocol

The Paris Agreement provides a framework for financial, technical and capacity building support to those countries who need it. The Paris Agreement reaffirms that developed countries should take the lead in providing financial assistance to countries that are less endowed and more vulnerable, while for the first time also encouraging voluntary contributions by other Parties. Climate finance is needed for mitigation, because large-scale investments are required to significantly reduce emissions. Climate finance is equally important for adaptation, as significant financial resources are needed to adapt to the adverse effects and reduce the impacts of a changing climate. The Paris Agreement speaks of the vision of fully realizing technology development and transfer for both improving resilience to climate change and reducing GHG emissions. It establishes a technology framework to provide overarching guidance to the well-functioning Technology Mechanism. The mechanism is accelerating technology development and transfer through its policy and implementation arms. With the Paris Agreement, countries established an enhanced transparency framework (ETF). Under ETF, starting in 2024, countries will report transparently on actions taken and progress in climate change mitigation, adaptation measures and support provided or received. It also provides for international procedures for the review of the submitted reports. The information gathered through the ETF will feed into the Global stock take which will assess the collective progress towards the long-term climate goals. This will lead to recommendations for countries to set more ambitious plans in the next round. Although climate change action needs to be massively increased to achieve the goals of the Paris Agreement, the years since its entry into force have already sparked low-carbon solutions and new markets. More and more countries, regions, cities and companies are establishing carbon neutrality targets. Zero-carbon solutions are becoming competitive across economic sectors representing 25% of emissions. This trend is most noticeable in the power and transport sectors and has created many new business opportunities for early movers. By 2030, zero-carbon solutions could be competitive in sectors representing over 70% of global emissions. [7]

[7] United Nations climate change, The Paris Agreement (2022) - https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

1.2.4. The 2030 Agenda and the SDGs

On 25 September 2015, the UN General Assembly adopted a new global sustainable development framework: the 2030 Agenda for Sustainable Development (the '2030 Agenda'), which has at its core the Sustainable Development Goals (SDGs).[8] Basing on the official declaration, the goal of the Agenda is to "*between now and 2030, to end poverty and hunger everywhere; to combat inequalities within and among countries; to build peaceful, just and inclusive societies; to protect human rights and promote gender equality and the empowerment of women and girls; and to ensure the lasting protection of the planet and its natural resources [..], to create conditions for sustainable, inclusive and sustained economic growth, shared prosperity and decent work for all, taking into account different levels of national development and capacities*." The Council of Europe contributes to achieving these goals through most of its sectors through work funded by the ordinary budget as well as with extra-budgetary contributions. The 2030 Agenda is a continuation of the UN Millennium Development Goals (2000-2015) which were in their day the first international consensus on facing global problems such as the eradication of extreme poverty and hunger, and to promote improvements in access to education. Although the targets were not fully achieved, they nevertheless provided the basis for significant progress which, in 2015, was extended through the 2030 Agenda and its respective SDGs.[9] The 2030 is based on the 5Ps: People, Planet, Prosperity, Peace, Partnership. Sustainable Development Goals established are 17: 1) End poverty, 2) Zero hunger, 3) Health and well-being, 4) Quality education, 5) Gender equality, 6) Clean water and sanitation, 7) Affordable and green energy, 8) Decent work and economic growth, 9) Industry/Innovation/Infrastructure, 10) Reduce inequality, 11) Sustainable cities and communities, 12) Responsible consumption and production, 13) Climate action, 14) Marine life, 15) Terrestrial ecosystems 16) Peace, Justice and strong institution, 17) Partnership for the Goals.

1.2.5. Actions from companies: industrial and financial alliances and/or frameworks

THE GLOBAL COMPACT (1999)

[8] Official Journal of the European Union - 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
[9] Iberdrola, The importance of the 2030 Agenda and the Sustainable Development Goals (2022) - https://www.iberdrola.com/sustainability/committed-sustainable-development-goals/what-is-agenda-2030

In 1999, former UN Secretary General Kofi Annan proposed a global commitment for companies and actors of economy in moving towards the achievement of the highest possible level of sustainability. The next year the reaction came from 44 global companies, 2 labour organizations and 12 civil society representatives that joined together to establish the UN Global Compact. It is a worldwide alliance in order to put effort in changing and it is declined in 10 principles inspired by the United Nations. The principles are focused on 4 different macro-areas: Human Rights, Environment, Labour, and Anti-Corruption. After 20 years the alliance has grown to about 10,000 companies achieving a CEO-level commitment. The initiative has spread to 68 local networks, 161 countries, 66,600 Public Reports, 10,400 companies and 3,400 non-business organizations. *The ''Global'' goals represent a path to end extreme poverty, fight inequalities and injustice, and protect our planet. Fulfilling these ambitions will take an unprecedented effort by all sectors in society and businesses has to play a very important role in the process. The UN Global Compact has been developed as a united front to help companies get involved in three main areas:*

1. *Act Responsibly*
2. *Find Opportunities*
3. *Inspire and Advocate.*[10]

PRINCIPLES FOR RESPONSIBLE INVESTMENT (2005)

The UN Principles for Responsible Investment (PRI) is an international organization that works to promote the incorporation of environmental, social, and corporate governance factors (ESG) into investment decision-making.[11] It was announced in 2005 and definitively launched in 2006, counting about 4,900 institutions in 2021. They are, more precisely, signatories of the key-six principles of the organization and provide reports every single year to disclose the results achieved in following the guidelines. The focus of the organization is to promoting environmental and social responsibility among the world's investors and the

[10] United Nations publications – UN Global Compact 20th Anniversary Campaign Overview (2021), https://www.unglobalcompact.org/docs/publications/UN-Global-Compact-20th-Anniversary-Campaign-Infosheet.pdf
[11] J. Fernando, UN Principles for Responsible Investment (PRI), Investopedia (2022) - https://www.investopedia.com/terms/u/un-principles-responsible-investment-pri.asp#:~:text=The%20UN%20Principles%20for%20Responsible%20Investment%20(PRI)%20is%20an%20international,)%20into%20investment%20decision%2Dmaking.

disclosures are totally voluntary. PRI signatories manage over $121 trillion in assets worldwide, and include some of the world's largest and most influential investors. Their aim is to consider social and environmental issues as full-part of the investment process, considering not only ethically but also financial irresponsible to not look for these aspects during a due diligence. On the contrary, other investors see ESG issues as possible negative externalities and part of the normal risk borne by companies. To fight this prevailing attitude, the PRI established six core principles followed by its signatories:

- *Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes.*
- *Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices.*
- *Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.*
- *Principle 4: We will promote acceptance and implementation of the Principles within the investment industry.*
- *Principle 5: We will work together to enhance our effectiveness in implementing the Principles.*
- *Principle 6: We will each report on our activities and progress towards implementing the Principles.*[12]

The launch of the program was supported by founding signatories, such as the Norwegian Government Pension Fund, the Government Pension Fund of Thailand, the Canada Pension Plan Investment Board and the California Public Employees' Retirement System (CalPERS).

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES – TFCD (2017)

The Financial Stability Board (FSB) created the TCFD to develop recommendations on the types of information that companies should disclose to support investors, lenders, and insurance underwriters in appropriately assessing and pricing a specific set of risks—risks related to climate change.[13] TFCD aim to

[12] Principles for Responsible Investment, About Us (2022) - https://www.unpri.org/about-us/about-the-pri
[13]'' Task Force on climate-change related financial disclosures'' website , About (2022) - https://www.fsb-tcfd.org/about/

market transparency concerning climate-related disclosures, following the Financial Stability Board guidelines. Its contribution consists in a set of recommendations in order to help companies in providing better information to support informed capital allocation. Guidelines are based on 4 pillars: governance, strategy, risk management, and metrics and target. The four recommendations are interrelated and supported by 11 recommended disclosures that build out the framework with information that should help investors and others understand how reporting organizations think about and assess climate-related risks and opportunities. The Task Force is formed by 31 members, all of them part of G20, representing both preparers and users of financial disclosures. Its chairman is Michael R. Bloomberg, founder of Bloomberg L.P.

SUSTAINABLE FINANCIAL DISCLOSURE REGULATION (SFDR)

The Sustainable Finance Disclosure Regulation (SFDR) is a European regulation introduced to improve transparency in the market for sustainable investment products, to prevent greenwashing and to increase transparency around sustainability claims made by financial market participants. It imposes comprehensive sustainability disclosure requirements covering a broad range of environmental, social & governance (ESG) metrics at both entity- and product-level. The main provisions of the SFDR have been applicable as of 10 March 2021, with a statutory instrument known as a Delegated Act containing more precise disclosure standards yet to be adopted by the European Commission. The SFDR is a fundamental pillar of the EU Sustainable Finance agenda, having been introduced by the European Commission as a core part of its 2018 Sustainable Finance Action Plan.[14]

SUSTAINABLE FINANCE ACTION PLAN

In March 2018, the European Commission published a "Sustainable Finance Action Plan", outlining the strategy and measures to be taken to establish a financial system capable of promoting development that is genuinely sustainable from an economic, social and environmental point of view, by contributing to the implementation of the Paris Agreement on climate change and the United Nations 2030 Agenda for Sustainable Development. The action plan recommends ten actions to be taken at

[14] EUROSIF website, SFDR (2022) - https://www.eurosif.org/policies/sfdr/

European level to: (i) facilitate the channeling of financial investment towards a more sustainable economy; (ii) consider sustainability in risk management procedures and (iii) enhance transparency and long-term investment. The Action Plan aims to:

- Improve the quality of Non-Financial Reporting by companies
- Imposing the need for institutional investors and asset managers to enhance sustainability factors in their investment decision-making and to tighten disclosure obligations
- the integration of sustainability into awarded ratings and market research, as well as the analysis of existing practices of credit rating agencies concerning the use of ESG factors.
- the integration of sustainability into the prudential requirements of credit institutions
- the creation of EU labels for green financial products based on the EU classification scheme, allowing investors to easily identify investments that meet environmental or low-carbon criteria.[15]

NET-ZERO BANKING ALLIANCE

The industry-led, UN-convened Net-Zero Banking Alliance brings together 43 banks from 23 countries with US$28.5 trillion in assets to deliver the sector's ambition to align its commitments with the Paris Agreement.[16] Member banks are committing to:

banks are committing to:

- Transition the operational greenhouse gases emissions from their lending and investment portfolios to align with pathways to net-zero by 2050
- Set 2030 targets and a 2050 target, with intermediary targets to be set every 5 years from 2030 onwards.

[15] CONSOB website, Sustainable Finance Action Plan (2022) - https://www.consob.it/web/consob-and-its-activities/sustainable-finance-action-plan#:~:text=In%20March%202018%2C%20the%20European,view%2C%20by%20contributing%20to%20the

[16] UNEPFI website, Net Zero Banking Alliance (2022) - https://www.unepfi.org/net-zero-banking/

- Engage with their clients' own transition and decarburization, promoting real economy transition

The alliance is joining the UN Race to Zero and is the banking element of the Glasgow Financial Alliance for Net-Zero (GFANZ). It has been formed to bring together existing and new net-zero finance initiatives into one sector-wide forum and now includes 160+ financial institutions across different Race to Zero initiatives. All banks that have signed the commitment will:

1. Transition the operational and attributable GHG emissions from their lending and investment portfolios to align with pathways to net-zero by 2050 or sooner
2. Within 18 months of joining, set 2030 targets (or sooner) and a 2050 target, with intermediary targets to be set every 5 years from 2030 onwards
3. Banks' first 2030 targets will focus on priority sectors where the bank can have the most significant impact, i.e. the most GHG-intensive sectors within their portfolios, with further sector targets to be set within 36 months.
4. Annually publish absolute emissions and emissions intensity in line with best practice and within a year of setting targets, disclose progress against a board level reviewed transition strategy setting out proposed actions and climate related sectoral policies.
5. Take a robust approach to the role of offsets in transition plans.

1.3. ESG and Sustainability in Investments: the concrete side

1.3.1. Definition of ESG concept

Economy must seek a more virtuous evolution with no doubt after the precedent analysis of the changes that our world is facing. These issues do not concern only environment but, considering a necessary wider point of view, belong to other macro-areas with the same relevancy. Social and governance issues in fact, have also a strong importance because they generate at the same way deep negative trends that must be stopped. In the ''2030 Agenda'' and, to be more specific, in the 17 previously listed SDGs is paid attention to poverty, equality and business-related transparency. Companies, financial and non-financial institutions involved in the change, have to put effort in taking care of social problems, ensure equality and fair opportunities to employees, align board and governance interests with the other stakeholders avoiding the abuse of their hierarchical position. In summary, making

a positive impact involves commitment to maintain or improve an environmental-friendly behavior, to put social rights and well-ness as a priority and to seek for a virtuous governance, in order to improve as a company while staying attractive for investors.

The call to action provided by governments and international alliances is strictly related to the needs of a new generation of investors. People are informed and aware of the damages occurred by the bad management of resources, and by an "egoistic'' attitude in capitalism. For this reason, investment choices are not only influenced by profit but also by sustainability, in the logic that ''financing the change'' is the best way to reach it. Trying to seek for companies that shows a good approach in contributing to re-shaping economy and respect the new regulations, is of course necessary one single or a group of parameters, as for governments such as for investors. ESG is the answer to this need and refers to environment, social, and governance features when measuring the sustainability and ethical impact of an investment in a business or company. *It is a generic term that is used primarily in capital markets where it originated. Investors commonly use ESG to evaluate the behavior of companies and determine an organization's future performance and thus their worth—their value. It covers the three main factors that socially responsible investors measure when deciding whether to invest in a company*.[17] ESG has a relevant importance beyond the ethical sense, providing better performance and resilience to the business that benefits from it. The E in ESG, or environmental criteria, includes the energy an organization takes in, the waste it discharges, the resources it needs, and the consequences for the planet and living beings as a result of an organization's activities. It encompasses issues such as carbon emissions and climate change. These are the best-known examples of the E of ESG. Every organization, from the sole proprietorship to the corporate giant, uses energy and resources. Every company affects, and is affected by, the environment. Consideration of ESG is not just for companies that are in oil and gas, energy, or extraction. We all have an environmental footprint, and there is something that all of us can do to improve our interactions with the environment. The S in ESG, or social criteria, addresses the relationships an organization has and the reputation it fosters with people and institutions in the communities where it

[17] Brown D. & Brown D. (2021), *ESG Matters (1st ed.),* Governance Solutions Inc.

does business. Social criteria include elements like labor relations, diversity, equity, and inclusion. Every organization operates within a broader, diverse society. We call that social license or social contract. A social contract is a covenant. Without earning the social license to operate, a business will not reach its full potential. In a worst-case scenario, an organization will be prevented from moving forward if its leaders and employees abuse their relationship with a stakeholder. The G in ESG, or governance criteria, is the system of direction and control of the organization. Governance criteria go further to include the operating system of practices, controls, policies, and procedures your company adopts to govern itself—to make effective decisions. It includes ethics, transparency, and going beyond complying with the letter of governing laws to fulfilling the spirit of them. Governance includes what is sometimes called citizenship: meeting the needs, expectations, and aspirations of external stakeholders and the public. Every organization requires governance, and the better an operation is governed, the more investment it will attract and the higher it will perform.

1.3.2. ESG Scoring: different approaches and their background logic

Investing and chasing opportunities engaging projects and companies which better perform in satisfying the previously listed features requires an objective and quantitative method to avoid false information and allow to compare the options in the market. To this purpose an aggregate output have been produced: the ESG Score. "*An organization's ESG score is, simply put, a numerical measure of how it is perceived to be performing on a wide range of environmental, social and governance (ESG) topics*."[18] It can be material for the company as for its stakeholders, helping at the same time the organization internally and the wider corporate ecosystem, to assess and understand ESG performance. The pillar word for this system is "perception". The score is in fact, a track of how the company analyzed is seen to be performing, that means how its behavior concerning the ESG criteria is reported. The matter is that in building an organization's performance there is a gap between what is real and what is perceived. Although a business may have strong policy focused on emissions or social issues, if them are not registered and released in the public market, it would not impact ESG score and, a direct

[18] Alva Group (2021), What is an ESG score and how is it calculated? - https://www.alva-group.com/blog/what-is-an-esg-score-and-how-is-it-calculated/

consequence, engagement from aware investors. More importance could be given to this metrics considering the entire universe of stakeholders related to the company. A good perceived and measurable performance in this sense, attract also employees interested in the social issues, allowing the best talent to choose the company among the competitors. Higher "S" score means better work conditions, higher possibility to be awarded for hard and successful work and build true and sustainable loyalty. Moreover, NGOs and campaign groups are less likely to negatively target companies with good ESG scores when they expose unsustainable practices.

With the growing need to quantify a business's ESG performance, different scoring systems have emerged. Analysis companies offering various calculation processes are offering to create bespoke ESG scores for clients, but, just as ESG scoring is the measurement of perception rather than reality, so ESG data systems can be largely subjective. For this reason, in the study proposed, the logic is to take in consideration the most used and largely recognized systems by investors and the market in general, which establish the basis to identify the best ESG-related indexes and aggregates for choosing sustainable companies and derive information for any useful analysis.

1. MSCI ESG Rating

MSCI is an acronym for Morgan Stanley Capital International. It is an investment research firm that provides stock indexes, portfolio risk and performance analytics, and governance tools to institutional investors and hedge funds. In 2004, MSCI acquired Barra, a risk management and portfolio analytics firm, for approximately $816.4 million. The merger of both entities resulted in a new firm, MSCI Barra, which was spun off in an initial public offering (IPO) in 2007, and began trading on the New York Stock Exchange (NYSE) under the stock ticker MSCI. The firm became a fully independent, stand-alone public company in 2009.[19]

This rating is composed assessing thousands of data points across 35 ESG Key Issues focusing on the intersection between a company's core business and the industry issues that can create significant risks and/or opportunities for a company. Companies are rated on a AAA to CCC scale relative to the standards and

[19] W. Kenton, Investopedia (2022), MSCI - https://www.investopedia.com/terms/m/msci.asp

performance of their industry peers.[20] The model developed try to respond to four questions:

- What are the major ESG risks and opportunities that a company is facing?
- How much is the company exposed to these risks/opportunities?
- How much is the company is able to manage them?
- What is the overall picture of the company and how does it compare to its industry peers?[21]

Companies in the same industry generally face the same risks and opportunities while individual exposure could vary. The rating system examinates only those risks/opportunities which are material for the each industry, that means the possibility for the company to generate loss/profit though it. Material risks are identified using a quantitative model that looks at ranges and average values for

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	

externalized impacts such as carbon intensity, water intensity and injury rates (with

Figure 5 - Source: MSCI ESG Rating methodology

company-specific exceptions). These values are outputs derived starting from the so-called “Key Issues”:

[20] MSCI ESG Researching LLC (2022), MSCI ESG Ratings methodology
[21] MSCI ESG Researching LLC (2022), MSCI ESG Ratings methodology

To obtain the final ESG score, the individual weights of the Key Issue scores are calculated and then normalized relative to ESG Rating industry peers. Values obtained in this way are not absolute but relative to a company's industry peers. After the right Key Issues have been selected for the Global Industry Classification Standard (GICS) sub-industry, their weights are derived assessing the contribution on the impact (high – low) in the industry and its time horizon (short term – long term). Generally, E and S single weight stays in a range between 5% and 30%, while G weight has minimum weight of 30%.

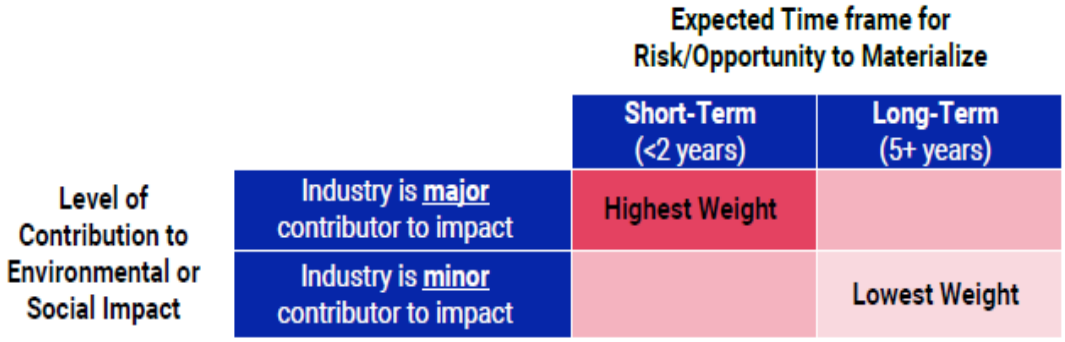


Figure 6- Source: MSCI ESG Rating methodology

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Starting from the weights the system attributes a Key Issue risk-score considering both the individual risk exposure and the management response to it. To score well, the management needs to be commensurate with the level of exposure: a company with high exposure must also have very strong management, whereas a company with limited exposure can have a more modest approach. Conversely, a highly exposed company with poor management will score worse than a company with the same management practices but lower exposure to the risk. While Key Issues are identified by looking quantitatively at each industry as a whole, individual companies' exposure to each issue will vary. MSCI ESG Ratings determine each company's exposure to key ESG risks based on a granular breakdown of its business. Score goes from 0 to 10 for the exposure as for the management.

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

[22] MSCI ESG Researching LLC (2022), MSCI ESG Ratings methodology

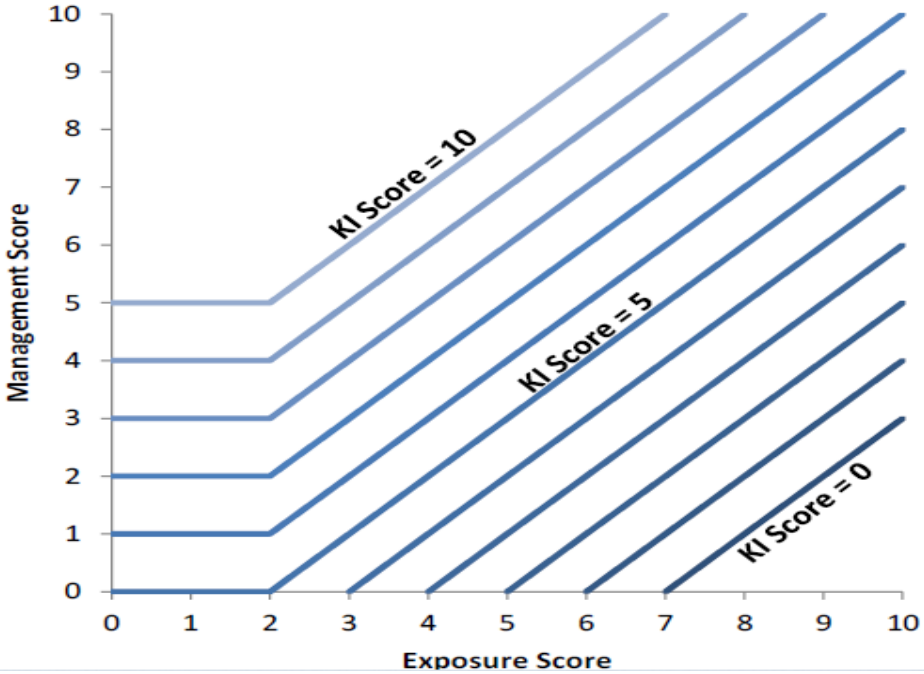


Figure 7 - Source: MSCI ESG Rating Methodology

[23]

The Governance Pillar Score is an absolute value of a company's governance that uses a universal 0-10 scale. It is composed by the Theme Scores and the Key Issue Scores that are individually calculated based on a deductive approach in which points are deducted from a "perfect 10" based on the prompting of Key Metrics across the underlying Key Issues. The final output is an Industry-Adjusted Score (IAS), defined by the weighted average of the E, S and G score and normalized based on score ranges set by benchmark values in the peer set. The following criteria apply in setting the industry top and bottom benchmark values:

- The top benchmark value ("industry maximum score") falls between the 95th and 100th percentile of modeled weighted average key issue scores (WAKIS) within an ESG Rating Industry.
- The bottom benchmark value ("industry minimum score") falls between the 0th and 5th percentile of modeled weighted average key issue scores (WAKIS) within an ESG Rating Industry.

[23] MSCI ESG Researching LLC (2022), MSCI ESG Ratings methodology

The Industry Adjusted Score corresponds to a rating between best (AAA) and worst (CCC). These assessments of company performance are not absolute but are explicitly intended to be relative to the standards and performance of a company's industry peers.

24

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

Figure 8 - Source: MSCI ESG Rating Methodology

MSCI ESG Research recalibrates these benchmark values on an annual basis to reflect changes to underlying company data, methodology updates and fluctuations in industry peer sets.

2. Sustainalytics ESG Rating

Sustainalytics, a Morningstar Company, is a leading independent ESG and corporate governance research, ratings and analytics firm that supports investors around the world with the development and implementation of responsible investment strategies. Today, Sustainalytics works with hundreds of the world's leading asset managers and pension funds who incorporate ESG and corporate governance information and assessments into their investment processes. Sustainalytics also works with hundreds of companies and their financial intermediaries to help them consider sustainability in policies, practices and capital

[24] MSCI ESG Researching LLC (2022), MSCI ESG Ratings methodology

projects.[25] The rating that it provides is based on the degree at which a company's economic value is at risk driven by ESG factors or, in other words, the magnitude of the unmanaged ESG risks. The final rating is expressed as a quantitative score and a risk category. The numerical part express units of unmanaged risks with a lower score linked to a better performance and a safer risk category. The output is on a 0-100 scale with the 95% of cases under the 50 points for the maximum level of unmanaged risk, while the risk categories are ''negligible, low, medium, high, severe''. These categories are "absolute" in the sense that companies can be compared among different sub-industries. The issue considered need to be "material" for the organization, so they will have a potentially substantial impact on the economic value of a company and, hence, its financial risk- and return profile from an investment perspective.

The composition of the ESG risk rating is made up of three building blocks: Corporate Governance, Material ESG issues (MEIs), and idiosyncratic risk issues. Corporate Governance is the foundational element of the rating, reflecting the conviction that bad governance involves more exposure to negative outputs in managing typical risks. It applies to all companies universally, with no distinction concerning the sub-industry and unmanaged Corporate Governance risks contributes round about 20% on average, with some adjustments due to the other ESG issues considered for each different sub-industry. Material ESG issues are focused on a topic, or set of related topics, which require a common set of management initiatives or a similar type of oversight. The assessment of material ESG issues occurs at the subindustry level and is reviewed annually through a comprehensive and structured process. At a company level, material ESG issues can be removed from the rating if they are not relevant to the company's business model. The MEIs is the core and the center of the methodology and assumes that ESG issues can impact the economic value of a company in a given industry in a quite predictable manner. These kind of risks in fact, are based on the typical business model and the related business environment a company is operating in. In the case these issues became significant and material in an unpredictable manner they turn as "idiosyncratic risks'', which form the third building block of the

[25] Sustainalytics (2021), ESG Risk Ratings - Methodology Abstract vers. 2.1 - https://connect.sustainalytics.com/hubfs/INV/Methodology/Sustainalytics_ESG%20Ratings_Methodology%20Abstract.pdf

methodology. Idiosyncratic Issues are ‘unpredictable’ or unexpected in the sense that they are unrelated to the specific subindustry and the business model(s) that can be found in that subindustry. For example, an accounting scandal is certainly nothing that is more predictable in some industries than in others. It could happen at any company across all sectors and, hence, falls outside of the logic with which we capture subindustry-specific material ESG issues, and the market often identifies as “black swan”. Idiosyncratic risk must pass a determined threshold to represent a materiality, in the case they do, they are material only for the specific company under review and do not affect the entire related sub-industry.

The quantitative score is a valuation of a two-dimensional architecture white exposure as first dimension and management as the second one. Exposure can be considered as a set of ESG-related factors that pose potential economic risks for companies. Another way to think of exposure is as a company’s sensitivity or vulnerability to ESG risks. Firstly, a Subindustry Exposure is assessed testing a set of potentially relevant ESG issue for the companies that operate in the same subindustry (characterized by roughly similar products and business models). Then the sensitivity of the specific company is estimated through a Beta, that reflect the degree to which a company’s exposure to a material ESG issues deviates from the average exposure to that issue within its subindustry. To arrive at a company’s exposure score for a particular ESG issue, the subindustry exposure score is multiplied by the company’s issue Beta. Risk is divided into Unmanageable Risk and Manageable Risk. The logic behind the second category assumes that for some material ESG issues the risk cannot be fully managed. As a consequence, the manageable element must be excluded using the Manageable Risk Factor (MRF), expressed in percentage and generally comprised between the 30% and the 100%. The second dimension of the methodology is the Management and the overall score for a company is derived from a set of management indicators (policies, management systems, certifications, etc.) and outcome-focused indicators. Outcome-focused indicators measure management performance either directly in quantitative terms (e.g. CO2 emissions or CO2 intensity) or via a company’s involvement in controversies (represented by the company’s event indicators). ESG indicators are the smallest assessment unit used to measure a company’s management of ESG issues. They provide a systematic and consistent way of assessing clearly delineated and standardized criteria. These criteria are based on

key areas of risk or best practices that help to distinguish between the performance of different companies. Indicators are scored on a scale of 1-100.

The final ESG Risk Ratings scores are a measure of unmanaged risk, which is defined as material ESG risk that has not been managed by a company. It includes two types of risk: unmanageable risk, which cannot be addressed by company initiatives, as well as the management gap. The management gap represents risks that could potentially be managed by a company but aren't sufficiently managed according to our assessment. The scoring system for a company is best thought of as occurring in three stages. The starting point is determining exposure. The next stage is assessing management and the degree to which risk is managed, and the final stage is calculating unmanaged risk. This structure applies to individual material ESG issues as well as the company's overall ESG Risk Ratings.

[26]

Company Exposure	=	Subindustry Exposure	*	Issue Beta		
	=	8	*	1.5	=	**12**
Manageable Risk	=	Company Exposure	*	MRF		
	=	12	*	90%	=	**10.8**
Managed Risk	=	Manageable Risk	*	Management score (as %)		
	=	10.8	*	75%	=	**8.1**
Unmanaged Risk	=	Company Exposure	-	Managed Risk		
	=	12	-	8.1	=	**3.9**

Figure 9 - Source: Sustainalytics - ESG Risk Ratings - Methodology Abstract

The final ESG Risk Ratings score is calculated as the sum of the individual material ESG issues' unmanaged risk scores or as the difference between a company's exposure and its managed risk.

[27]

Negligible	Low	Medium	High	Severe
0 - 10	10 - 20	20 - 30	30 - 40	40+

[26] Sustainalytics (2021), ESG Risk Ratings - Methodology Abstract vers. 2.1 - https://connect.sustainalytics.com/hubfs/INV/Methodology/Sustainalytics_ESG%20Ratings_Methodology%20Abstract.pdf

[27] Sustainalytics (2021), ESG Risk Ratings - Methodology Abstract vers. 2.1 - https://connect.sustainalytics.com/hubfs/INV/Methodology/Sustainalytics_ESG%20Ratings_Methodology%20Abstract.pdf

3. S&P Global ESG Rating

The ESG Evaluation is a forward-looking opinion of ability to manage future ESG

Figure 10- Source: Sustainalytics - ESG Risk Ratings - Methodology Abstract

risks and opportunities. With a company's permission, the ESG Evaluation uses responses from the S&P Global Corporate Sustainability Assessment (CSA) and is further supported by deeper engagement between the Ratings' Analysts, company/bank management and a board member. Each ESG Evaluation comprises two inputs: the ESG Profile and Preparedness opinion. The ESG Profile score summarizes S&P Global Ratings opinion of the current-to-near-term effectiveness of the entity's ability to manage its risk exposure and uncover opportunities relative to peers. The ESG Profile score combines S&P Global Ratings assessment of three Profiles: Environmental (30%), Social (30%), and Governance (40%). More than 40% of the ESG Profile is driven by how we apply our macro sector and regional analysis to an entity. The ESG Risk Atlas consolidates our analytical sector knowledge and expertise and provides the foundation for our macro sector and regional analysis, which makes the ESG Evaluation comparable cross-industry and cross-region. In order to obtain an ESG Evaluation, companies are invited to complete the S&P Global Corporate Sustainability Assessment (CSA). The responses provided by a company in the CSA questionnaire are used by S&P Global Ratings' analysts as a starting point for their comparative ESG analysis of the company. This is bolstered by information gleaned from direct discussions between the company and S&P Global Ratings analysts. The Preparedness opinion is a qualitative view of a company's capacity to anticipate and adapt to a variety of long-term disruptions. To develop the Preparedness opinion, S&P Global Ratings analysts meet with a company's senior management and a board member to establish their awareness and assessment of emerging trends and potential business disruptors, as well as associated long-term planning. Incorporating the views of board and management of a company's top risks and its future direction both adds further dimension to the Preparedness opinion, and highlights to investors how the company's strategy is likely to deliver long-term value.[28] Once S&P Global Ratings has determined the company's ESG Profile score and Preparedness opinion, they are combined to produce a relative overall ESG Evaluation score on a 100-point

[28] S&P Global Ratings (2021), *ESG Evaluation brochure digital*

scale. Evaluated companies receive a report which details the analysis and delves into the rationale behind the scores. This report can be kept confidential to use as an internal strategy tool or shared with investors and stakeholders as companies see fit. Once CSA questions have been received points, they are progressively weighted and summed at the Question-, Criteria- and Dimension-levels to reach a final aggregated score, the S&P Global ESG Score. Scores are also produced at each of the levels of aggregation (Question, Criteria and Dimension). The formula utilized to create S&P Global ESG Scores is:

$$\boldsymbol{SPESG = \Sigma\ (((SPQP * SPQW) * SPCW) * SPDW)}$$

Where:

- *SPESG = S&P Global ESG Score*
- *SPQP = Question Points*
- *SPQW = Question Weight*
- *SPCW = Criteria Weight*
- *SPDW = Dimension Weight*

The final output does not flow in a final category of risk but compare the 0-100 score with the industry ESG leader's one, providing a relative assessment of the company that is analyzed.[29]

Furthermore, there is a huge number of different ESG scores, with similar importance and not explained in deep. FTSE Russell ESG Rating is one of them, or the Bloomberg and the Refinitiv ones. Some data companies, include ESG in their Credit Rating, like Moody's. Other asset managers, use their proprietary scoring methodology, the inform investors or to simply conduct analysis on their own. The point is that in addition to the big variety of existing ratings, it is also difficult to get and report data for a lack of detailed disclosures or the complexity of the specific methodology. For the study proposed in this dissertation, the MSCI rating and the Sustainalytics' ones appear the most useful and their explanation have been provided. The reason is that they are easy to understand and the two companies provide free access to data and ESG related indexes.

[29] S&P Global Ratings (2022), *S&P Global ESG Scores Methodology*

1.3.3. Applying the ratings: investment approaches and sustainable financial instruments

ESG scores are the necessary instrument to transform theory in practice and build a concrete set of action to make the change countable and measurable. Environmental, Social and Ethical issues have been discovered and after a long period of silence, world have started to be aware of their effects understanding that the change is crucial and urgent. Governments took actions and imposed disclosures to the companies, rating agencies provided analysis, model, and outputs to evaluate or support the disclosure, giving the possibility to judge each ESG performance. Although every industrial and financial actor is put under-pressure by governments at first impression, the real key of a virtuous behavior are investors. Bid is the core element of every market direction and if people demand sustainability, if customers reward ESG practice, offer must adapt and improve to stay competitive. The real change has been started by investment and investors awareness, with a stunning up-trend of sustainable choices in employing capital. In order to understand how they can influence the market, it is necessary to investigate the different approaches to sustainable investments, which differs also for grade of intensity and result either more active and discerning or more passive. At this purpose, the principal division to do is between *Social Responsible Investing (S.R.I.)* or Ethical Investing and *Sustainable Investing.*

S.R.I.

Ethical investing or S.R.I., arises from the investor's values. Ethical investors are willing to compromise on their expected returns in order to invest their assets in good conscience. They refuse to invest in five sin stocks: alcohol, tobacco, the arms industry, adult entertainment and gambling. Based on ethical choices, they may also exclude other companies, such as finance companies (payment of interest), pharmaceutical companies (birth control), meat industry companies (pork or all animal-based products) and companies selling cannabis for recreational use. Initially, ethical investors often used to have a religious set of values, but their selection of investments is increasingly affected by views related to environmental objectives, such as combating climate change.

Sustainable investing refers to the consideration of environmental, social and governance (ESG) factors in investing, as well as to the connection between the

risks and opportunities arising from these factors and the value of the investee. Sustainable investors often refer to a set of international norms or an international framework, such as the Principles for Responsible Investment. They seek good returns on their capital, but they also seek to consider ESG aspects by favoring investees that promote sustainability. There are various methods of sustainable investing, and investors can put more weight on the methods that are suitable for them. In practice, sustainable investors can use several methods simultaneously, and there may also be overlaps. Many of them choose to prioritize various methods, in addition to find methods that enable them to achieve outperformance as part of their investment strategy. *Exclusion (or negative screening)* is the oldest method of sustainable investing and stems from methods of ethical investing. It used to play a more important role, but its significance has decreased now that other methods (such as active ownership and the integration of ESG aspects into stock analysis) have become more common. Exclusion originally concerned the sin stocks mentioned above, as well as controversial industries. For example, tobacco used to be considered a sin stock mainly by ethical investors. Today, however, mainstream investors are also increasingly excluding tobacco companies because of undeniable health risks. Tobacco companies have also been excluded from the scope of the Global Compact initiative, as it is estimated that tobacco kills around seven million people each year. However, despite its harmful effects, tobacco has been a profitable investment, and many investors report having lost returns because of its exclusion. There are grey areas within the Principles for Responsible Investment and international norms, and investors need to assess the sustainability of these grey areas. Many investors exclude investments in controversial weapons, which are considered to include nuclear weapons and weapons prohibited by international treaties. Investors must also make choices concerning the definition of manufacturers of controversial weapons (for example, whether controversial weapons also include launch pads, maintenance measures or key components that may also have purposes other than those related to controversial weapons). ESG analysis services support investors in shaping these policies, but these parties may come to inconsistent conclusions. In recent years, investors have increasingly included coal mining and coal-dependent electric utilities in their lists of questionable industries because of their negative environmental impacts and environmental risks. Since 2015, the Government Pension Fund Global of Norway

has excluded investments in companies that keep mining and using coal. This decision has been made for reasons related to the climate. The exclusion of coal companies has since increased, and according to an AODP report published in 2018, coal has been excluded by 15% of the world's 100 largest pension companies. The exclusion of coal often involves a more specific definition, such as a limit for net sales, which is used to exclude a company from the investment portfolio (for example, a company will be excluded if coal represents more than 30% of its total net sales). Some Danish and Norwegian institutional investors have also excluded companies focusing on oil sands from their investments. These decisions have been made for environmental reasons. Coal and other forms of fossil energy involve the **transition risk**, which forces investors to assess their investments in terms of both values and investment risks, and the ultimate reason for exclusion may also be (partly) financial. If the profitability of investment were jeopardized because of legislative changes, consumer behavior or climate risks, this would also be reflected in these companies' cash flow statements over time because such cash flows can be predicted to continue only for a limited time in a calculation formula based on perpetual discounting. It is possible that the life cycles of the cash flows of certain products or industries are not indefinite but last for 5–10 years instead, for example. In addition, the elevated risk (return requirement) included in the calculation formula has an immediate impact on the value. As a result, some of the assets on the company's balance sheet would lose their value (stranded assets). Exclusionary approach is also related to the fact that investment managers and asset managers, particularly on the institutional level, are often guided by investment policies that are constructed to adhere to the needs or objectives of their clients, plan participants, governing bodies, or counterparties. As these policies are constructed based on the specific constituency to which that investor is accountable, these policies can vary greatly. **Policy risk, or ESG-based policy risk**, represents the risk that an investment will violate the policies to which investors are accountable. Investment managers may be subject to ESG-based policy risk because of institutional by-laws, beneficiaries' desires, interest of investors, board of trustees' beliefs, or plan participants. Asset managers, likewise, may encounter ESG-based policy risk through alignment of an investor's guidelines, board of directors or executive team's mandate, or counterparty requirements. **Headline risk** can be understood as any risk to the reputation, and subsequently the sustainability and profitability, of

an organization. This risk is a major factor particularly for all investors managing money for others. It is also a major risk component within ESG risk. Investors might consider ESG-based investing in order to mitigate negative news coverage events. The above section on policy risks illustrated how various institutional investors might be at risk if their policy conflicts with their investments. Headline risk builds on policy risk, as it presents first the side effects of a policy lapse (the negative news coverage that results from a breach of policy), and second the potential for reaping the negative consequences of poor environmental, social, or governance decisions made by underlying companies within their investment portfolio. The institutional investors view ESG factors as an increasingly viable method for predicting and avoiding headline risk. Asset managers may also align their money management philosophy with ESG investing as negative news coverage could lead to the perception of inability or instability. **Performance risk** is the risk of underperforming benchmarks, peer groups, and investment mandates. Investors may utilize ESG investment policies if they believe that ESG investing methodology will benefit the performance of their investments. As discussed in the previous chapter on the history of ESG, integrating environmental, social, and governance factors into portfolio construction was long viewed as a detractor to performance. This viewpoint was held by investors when ESG investing was understood solely as socially responsible investing (SRI), which traditionally involved moral screens in investment portfolios against firearms, alcohol, pornography, etc. However, today investors at the personal and institutional level view ESG investment policies as performance enhancers since quantitative data continues to show the superior long-term performance of ESG-integrated portfolios over traditional portfolios. For example, screening out a tobacco company as their product has a negative impact on their consumer's health. ESG investing has evolved in the 21st century as many investors consider ESG research a form of fundamental research that is measurable through factors that have impact on securities' performance. ESG performance risks could arise when investors choose to not consider, or ignore, such ESG factors.

ESG integration is the explicit inclusion of securities based on factors of ESG risks and opportunities, into an investment portfolio. Investors often choose this strategy to mitigate risk and/or to help generate alpha. Whereas exclusion-based ESG

investing has a primary objective of adhering to a specific policy mandate or guidelines, ESG integration is a method of ESG investing that is used with the intention to add quantifiable value to the investment process. The added value is generated either reducing portfolio risks or volatility, increasing returns, or adding value to the portfolio's effect on society and on environment. Excluding certain securities or assets may be complementary to ESG integration when seeking for certain ESG factors calls for the exclusion of securities or segments of the capital markets. For example, an ESG integration strategy that seeks to maximize the long-term sustainability of energy equities might consider excluding coal mining and oil exploration equities and, instead, allocate to natural gas exploration equities.

Investors generally choose ESG integration for its flexibility in implementation. In fact, exclusionary investing is fundamentally grounded on prohibiting securities while integration does not restrain an investor, in such a "black and white" logic. It is a methodology that focuses on incorporating insights on environmental, social, governance, and other related non-financial performance factors in order to optimize an investor's risk-and-return profile without restraining an investor by policy or investment guidelines. ESG factors cover a vast range of topics and issues such as (but not limited to) board or management diversity, cyber security, accounting standards, financial reporting, waste management, carbon emissions management, energy efficiency, carbon footprint management, raw materials use, water use, water pollution, etc.. Researching and analyzing these elements allow investors to measure a company's securities based on key metrics not found within a company's financials or traditional valuation metrics. There are several ways in which investors practice implementation and practitioners often debate the optimal method to do it. To better understand the practical implementations of ESG investing, it is helpful to examine two of the mainstream approaches: Fundamental research-based ESG integration and Systematically implemented ESG integration. Fundamental ESG integration can be implemented through fundamental research methodologies and it is like traditional fundamental investment strategy. In this methodology, an investor will analyze specific ESG factors as criteria for their ESG integration. Research reports produced by ESG research firms, financial institutions, or academics, are largely used but they may conduct their own proprietary research based on their own standards and processes. Generally, this approach to analyzing ESG factors is more qualitative in nature and requires careful

examination of both direct and indirect data. It may also incorporate the analysis of macro-thematic ESG factors that may affect the industry a company operates within or that affect the company specifically. Fundamental ESG integration allows investors to draw insight from research reports, news, and information discovery, incorporating their own system to weight and evaluate them. Systematic ESG integration is the quantitative application of integrating ESG factor analysis in an investor's decision-making process. The factors can be measured quantitatively, and thus assigned set values for monetarization and systematic analysis. For the purpose, also assigned ESG-classification, ESG factor ratings, or security-level ESG quantification can be used as an instrument. These preset quantitative criteria are integrated into the investment portfolio rather than qualitatively deriving ESG insight for integration.

Positive screening (or best-in-class) is one method for systematic ESG integration. Investors may also choose to systematically integrate ESG factors through filtering a universe of securities in order to integrate elements with favorable ratings on ESG factors into a portfolio. Ratings are those produced by a research firm or ESG ratings agency (as explained in the previous paragraph). An investor chooses to only include securities of a certain rating hurdle: for example, an investor might conduct positive screening to integrate only securities rated AA or AAA into an investment portfolio as part of their systematic ESG integration process. Further, an investor may use the positive screening to narrow their investable universe. The positive screening ESG integration approach is also referred to as tilting as an investor is essentially tilting their portfolio towards a criterion of ESG ratings quality (Portfolio Tilt method). Among these difference methods, investors will naturally use the integration-based ESG investing approach that they believe adds the most value to their investment process and investment objectives. Investors might also consider using an ESG integration approach that is beneficial to their results measurement and ESG investment reporting requirements.

Engagement-based ESG investing is the third approach to ESG investing. Engagement is the act of communicating and collaborating with a company that is a current or prospective investment. Engaging with companies allows investors to increase the weight of investors' demands in the eyes of corporate management. Investors choose engagement-based ESG investing so that they may communicate their beliefs on a particular issue in order to serve as a catalyst for change. The tone

of engagement can vary greatly: in some cases, the engagement process is collaborative, other times the engagement process can be hostile, as investors maximize pressure on a corporation to effect change. In either case, engagement can grant the investor the opportunity to make a material impact in corporate policy. In Collaborative investors try to work alongside the company in a supportive manner. An example of a collaborative engagement-based ESG investment action could be observed through the lens of a hedge fund that contacts a ‘’mid-cap’’ company through a private letter to the board of directors explaining governance issues, the need for gender and minority diversity at the senior management and executive suite level, and a pathway to create greater shareholder value, along with an offer to commit time and energy in assisting the company in accomplishing the suggested objectives. Hostile engagement, on the other hand, is the act of engaging with a company in an aggressive manner to use the investor’s position to forcefully be a catalyst for change. Although the effects of collaborative engagement can be positive or negative, hostile engagement is more likely to cause a conflict within the company, deter other investors from investing, or reflect negatively in the eyes of the company’s consumer or client. That said, hostile engagement can be successful at creating shareholder value. It might also engage other decision makers at the company through their new, potential, position on the company’s board of directors in the effort to force the change. The approach for engagement can vary a lot in practice. Furthermore, engagement can be private or public. Private engagement may include confidential communications on constructive ESG issues, intellectual capital and strategy sharing, and research and development. Regardless how engagement- based ESG investing is practiced, the core focus is to be a catalyst, or contributor, for change relative to an ESG issue or risk in order to create greater shareholder value. Public engagement may entail open letters, use of media platforms and social media channels to communicate desired engagement and goals for change. It may also come in the form of activism, which may be collaborative or hostile in nature: investors buy large amounts of a public company’s stock and then attempt to obtain seats on the company’s board with the goal of creating a major change in the company. Proxy voting is a mainstream example of a basic engagement strategy. Investors have the option to vote on shareholder resolutions proposed, particularly those that are relevant to environmental, social, and

governance factors. Either retail as institutional ones, engage with companies through their decision-making practices relative to proxy voting.

Thematic investing (or theme investing) means that certain themes are favored in the selection of investments as companies operating in certain sectors or producing certain products and services. The themes may be related to sustainable development goals and may range from water and forests to climate change, for example. In thematic investing, the investor wants either to support the development of their chosen operations or to achieve returns on investments related to a specific theme that they see as having great potential. Thematic investing can be regarded as one form of sustainable investing, meaning that other principles of sustainable investing are not applied extensively to all thematic investments.

Impact investing is a hybrid form of investing that combines returns with benefits for society: investors will invest in companies, or practice specific investment strategies, that combine both social and financial returns. An investor might prefer impact-based ESG investing methodology for a variety of reasons, but the two most significant reasons are: to meet the social or environmental objective of the asset owner (or the investor's belief system) or to yield the best risk-adjusted return compared to other investment choices. Impact-based ESG investing examines business processes and activities of companies in order to measure the impact that investing in, or owning, those companies would have on certain issues, assessing their sustainable business policies can benefit the environment, while providing a long-term advantage to return potential. It often focuses on the cause-and-effect relationship of investing in order to measure the true impact (i.e. financial and non-financial) of the investment. Impact investing can be thematic in nature. Themes may be aligned to general impacts or can be isolated to a specific cause or issue. Themes may be global, regional, country-specific, or targeted to specific local population. Themes can also be targeted to impact a certain culture, socioeconomic status, or population group. Impact investing can differ in investment liquidity, geography, asset class, and the type of environmental or social theme that the impact is directed towards, but impact-based ESG investing is consistent in the cause-effect embodiment. An example of an impact-based ESG investing theme can be observed through the lens of an investor who desires to reduce carbon emissions as part of their investment process may implement an investment strategy that is designed to proactively impact carbon emissions. This investor may dually

invest in companies that have business models that feature technologies that are carbon-reduction technologies, as well as construct portfolios that are more aware of their carbon footprint within their equities. This investor might strive to develop a portfolio of companies that have management teams and boards that are active in carbon emissions reduction. In this example, the investor might utilize elements of exclusion and integration, but have a core focus on the impact of carbon footprint reduction. Examples of the various forms of impact investing include green bonds, which support sustainable development, and social impact bonds. In the 'original' idea of impact investing, the returns for investors depend on the improvements achieved, but this is not the case with green bonds, for example. In monetary terms, the share of impact investing continues to be small, but it has multiplied in just a few years. With the growing demand, its effectiveness should also be examined critically, as there are practically no standardized methods for measuring impacts. Microloan funds are a form of impact investing. They invest in operators that lend relatively small amounts of money to people whose loan applications would be rejected by traditional banks. The original purpose of microloans was to help the poor in developing countries and enable them to start small businesses, but the target groups have since expanded. [30]

On the other hand, also financing activity have been reshaped in order to bring more commitment to the sustainable metamorphosis of the economic system and meet the needs of the investors at the same time. New financial instruments of debt in fact, have been created and issued to attract ESG-oriented capital:

- Green Bonds
- Social Bonds
- Sustainability Bonds
- Sustainability KPI-Linked Bonds
- Transition Bonds.

Green Bonds are debt instruments that collect proceeds in order to use them exclusively for climate/environmental sustainability purposes, regulated by ICMA and EU Green Bond Principles. Common eligible projects include: renewable

[30] H. Silvola, T. Landau (2021), *Sustainable Investing - Beating the Market with ESG*, Palgrave Macmillan

energy, pollution prevention and control, climate change adaption and clean transportation. Until 2020, 250.1 Bn of Green Bonds have been issued.

Social Bonds use capital for social projects, like access to essential services for everyone (i.e. healthcare), affordable houses and affordable infrastructures. They are regulated by Social Bond Principles and have reached a market-cap of 145 Bn until 2020.

Sustainability Bonds link both Environmental and Social purposes in using their proceeds, with an issuance of 150 Bn until the previous year. *Sustainability KPI-Linked Bonds* are interesting because show a unique characteristic: the financial and / or structural characteristics can vary depending on whether the issuer achieves predefined Sustainability Objectives. Issuers are thereby committing explicitly (including in the bond documentation) to future sustainability outcomes within a predefine timelines. SLBs are a forward-looking performance-based instrument. Proceeds of SLBs are intended to be used for general purposes, issuers may choose to combine Green Bonds with SLBs.

Transition Bonds could use KPI Linked Approach or direct their proceeds to specific projects that help "brown" processes / companies become less brown and align themselves with the sustainable benchmarks. Market is moving toward this direction showing a huge uptrend concerning sustainable financial instruments:

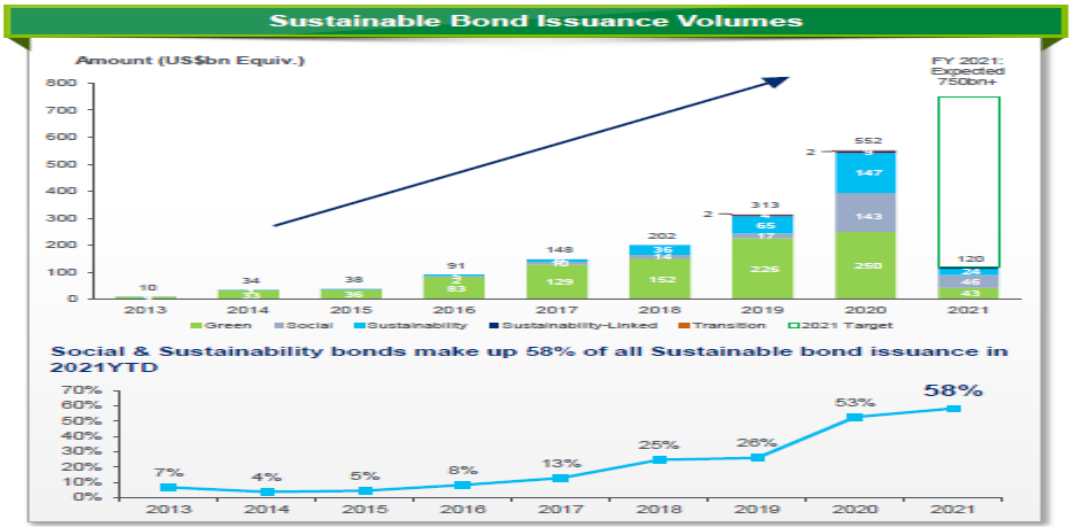


Figure 11 - Source: Citi, Dealogic (2021)

CHAPTER 2

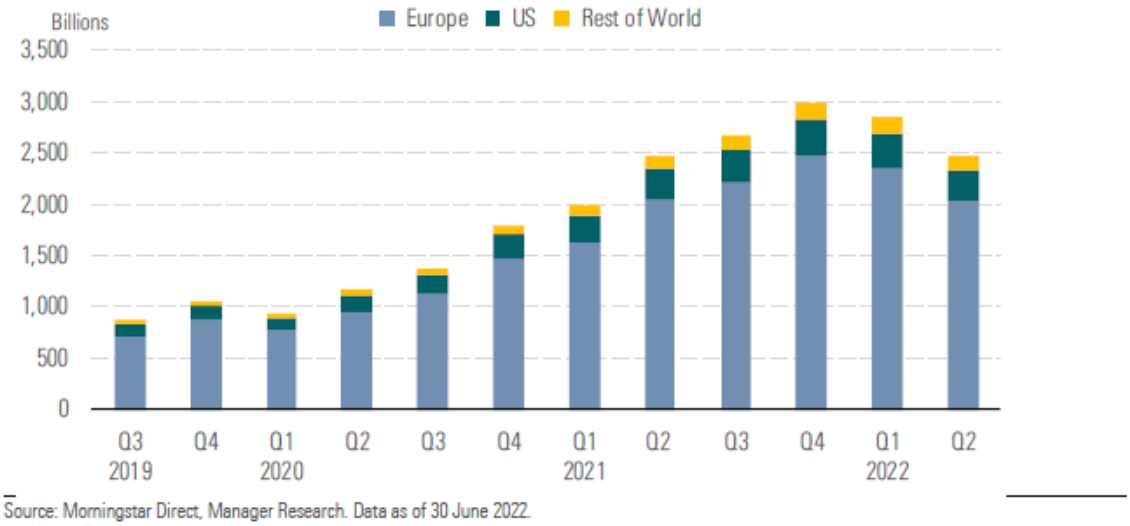
2. IS ESG-BASED INVESTING PROFITABLE? THEORIES AND FINDIGS

The precedent assumptions in the first chapter were an introduction of the topic that is going to be analyzed from this chapter and forward. ESG investing is with no doubt crucial for the environment, in order to enhance the society and the quality of life and moreover, it is important to align interests between shareholders and stakeholders, representing in this sense, a strong instrument to adopt what literature calls “stakeholder view”. Assuming the largely demonstrated benefits for the world in general and for a long-term sustainable economy more in the specific, the debate concerning the ESG-based investing financial outlooks is still very controversial. The old school of economic theory, stated that sustainability sacrifices performance and profitability in order to take care of ethical issues, bringing no financial benefits to the organizations. This view has been rejected in the modern days, firstly by scholars of the new economy and later by markets. Governments, corporates, financial institutions and not less important, the investors (the heart of financial system), understood the relevance and the benefits of investing using sustainable strategies, and started to re-allocate their capitals generating an exponential trend that supports ESG-based theory. The aim of this study is to verify if the trend is justified, observe the financial data of the very last years and trying to respond at the question: is ESG profitable? What are the factors that brings concrete value to the organizations after the adoption of sustainability-oriented strategies? After the possible answer the objective is to empirically verify the relation between good performances and ESG high profiles and to assign approximated weight to this factor in affecting performance measures. The first answers come directly from some insights on the last market trends. The following data are presented to give an idea on how the economic environment is responding to the “Green Revolution”, taking in consideration studies and reports from banks, data providers and advisory companies. Starting from a pure social-surveying premise, nowadays 79% of U.S. individual investors and 99% of millennial investors are interested in sustainable investing (Morgan Stanley Institute for Sustainable Investing, 2021). The two-third of investors, furthermore, choose a value-based approach, with the 63% of them oriented to buy stocks aligned with their values and 68% of them trying to avoid investments that contradicts these values (Gallup, 2021). 50% of investors, more specifically, are likely to buy sustainable funds (Gallup, 2021). This kind of

awareness is observed also in companies, that are moving towards the trend for several reason. The largest pressure come from governments: the new regulatory framework success into re-shape the market thanks to a “double incentive” approach. The first incentive is positive: ESG high performance allow to obtain tax benefits and form of subsidy (i.e., in purchasing “green” PPE or assets). The negative approach instead, is represented by hard sanctions for new environmental or social principles violation. Financing is the other constraint that push corporates to increase their ESG performance because banks and financial institutions are more likely to erase capitals in project with sustainable purposes in order to increase their amount of sustainability in assets, generating an effective chain-reaction. The last, but not less important, factors are investors and costumers: high ESG companies appear as more stable in the time, more innovative and often meet the values of the environment they face, attracting more capitals and generating a higher number of sales. To gain engagement from this point of view, organizations started to adopt sustainable policies both in operations and in investments and to embody related disclosures to enhance their competitive position in the market. Over 25% of S&P 500 companies, indeed, mentioned ESG on their Q4 2021 earnings call (FactSet, 2022). Rating world also changed as a consequence showing an increase of beyond 100 rating agencies providing ESG score in 2022 (Global Initiative for Sustainability Ratings, 2022), and some of the best-known are Sustainalytics (owned by Morningstar), MSCI, FTSE, Bloomberg, Thomson Reuters, and S&P Global ESG. This evolution of interests and mindset in general, is traduced in action when the focus is set on the capital flows estimated in the last years and in those forecasted for the near short-term projections. In particular, quarterly Global

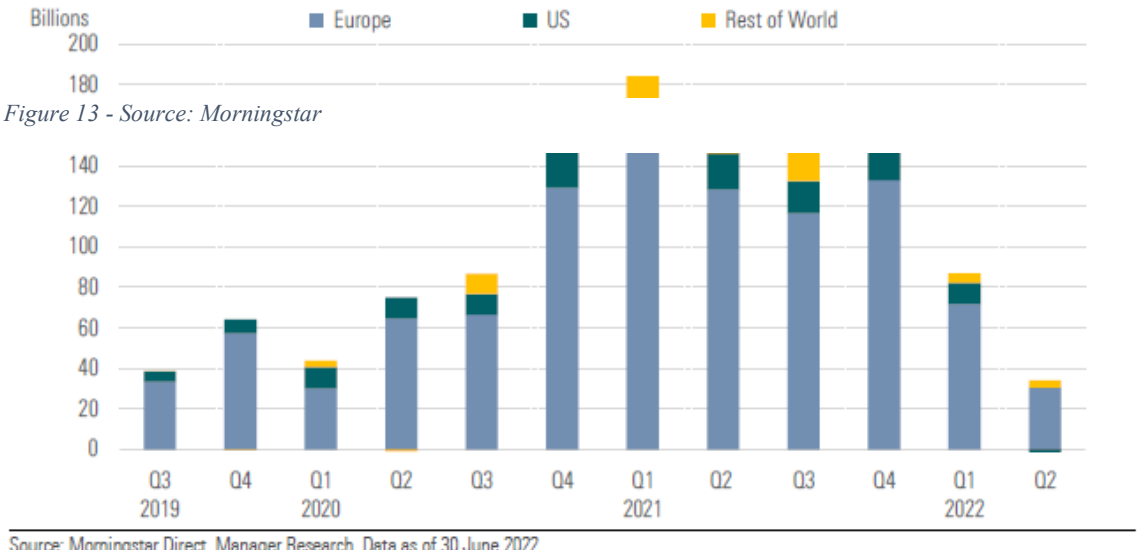
Sustainable Funds flows in USD billions have increased exponentially from 2019 to 2021.[31]

In 2022, a contraction is observed due to general fear unchained by Russia-Ukraine war and the global growth of inflation. The expansion related to the period between 2020 and 2021 must be probably attributed to the COVID-19 pandemic. In fact, early 2020 contraction identifies the beginning of the crisis but the from Q4 increase in capital flows is due to two factors: trust in the general economic recovery and the



Source: Morningstar Direct, Manager Research. Data as of 30 June 2022.

effects of investor's awareness boost for sustainability after the Coronavirus shock.



Source: Morningstar Direct, Manager Research. Data as of 30 June 2022.

Figure 13 - Source: Morningstar

Figure 12 - Source: Morningstar

[31] Morningstar Manager Research, 2022, *Global Sustainable Fund Flows: Q2 2022 in Review*

Although the contraction verified in the last quarters represents faithfully the typical investor's preference to keep their capitals safe during negative and disruptive macro-events, growing in sustainable asset is maintained almost constant showing no large signs of decrease since 2019:

It is also interesting to observe that the largest number of sustainable investments belongs to the EU and not to the U.S., possibly to the strongest attention paid to ESG Regulation by the former respect to the latter. "Green" funds hit about 2500 billion in 2021 in the Eurozone (Figure 15), against the 350 billion of the United

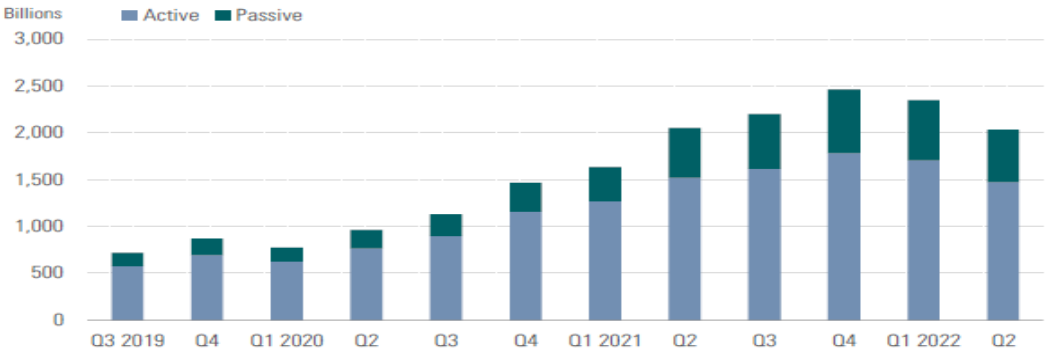


Figure 14- Source: Morningstar

States (Figure 16).

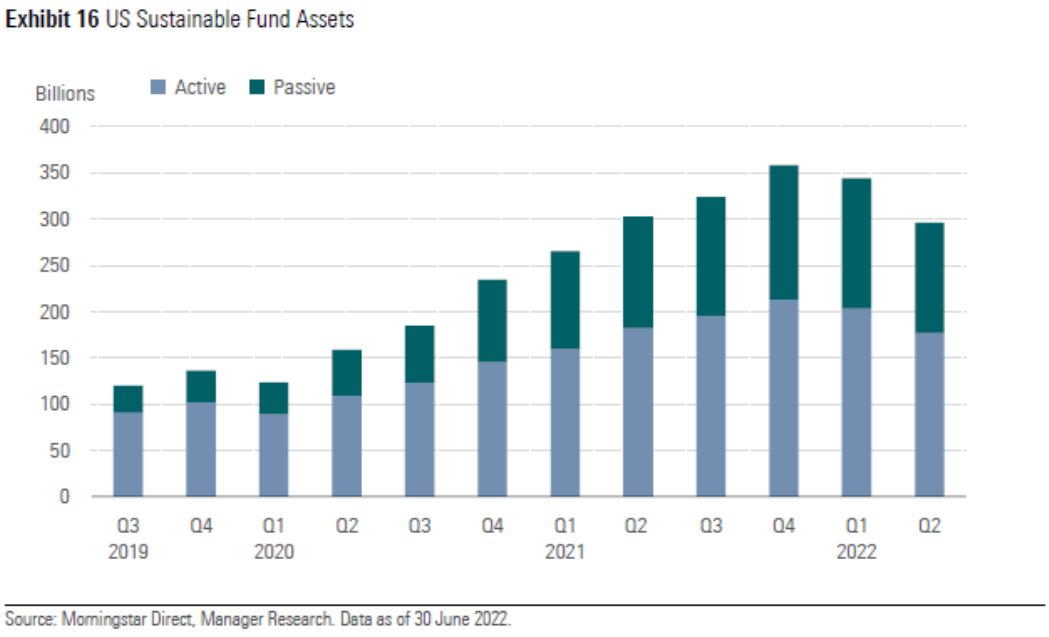


Figure 16 – Source: Morningstar

This positive trend is strong in 2 out of 3 economic powers in the world, unfortunately. In Asia in fact, sustainable assets have not reached the same popularity, even if a slight progress is observed during the last three years also in order to meet global investors' needs and allow a successful capital mobility

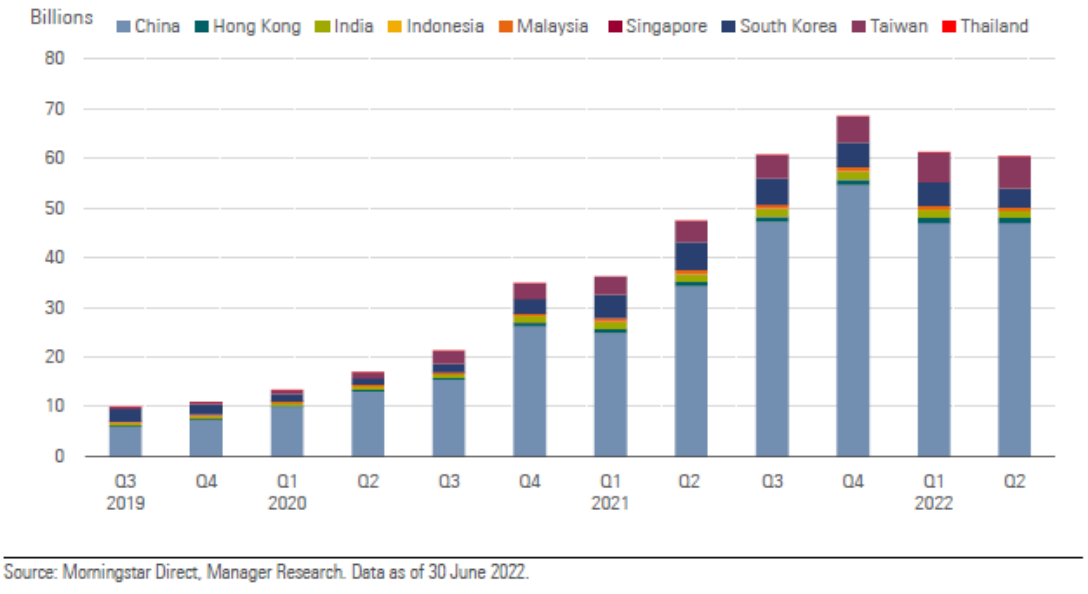


Figure 15 - Source: Morningstar

(crucial in a globalized economy).

Figure 17 shows that at the maximum level, Global Sustainable Funds Asset, hit almost 70 billion, the majority of them provided by the only Chinese market, which is less than a half compared to the United States market's data. This finding is not

very encouraging, considering that Asian Economy is facing the largest expansion of the last twenty years and can be considered the first responsible of pollution in the world due to its amount of industrial production and manufacturing.

The expansion, back to the first topic, is not going to stop, even if the actual fear of the market caused uncertainties that could decelerate the trend. In a possible scenario in which the social order and the financial stability would be restored, 50% of the global managed assets are likely to be ESG mandated in the U.S., pushed by investors' demand in 2025 (Deloitte Center for Financial Services, 2020). "Investment managers are likely to respond to this demand by potentially launching up to a record 200 new ESG funds by 2023, more than double the previous three years."[32]

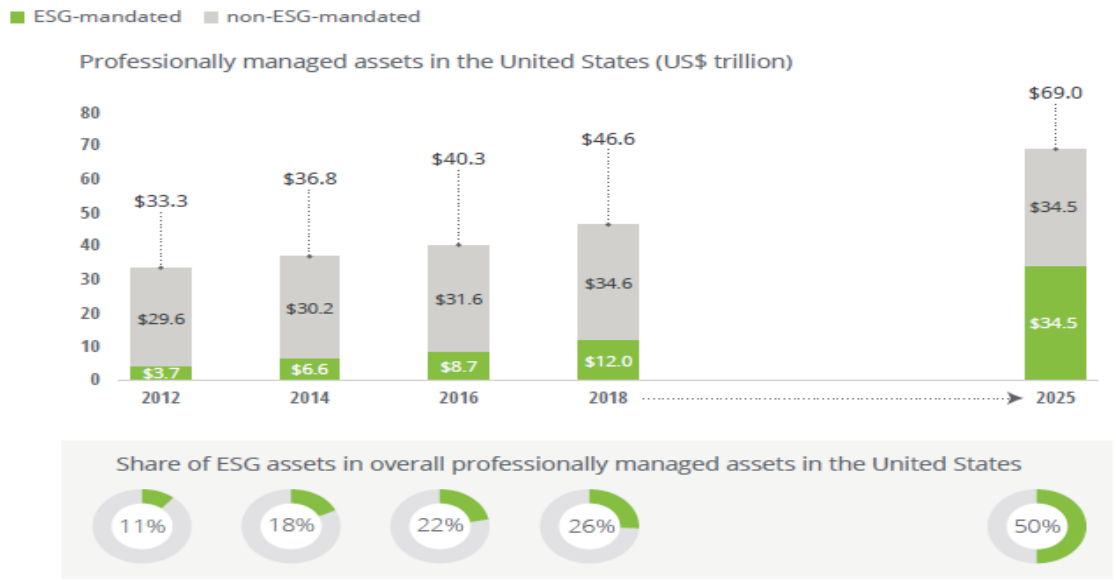


Figure 17 - Source: Deloitte Center for Financial Services

Sustainable assets are setting records every year and these outperforming volumes characterized by an exponential growing acceleration, are registered in the same way for the financing side. The issuing of financial instruments related to sustainability and their popularity, triggered by the choice of almost "prioritize" ESG criteria in purchasing assets by both investors and debt-lenders, confirmed and enhanced the trend that finance is witnessing, suggesting the absence of a possible down-turn and categorizing it as a real permanent evolution. ESG-related bond as Green Bond, SBL Bond, Transition and Social Bond, hit new records in 2021, totalizing $859 billion according to Refinitiv data. That compares with $534 billion

[32] S. Collins, K. Sullivan - Deloitte Center for Financial Services (2020), *Advancing environmental, social, and governance investing*

the previous year. Green bonds, where the money targets an environmentally friendly project, saw the highest issuance of $481.8 billion, followed by social bonds at $192 billion and sustainability bonds at $177 billion.

The volumes reported in assets, debt instruments, percentage of investors ESG orientation, are provided in this study to present a picture of how this kind of investment strategy represents an important topic to understand to not be unprepared in the future and to stay successful in the financial market as an investor as like a professional. This introduction suggests in fact, that Sustainability as a high demand but the reasons are not only moral in the facts. ESG has also valuable financial benefits, the market has understood its potential, and in this chapter they are going to be illustrated and analyzed from different perspectives.

2.1 Market perspective: historical performance indicators

The main question that the study aims to answer is: are sustainable investing strategies profitable? In order to respond is not enough to find a large number of positive performances in the market related to the "green" investment products. In fact, a series of good market indicators or a simple growth in market value cannot be satisfying for the purpose, considering that a "bullish" trend could be affected by heterogeneous factors which may not involve ESG score or sustainable practice. The point is to find a sufficiently explicative relation between ESG-thematic features and market performances. A process of research in literature, reports and several insights has built the theoretical basis to support this dissertation and provides conclusions about the effectiveness of sustainability for investment purposes. The first assumption is that exists a studied correlation between sustainable practices and financial performance. In particular, ratios explicative of investing outcomes show a positive correlation in this sense. Several extensive summary analyses of published scientific articles have come to the conclusion that there is a statistically significant positive association between sustainability and financial profitability. Margolis, Elfenbein, and Walsh (2007) compiled 167 studies from 1972 to 2007 for their article. They noticed that these studies typically examined the association between the company's financial performance (e.g. Tobin's Q, ROA) and the sustainability aspects reported by the companies.[33] Friede,

[33] H. Silvola, T. Landau (2021), *Sustainable Investing - Beating the Market with ESG*, Palgrave Macmillan

Busch, and Bassen (2015) later analyzed a considerably larger sample that covered around 2,000 studies that showed this positive correlation in the majority of the results. The strongest relationship verified in a larger number of cases is due probably to two factors: the first is a bigger group of samples (that enhance statistical significance) and the second is that the studies were completed in a more recent period (2015). Sustainability investing indeed, shows stronger impacts in the last decade than previous years for the better quality of the established criteria, the larger number of observable cases and a better response from the market derived

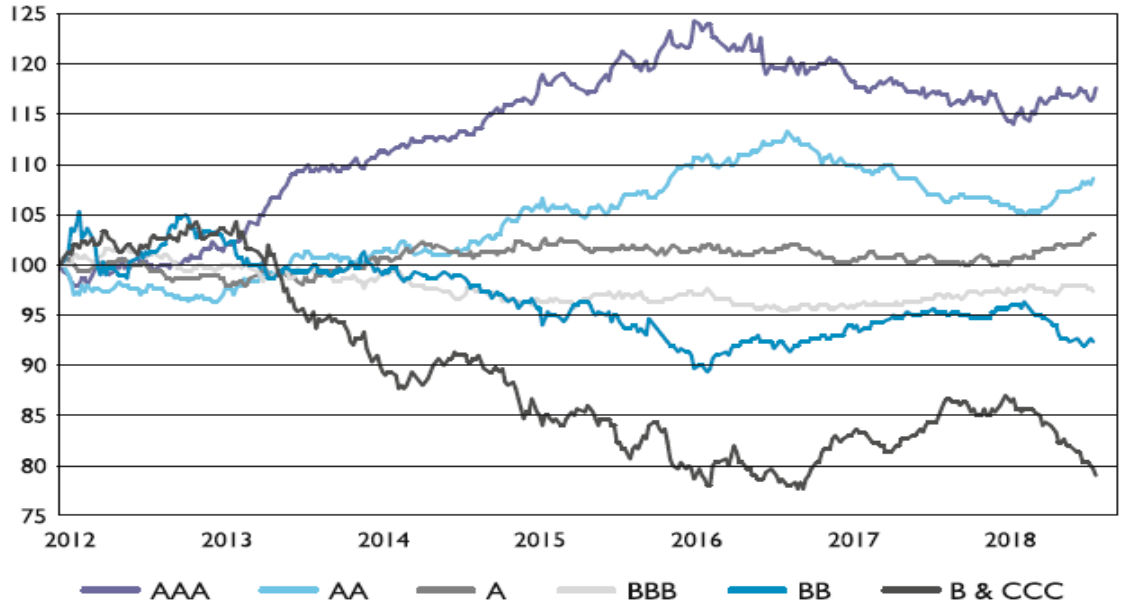


Figure 18 - Source: Nordea (2018)

from a bigger population of aware investors. What is particularly determinant for better financial performance are public ESG Ratings. With the born of this score methodology, related information is publicly available for investor, affecting their perception and their propension to invest or divest in the company. A study completed by Nordea (2018) conducted on S&P 500 index's companies shows the higher financial profitability of the top-scorer respect to the worst competitors. Financial profitability is measured considering both operating performance indicators and changes in market value. Choosing MSCI ESG Rating as a score, is observed that "AAA" rated companies outperformed by 35% the companies with "B" and "CCC" scores.

These data confirm the previous hypothesis concerning the investor's engagement, that is precious especially in periods of high market-volatility. Gaining trust allow to maintain a solid basis of capital inflows and prevent rapid and unexpected

outflows. On the contrary, the market tends to “punish” bad conducts especially after scandals providing in addition big losses of value as showed in table above. A famous case in fact, was verified with the Volkswagen emission scandal which was widely reported in the news in 2015 and had a negative impact on the market values of shares across the automotive industry. In 2010, the Gulf of Mexico oil spill (the BP oil disaster) caused the company’s market value to decrease by around 50% over a period of three months. The nuclear accident at TEPCO’s Fukushima 1 power plant, caused the company’s market value to decline, along with the market value of many other companies that use nuclear power. ESG in conclusion, determines both relevant positive and negative outperformances respect to the systematic risk of the market, in some cases regardless of the economic cycle. A study by Serafeim (2018) at Harvard University scientifically confirms the phenomenon mentioned above concerning the association between ESG level and financial profitability. According to Serafeim, the financial success of sustainable companies has increased over time and is affected by positive public information. In his model, Serafeim examines how changes in companies’ sustainability levels (ESG level) affected the companies’ market values measured using end-of-month values. Companies with a higher ESG level also have a higher market-to-book value and return on equity (ROE). An improvement in the ESG level had a twofold or threefold impact on the market-to-book value of companies whose sustainability had received positive publicity compared with companies whose sustainability aspects had been discussed in a negative light. From this it could be concluded that a company’s reputation as a responsible company and its media image have a positive impact on its market-to-book value. According to Nordea’s study as well, the return on capital employed is associated with the ESG rating. Figure 8.2 illustrates that companies with the highest ESG rating (AAA) are more successful, generating up to a 50% higher return on capital employed (ROCE) than companies with a poor ESG rating (B and CCC) in 2017.

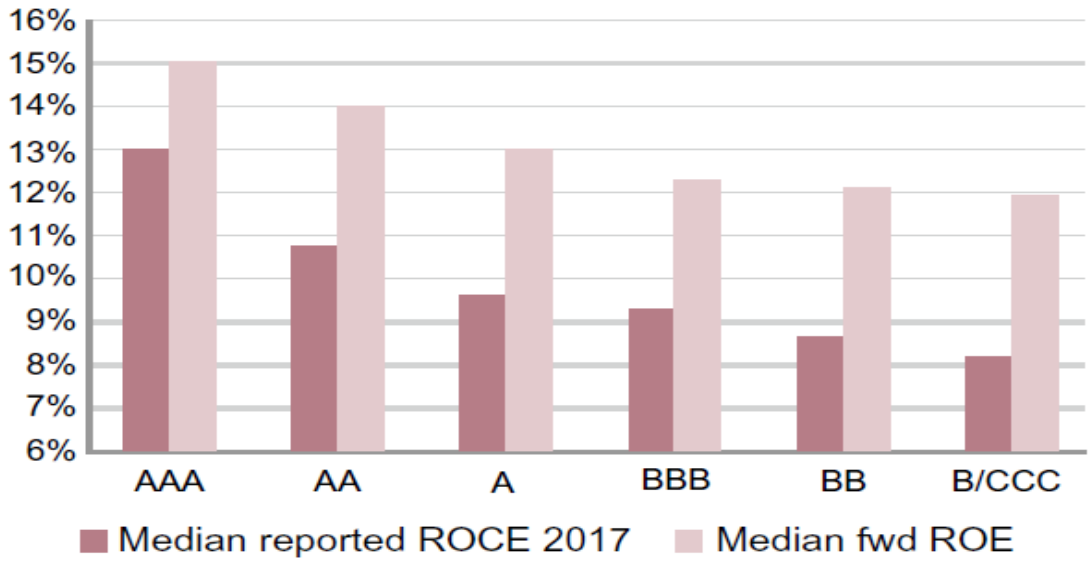


Figure 19 - Source: Sustainable Investing

According to research-based information, the materiality of ESG data has a significant impact on returns. Khan, Serafeim, and Yoon (2016) published an article in the prestigious academic journal The Accounting Review in which they analyzed 2,000 US companies between 1993 and 2013. According to the results of their study, companies that outperformed the benchmark companies in their sector in terms of material ESG factors increased their profit margins more rapidly and generated better risk-adjusted returns. Correspondingly, high ESG ratings for immaterial factors did not produce the same reaction and sometimes even decreased returns. Materiality was determined in accordance with the SASB's sector-specific material ESG factors. Another interesting and more recent study confirms the importance of materiality and shows how selecting different ESG factors for different industries is necessary to find relevant, coherent and comparable results in performance analysis. This research was initiated by the Global Alliance for Banking on Values (GABV) following exchanges with the European Investment Bank (EIB) about the links between financial performance and sustainability focus. With the support of the EIB and Deloitte, GABV contracted KKS Advisors to replicate analysis originated by Professor George Serafeim regarding linkages between financial performance and focus on material sustainability issues as defined by the Sustainability Accounting Standards Board (SASB) for the largest commercial banks in the world.[34] In the report, a first distinction between material and immaterial factors is made in order to create two indexes: materiality index,

[34] Deloitte (2019), *Do sustainable banks outperform? Driving value creation through ESG practices*

formed by banks with high score in the proper material issue factors, and immateriality index. The sample comprises 100 international banks by capitalization as of September 2018 and the scores are extracted using Bloomberg ESG data. The output shows results spanned in a time frame of 10 years, between 2007 and 2017.

Consistent with Serafeim studies, they found an outperformance of the top materiality portfolio with respect to the bottom materiality portfolio. The graph above shows the performance of $1 invested in each portfolio at the beginning of 2007 and held until the end of 2017. Investing $1 in the beginning of 2007 in the top materiality portfolio would have grown to $1.76 by the end of 2017. In comparison, investing $1 in bottom materiality portfolio for the same period, would have grown to $1.32. It is interesting to observe that from the beginning of 2007 to 2013, the two portfolios behave very similarly and show very little difference in compounded performance. In 2014 start an increase in performance from the top

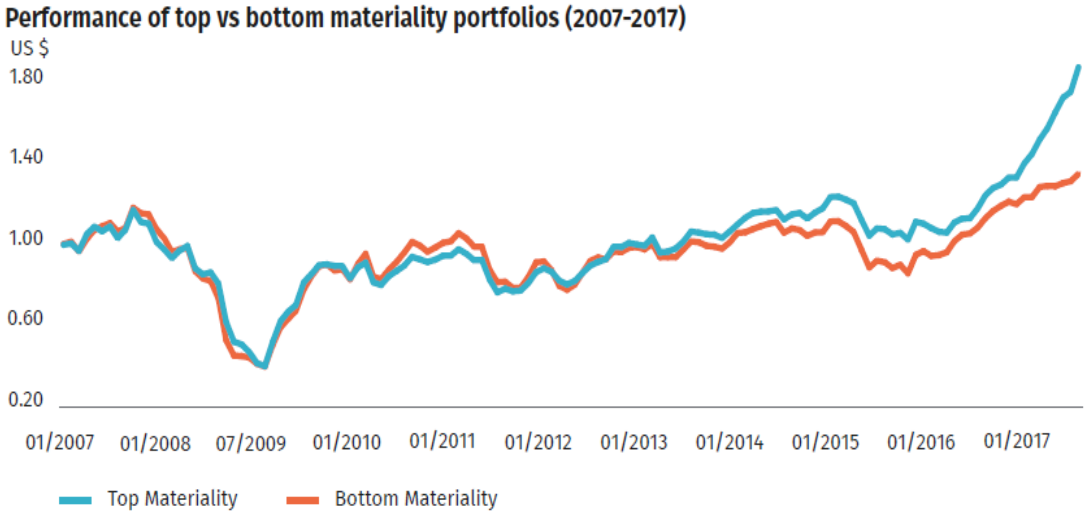


Figure 20- Deloitte

materiality portfolio and a spike in outperformance throughout 2017 compared to the bottom materiality portfolio. Potential explanations for the change observed after 2014 are, as said in the first study mentioned about positive correlation between performances and ESG, the improvement in ESG data quality and coverage and the rising importance of ESG issues for the investors.

Academic research shows that a sustainable company has lower market value volatility than a company with a low ESG rating. According to Verheyden, Eccles, and Feiner (2016), the volatility and the loss risk of an investment portfolio are lower using the best-in-class method based on ESG levels than for unscreened portfolios. Nordea's study (2018) based on MSCI data also illustrates that share price volatility was eight percentage points lower for "AAA" rated companies than for S&P 500 Index companies with the lowest ESG rating (B/CCC) between 2012

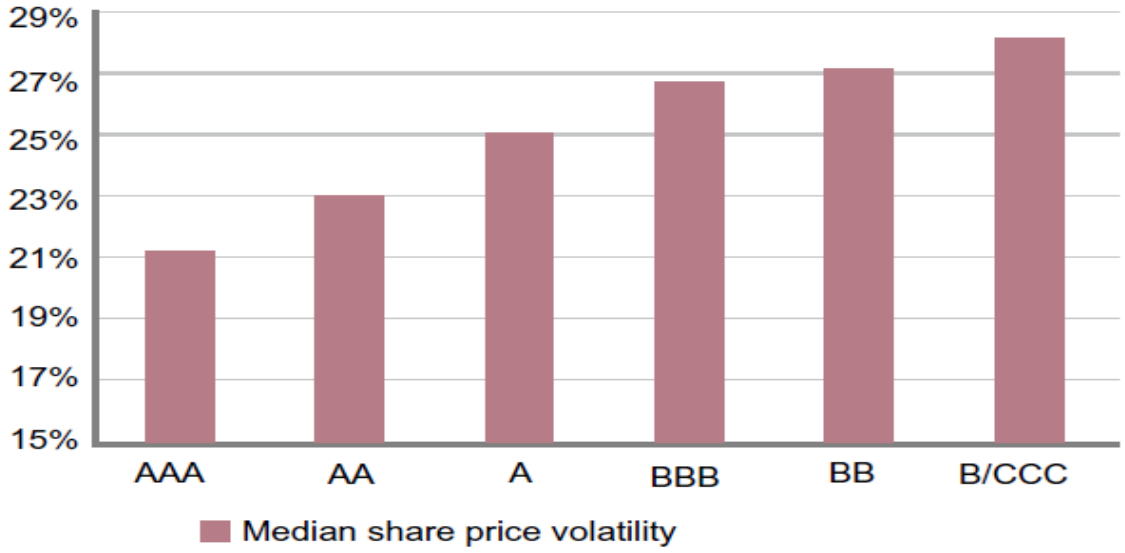


Figure 21 - Nordea

and 2018.

This lower volatility unlocks its positive potential especially during bad market cycles or periods of generalized crisis, as mentioned before (Albuquerque, Durnev, & Koskinen, 2012). The customers of sustainable companies are more loyal to a sustainable brand and are willing to pay a higher (premium) price for products. The difference between sustainable and less sustainable companies was evident during the 2008 recession in particular. Stable net sales development and share price performance decrease the cost of capital, reduce the company's overall risk and make the share more attractive. Cheema-Fox, LaPerla, Serafeim, and Wang (2020) observed that sustainable companies have recovered rather well from the stock exchange slump caused by the Covid-19 pandemic in March 2020. They analyzed more than 3,000 companies from around the world. According to the study, investees that actively communicated about their crisis response and showed credible commitment to their stakeholders were the least affected by the slump in terms of returns.

A quick analysis on the behavior of the ESG-based market products could be conducted to verify their response to the years of the COVID-19 pandemic. Using the financial software “Refinitiv” have been observed two equity indexes built by MSCI: MSCI Europe Price-Return Index and MSCI Europe ESG Leaders Price-Return Index. Both the instruments are expressed in US dollars using a restricted timeframe of about 2 years to focus on the pandemic. In particular, performance between 01.01.2020 and 24.08.2022 are showed in the figure below. Price returns have been rebased to a base value of 100 starting from the first date to make them comparable and observe the relative performance of the indexes, excluding any distortion of price due to the total market capitalization. Results are expressed on a daily basis:

In GREEN the performance of ESG Leaders index is shown. It is clear how it outperformed the chosen benchmark especially during the first months of 2020, identified with the explosion of the COVID-19 crisis. The recovery from the pandemic fear appears more prominent and on the other side, every case of downturn is more restrained. From 2022, the effects of Russia-Ukraine conflict are observable through a generalized trend inversion that, as expected, is more pronounced for the general Europe Index. The results of this chart are representative of a best-in-class performance: Europe ESG Leaders Index in fact, is formed by the best 10% ESG

rated companies in Europe and is compared to the other index like a best-in-class portfolio is compared to a standard-built one.

2.1.2. Literature's debate on ESG factor's impact on credit risk ratings

The recent literature indicates that ESG factors are associated with a reduction of the company's idiosyncratic risk and an improvement of the financial performance over a long-term horizon (Cheng et al., 2014; Desclée, Dynking, Hyman & Polbennikov, 2016; Verheyden et al., 2016). Hence, there seems to be some parallels to the role and function of credit ratings as they aim to cover a company's long-term exposure to credit risks and its creditworthiness (Desclée et al., 2016; Hoerter, 2016; Matthies, 2013). Nevertheless, the relationship between ESG and credit ratings and the incorporation of ESG into credit ratings is less scrutinized. The majority of the empirical research focuses on the examination of a relationship between sustainability criteria and the performance of a company and its credit rating. Bhojraj and Sengupta (2003), Ashbaugh-Shaife, Collins and LaFond (2006),Weber, Scholz, andMichalik (2010); Attig, El Ghoul, Guedhami, and Suh (2013); and Desclée et al. (2016) analyze the correlation between sustainability and corporate credit ratings. Bhojraj and Sengupta (2003) and Ashbaugh-Shaife (2006) focus on corporate governance. Both find a positive correlation between corporate governance and a company's credit rating. Bhojraj and Sengupta (2003) argue that good corporate governance reduces a firm's risk of default by mitigating agency cost, monitoring efforts and reduce information asymmetries. This is based on a higher transparency and disclosures by the firm's management. An independent board structure, board expertise and the existence of anti-takeover measures are examples how a good corporate can improve the creditworthiness. Weber et al. (2010) analyze the influence of firms' economic, environmental and social risks in terms of sustainability on its credit risk rating. Similar to the findings of Bhojraj and Sengupta (2003) and Ashbaugh-Shaife et al. (2006), they reveal a positive correlation between creditworthiness and sustainability factors. Moreover, Weber et al. (2010) conclude that sustainability criteria can be used to predict the financial performance of a company and improve the predictive validity of the credit rating process. The results are confirmed by Attig et al. (2013). Besides a positive correlation, their study finds that community relations, diversity, employee

satisfaction and environmental performance matter for a company's creditworthiness. Desclée et al. (2016) found a positive correlation between high scores and credit ratings as well. In contrast to prior findings, the correlation between ratings and environmental issues is the strongest. Companies with a better credit rating and a stronger balance sheet are better placed to comply with environmental constraints than those with lower credit quality. McAdam (2012) and Hoerter (2016) focus on the extent to which Credit Rating Agencies (CRA from now) consider ESG in their rating decisions. Applying an interview technique on key stakeholders and representatives of CRAs, McAdem (2012) found no evidence that ESG is embedded in the rating criteria. The paper argues that the current regulations for CRAs, valid in 2012, do not include any sustainability issues. Hoerter (2016) analyses the materiality of ESG dimensions and ESG criteria within financial risk and the integration of ESG into the credit assessment approaches of CRAs. Contrary to McAdems (2012), Hoerter (2016) suggests that ESG risks are increasingly considered in the rating processes and could be material for rating activities. However, CRAs consider ESG mainly in a holistic approach as part of their standard credit risk analysis. Thereby, the integration of ESG into rating decisions most often appears in the context of a negative rating action like a downgrade. Similar to the findings of Bhojraj and Sengupta (2003) and Ashbaugh-Shaife et al. (2006), governance and management are considered to be the most important aspects for credit ratings. Summarizing, the interest and relevance of effects and opportunities through ESG consideration in literature and practices are high. However, less research focuses on how ESG is integrated in traditional credit rating approaches to measure corporate risks. Moreover, the literature has not a compelling method to assess this integration yet.[35]

2.2 Internal perspective: effects on corporate intrinsic valuation

The observation collected on the market through the analysis of historical data are the image of how much ESG could enhance the value produced and perceived by the stakeholders. The rationale is that to perform better in the result, a company must enhance the effectiveness of its processes in quality and stability. For this reason, it is appropriate to analyze from a "fundamental" point of view what ESG could impact in three main statements of a firm: balance sheet, income statement

[35] Florian Kiesel, Felix Lucke (2019), *ESG in credit ratings and the impact on financial markets*

and cashflow statement. Mentioning the voices impacted positively by sustainability, the following assumptions aim to support the theory that wants the improvement of a company's intrinsic value provided by ESG compliance. This point of reflection finds application looking at the most used method of intrinsic valuation: the Discounted Cash Flows model. In conclusion a small mention on how sustainable strategies could also affect the capital structure of companies, especially the public ones.

2.2.1. Net Sales

Sustainable companies are better able to shape their business operations as the world and operating conditions change. Sustainability affects net sales through sales volumes and sales prices. The global challenges of sustainability offer new business opportunities: companies can offer products and services related to renewable energy or clean water, for example. In addition, some companies require sustainability from their suppliers: this makes sustainability a prerequisite for sales, as well as enabling higher sales volumes for sustainable companies. Some consumers are also willing to pay a higher price for a product or service if it is produced responsibly. Ecolabels, domestic origin, ecological and renewable raw materials—as well as favoring products and services produced in the home country of the consumers—are typical ways of appealing to consumers to increase sales. According to some studies, during recession, consumers remain most loyal to products that they consider sustainable.

2.2.2. Operating Costs

Many companies seek to reduce costs through sustainable operations. Typical means include reducing the consumption of energy and water, as well as reducing waste or pollution. It is easier to motivate employees to save costs when reducing consumption is justified on environmental grounds. Similarly, poor sustainability management or indifference can unnecessarily increase costs while also reducing the return on investment. Typical negative impacts include an unnecessarily high level of energy consumption and emissions, high employee turnover and environmental protection taxes. The materialization of even a single sustainability risk can cause the company to incur significant costs and loss of income. Naturally, costs also arise from the company's sustainability efforts. However, through these

efforts, the company seeks to increase its net sales beyond the cost of sustainability work.

Particularly interesting is the spread of a new phenomenon called "Green Swan" referred to the already known "Black Swan" (in other words a sudden event that negatively shocks the market or an individual entity). It occurs when the crisis is generated by a climate scandal, an extreme weather event or other forms of unexpected risk materialization derived by environmental or social issues. A Green Swan could affect tragically the costs sustained by the firm in this sense, causing an increasing need to stay protected against to these shocks and integrate ESG considerations in the Risk Management process. Climate change can affect the financial system in three ways:

1. The first is through what regulators describe as "transition risks". These are most likely to arise if governments pursue tougher climate policies. If they do, the economy restructures capital moves away from dirty sectors and towards cleaner ones. Companies in polluting industries may default on loans or bonds; their share prices may collapse.

2. The second channel is financial firms' exposure to the hazards of rising temperatures. The financial system could also be exposed to any wider economic damage caused by climate change, say if it triggered swings in asset prices.

3. The third concerns a worst-case scenario for the financial system is where transition risks crystallize very suddenly and cause wider economic damage (Minsky moment).[36]

"Climate Value-at-Risk" is an innovative instrument of protection provided by MSCI ESG Research LLC, that helps managers with a forward-looking and return-based valuation assessment to measure climate related risks and opportunities in an investment portfolio. The fully quantitative model offers deep insights into how climate change could affect company valuations. [37] The approach uses a first impact modelling, followed by a cost/profit calculation, a security valuation and a concludes with a final portfolio aggregation. The results comprehend a calculation of transition risk and

[36] H. Silvola, T. Landau (2021), *Sustainable Investing - Beating the Market with ESG*, Palgrave Macmillan
[37] MSCI ESG Research (20221, *Climate Value-at-Risk brochure*

opportunities together with physical risk/opportunity outputs and a financial impacts modelling.

2.2.3. Financial Costs and DCF valuation

The assessment of sustainability aspects is part of investment risk management. If a company fails to report material sustainability issues, this increases investors' risks through increased uncertainty. The terms of loan financing are weaker for a company that is assessed to be highly risk, meaning that its financial costs are higher. In recent years, banks have increasingly granted sustainability-linked loans to their customers. In these loans, the interest margin is tied to the achievement of the company's sustainability targets, which is measured using separately negotiated key performance indicators, such as GHG emissions, accident frequency rates and human rights audits. Investors also set higher return requirement for risky investees. The materialization of ESG risks may reduce net sales and increase costs, in which case the company is no longer able to meet its loan repayments or other financial obligations. Consequently, the investee may end up in a situation where the return on the capital invested in the company is lower than the weighted average cost of capital and creates no value for its owners.

All these single voices impacted in the balance sheet are, as known, fundamental for a complete valuation of the company. In particular, the case analyzed, is the intrinsic form of valuation, that is obtained largely through the use of the ''Discounted Cash Flows'' or DCF model. This system is used to understand the value of the company or of a specific project and consists in discounting the projected future cashflows the present value using as discount factor the WACC (weighted average cost of capital). Subtracting the capital expenditure from the calculated value, the result is the NPV (Net Present Value) of the entity that should be positive in case of good valuation. More specifically, there is an interaction between the NPV of the project and its corresponding IRR, indicating the cost of equity ("***Ke***" risk premium) and the cost of debt ("***Kd***" risk premium) - the fundamental components of the WACC - over the nominal rate of interest (real rate of interest + expected long-term inflation). Any investment with a positive NPV has an IRR > WACC, meaning that the threshold rate of return is higher than the cost of collecting capital. ESG investments impact this traditional scenario, and they may worsen initial payoffs (if the initial investments for starting up the ESG project

are higher than the traditional ones), even if in the long run sustainable investments may have compensating higher profitability. The way through which ESG affects the DCF valuation is to increase the NPV impacting both the capitalizing part of the model and the discounting part. In fact, it is observed that sustainability enhances the capacity of generate higher positive cashflows reducing at the same time the cost of capital used to discount the project, that in this case is the WACC. Focusing firstly on the cost of capital issue, its reduction is due to the higher trust putted by investors in the firms with a satisfying level of sustainability. These companies appear as less risky, because they are resilient and, as seen in the precedent paragraphs, they are protected against threats like regulation risks, climate and environmental shocks, scandals of public domain, and loss of customers in bad market cycles. The cost of capital, both cost of equity and cost of debt, represents the cost in terms of interests from collecting capital from new or pre-existing shareholders (i.e., stocks) and from debtholders respectively (i.e., bonds) but at the same time the expected return required from fund providers to face the relative risks. Ignoring ESG aspects exposes firms to risks that diminish value, shrink returns, and even lead to failure. Firms considering ESG aspects are perceived as less risky by capital providers. Such capital suppliers accept lower returns and lending rates when providing capital to firms with superior ESG practices and disclosure (Johnson, 2020). Moreover, whereas traditional—often "polluting"—firms collect ordinary capital/equity from shareholders and issue standard debt (underwritten by banks, bondholders, etc.), ESG-compliant firms issue capital for targeted equity-holders and green bonds or other sustainable debt. Giese et al. (2019) show that companies' ESG information is transmitted to their valuation and performance, both through their systematic risk profile (lower costs of capital and higher valuations) and their idiosyncratic risk profile (higher profitability and lower exposures to tail risk). For what concerns green bond in the specific, the data of the last 10 years show that they are quite less ''expensive'' for the issuers. In other words, bondholders accept to buy at a lower discount in presence of sustainable projects both for the ethical purposes and for the lowered risks they bear. This price advantage is due also for the increasing demand for these instruments, attracting a growing number of investors as confirmed by the larger amount of green bond issues reported in the paragraph 2.1.

The result in technical and quantitative terms is the observed reduction of the green bonds New Issue Concessions ("NICs", from now), a pricing benefit generated by a higher degree of oversubscription and sometimes a better execution in difficult markets. This phenomenon is called "*Greenium"* or *Green Premium.*

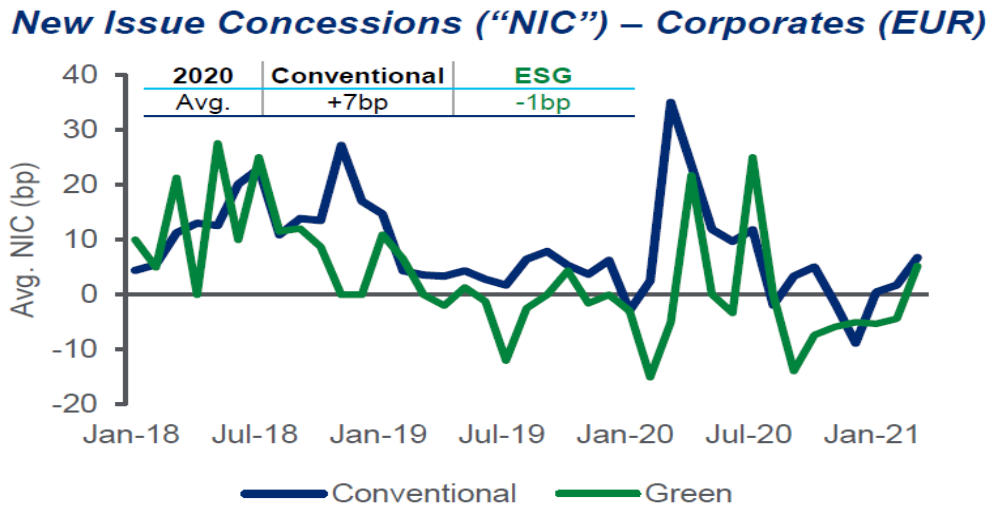


Figure 22 - Source: Citi

In the numerator part of the DCF model instead, the cashflow generated is affected in a positive way by the ESG factors. Sustainable companies, even if the payback of ESG investments may be longer (at least till when economies of experience can be incorporated in ecological projects) are able to generate higher payoffs in the medium-long term respect to those of the traditional investments, once the break-even cut-off rate is surpassed. The ability to improve cashflows come both from cost savings and revenue increase. ESG in fact, refers also to the Governance and Social issues of a company, as known. A better governance means quite always a higher quality management, better human capital resources and better innovation policies that contributes to an augmented EBITDA. New technologies implementation and more satisfied (and so more productive) workforce are associated with cost savings and wider production, while the perception of innovation and quality attracts more costumers boosting the sales. In this sense sustainability provides "scalability" to the firms, a process for which in the long-term a growing in production and a decrease in sales drive to improved profit margins. Summarizing, ESG factors can contribute to changing DCF in two ways—

modifying either the cash flows in the numerator and/or the corresponding cost of capital in the denominator. The standard DCF formula is:

$$DCF_{operating} = \sum_{i=1}^{n} \frac{CF1 + CF2 + \cdots + CFn}{(1 + WACC)}$$

where CF is the operating cash flow and WACC is the weighted average cost of capital. Should ESG parameters have a positive impact on both cash flows and WACC, the formula would be:

$$DCFoperating *\uparrow\uparrow = \sum_{i=1}^{n} \frac{CF1 \uparrow + CF2 \uparrow + \cdots + CFn \uparrow}{(1 + WACC) \downarrow}$$

The rationale behind this multiplying improvement that affects both the numerator and the denominator, boosting the DCF*, may be found in the ability to improve cash flows, thanks to savings or revenue increases, and to minimize the risk embedded in the WACC, lowering the cost for collecting sustainable capital, and the result is an higher NPV and so an higher intrinsic valuation of the firm.

2.2.4. Smart Capital Structure and ESG compliant Pecking Order Theory

The capital structure is determined by several factors and there are different theories regarding why a company chooses a specific type of financing. One of these is the Pecking Order Theory that emphasizes that capital structure decisions are dependent on the concept of asymmetric information, referring to the fact that managers know more about their companies than investors do. According to the Pecking Order Theory, this makes the managers first turn to internal funds, primarily reinvested funds, followed by new issues of debt and as a last resort, new equity (Brealey et al., 2017). This type of hierarchy is based mostly on the implicit cost of capital collecting. Internal funds are supported principally by EBITDA with other margins, and so by the company's cashflow generation. For this reason, they are considered free of charge and identified as the first option according to managers. At the lower position of the hierarchy there are new debt capital and equity capital respectively, due to the increasing cost they bear (related to the higher

implicit risk they represent, and the higher risk premium required as a consequence). ESG metrics impact:

1. On internally generated funds (EBITDA, EBIT, pre-tax and net profit; operating and net cash flows, etc.) through their value drivers that may foster revenues and minimize OPEX.

2. On the cost of collected debt that may be sensitive to sustainability concerns, easing green funding and lower NICs.

3. On the cost of equity, underwritten by sensitive stakeholders.

In other words, ESG rating mitigate information asymmetries between managers and investors, allowing the second ones to evaluate better the risk and avoiding prudential higher risk premium demand. The leverage ratios observed are not altered significantly for ESG rated firms, but they tend to redistribute their financing resources from public debt (bonds) to private debt (bank loans). This substitution effect is mainly driven by environmental and social factors and is more pronounced for firms with high financial pressure, low growth opportunities, and specialized assets.

2.3. Transaction perspective: effects on relative valuation

ESG shows a strong relevance not only for the intrinsic valuation but seems to provide value also when considering relative valuation and so, market multiples. In particular, sustainability could impact the Precedent Transaction Multiples, especially for specific sectors. This approach is the most used in M&A operations, resulting in the more generous method of valuation respect to the others. Transaction multiples in fact, are generally higher than industry multiples and provide a larger price also respect to the DCF method, considered optimistic by literature. The reason behind this phenomenon is that the price paid in a transaction do not only reflect the Net Present Value obtained through the cashflows generated by the firm but incorporate a premium too. This premium, reflects different factors: potential synergies, control premium, value of goodwill, competition premium. In transactions which involve ESG targets, both higher returns and transaction multiple have been observed respect to the industry average. In a study provided

by Sustainalytics using Bloomberg's data an outperforming by ESG compatible M&A has been reported:

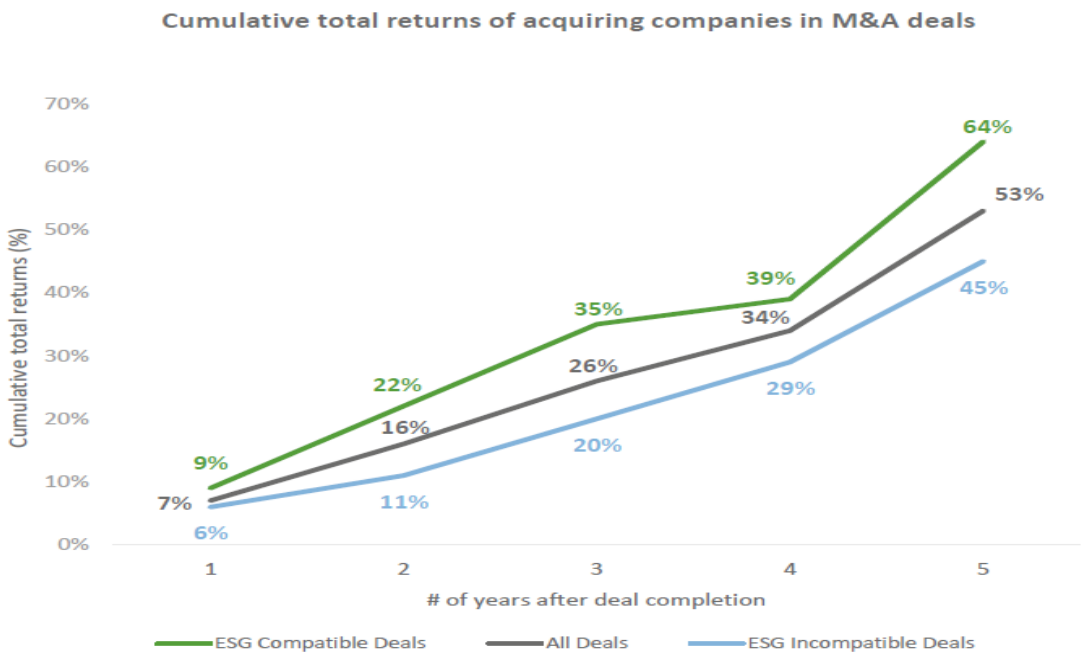


Figure 23 - Source: Sustainalytics, Bloomberg

Using a sample of 231 M&A deals, the result in 5 years of after-deal developments show about 21% of above performance of ESG compatible deals vs ESG incompatible deals confirming that when ESG is used as a proxy for company's culture, ESG/cultural compatibility drives to positive performances in M&A. Moreover, historical data confirm that multiples are generally higher for sustainable companies, both in trading and in transaction multiples (GCA Altium, 2021). ESG indices outperform traditional

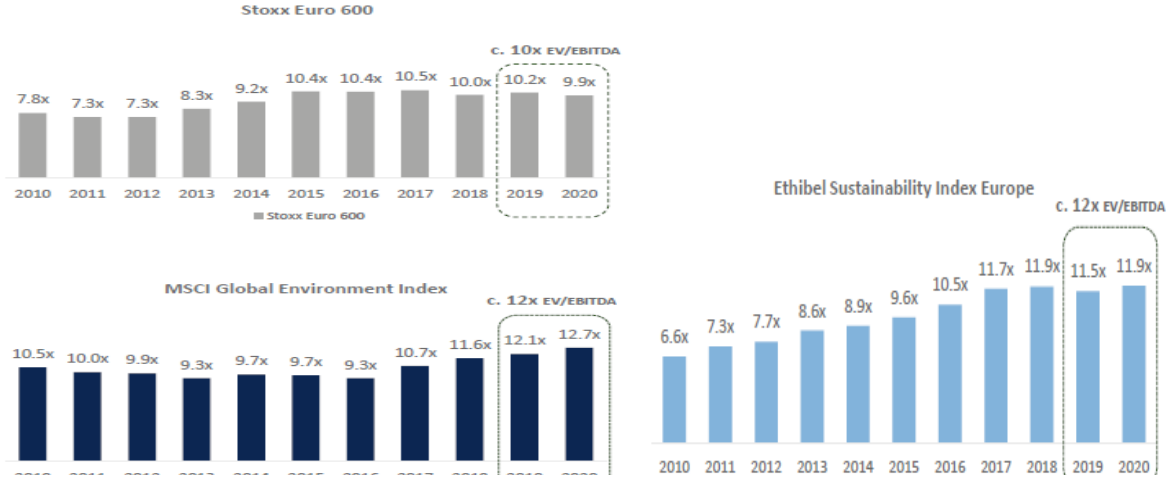


Figure 24- Source: GCA Altium (2021)

market benchmarks in valuation: Ethibel Sustainability Index Europe (formed by companies that derive most of them revenues from key environmental themes) and MSCI Global Environment Index reported in increasing higher EV/EBITDA multiple respect to the Stoxx Euro 600.

In addition, ESG provides again a "Green Premium", this time paid by acquirors during M&A private transactions, that is summed to the basic Enterprise Value. It is interesting to observe also how this premium is cumulative in TMT companies, that usually incorporate a "Technology premium" increasing further the value of the deal-targets. [38]

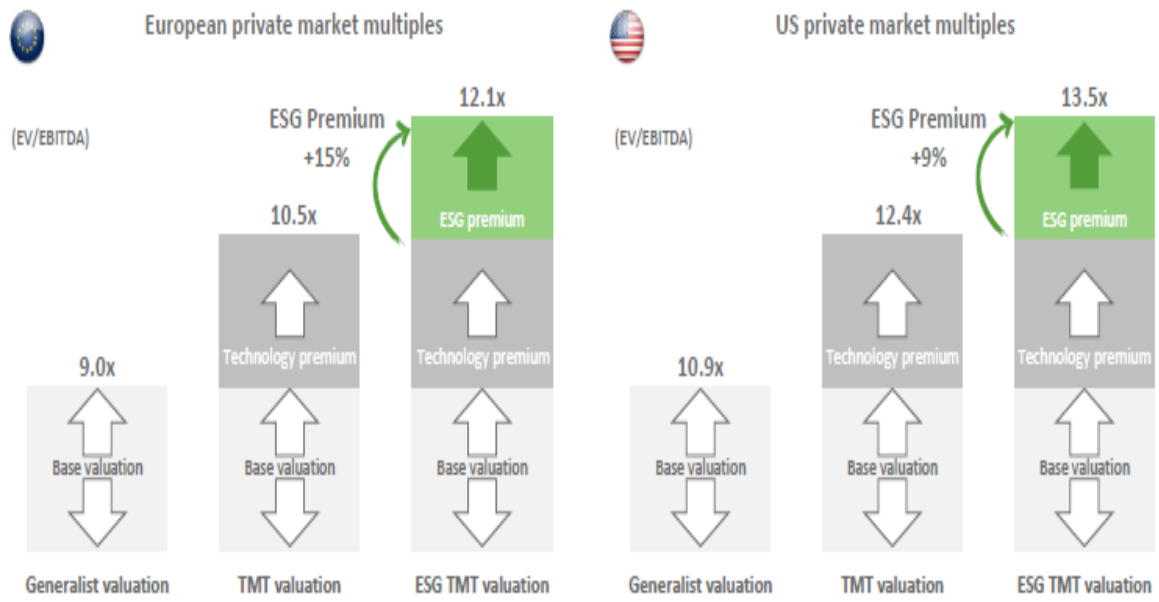


Figure 25 - Source: GCA Altium (2021)

The reasons that lead to a strong interest in considering and pay premiums for ESG several. There are two types of approach in choosing to prioritize the acquisition of high ESG companies*: ESG-motivated* approach and *ESG-conscious* approach. ESG-motivated deals are pursued explicitly to advance the buyer's ESG agenda.[39] In this approach acquirers are interested in:

- Synergies, especially in carbon-intensive industries. M&A is a driving force in the energy sector's transition to renewable sources of power. Meanwhile, in consumer products, the shift from animal- to plant-based proteins has prompted its own surge in M&A and partnerships. Other consumer goods companies are

[38] GCA Altium (2021), *ESG report*
[39] Bain Company (2022), *Global M&A Report 2022*

turning to M&A to address issues important to the social pillar of their ESG strategy.

- Shareholder's Activism, investors are requiring more and more ESG alignment to the firms for policy or ethical reasons
- Engagement, trying to attract ethical motivated new investors/customers.

Meanwhile, ESG-conscious M&A incorporates an ESG angle across the M&A value chain, even if the motivating deal thesis is not ESG related. For example, acquirers may perform due diligence to determine if a target's carbon footprint is aligned with the acquirer's sustainability goals, unrelated to the deal rationale. Due diligence in this case, is interested in:

- *Culture-Proxy*, trying to understand the cultural identity of the target through ESG metrics and to reduce information asymmetry
- *Financial Costs*, as explained in the previous paragraph, sustainability is a fundamental factor in lowering the cost of capital and the credit risk, ensuring better financial performances in the long-run
- *Regulatory Risk*, ESG compliance protects against present and future regulatory issues that could suddenly occur for the forecasted increase of regulations, due to a higher attention by the governments in sustainability
- *Post-Integration process*, ESG means high levels of Governance, that probably drive to a better resolution of the disputes and to a more efficient re-allocation of management structure and human resources.

CHAPTER 3

3. ANALYSIS OF ESG POSITIVE IMPACT ON FINANCIAL PERFORMANCES

The findings expressed until this chapter are verified and guaranteed from scientific and financial professional resources. The historical trends described and the factors involved in judging the superior performances related to ESG factors are theories developed by professionals operating in the world of economics both in academic and in corporate research. At the same time, a personal contribution is mandatory to respond properly to the question proposed at the beginning of the dissertation. For this reason, in the following parts of the study, an individual approach will be adopted in trying to provide concrete elements to the previous assumptions. This approach will be divided into two portfolio analysis: the first consider companies and their ratios of profitability, the second is focused on funds. All the data provided have been personally collected using online financial databases and the methodology is based on the financial competencies acquired during the academic path at LUISS. The process that brings to evidence has the purpose to be intentionally simple and schematic in order to not suffer of distortions and be clear and effective at the same time. Basically, the analysis could have some point of improvement and reasonable limitations that are presented at the end of the chapter.

3.1 Portfolio analysis: companies

The rationale for the following study is to find evidence related to literature and research proposed in the previous chapter. In the second part of the dissertation, among the several aspects related to a company's performance impacted by ESG, there is one of particular interest: ROCE (return on capital employed). The reason is that this specific measure focuses on the total assets of the company. In fact, differently from other ratios (like ROE), ROCE do not consider only Equity but the entire capital that the firm employs in its operating process, including in this way also debt. This is important because it was explained that sustainable companies were able to lower their cost of capital, not only in equity but also in debt issuing, through "green financial instruments" (i.e., Green Bonds). It is reasonable to think at this point, that being advantaged in issuing debt triggers to a capital structure with a larger amount of borrowed resources with better returns on the capital employed

originated both from debt and equity thanks to cost savings. Moreover, ROCE is expressed as:

$$ROCE = \frac{EBIT\ (Operating\ Profit)}{Capital\ Employed\ (Total\ Assets - Current\ Liabilities)}$$

Using EBIT and not Net Income, means to exclude every contribution from Tax Costs/Revenues and Financial Costs/Revenues, including at the same time depreciation, a measure of the impact provided by capex and investments in sustainability and innovation (another typical strategy of high ESG score companies). In addition, EBIT is a measure of operating profitability that could be possibly linked to the major success of sustainable companies in increasing revenues through costumers' engagement. Referring to the Chapter 2:

"*According to Nordea's study as well, the return on capital employed is associated with the ESG rating. Figure 8.2 illustrates that companies with the highest ESG rating (AAA) are more successful, generating up to a 50% higher return on capital employed (ROCE) than companies with a poor ESG rating (B and CCC) in 2017.*"

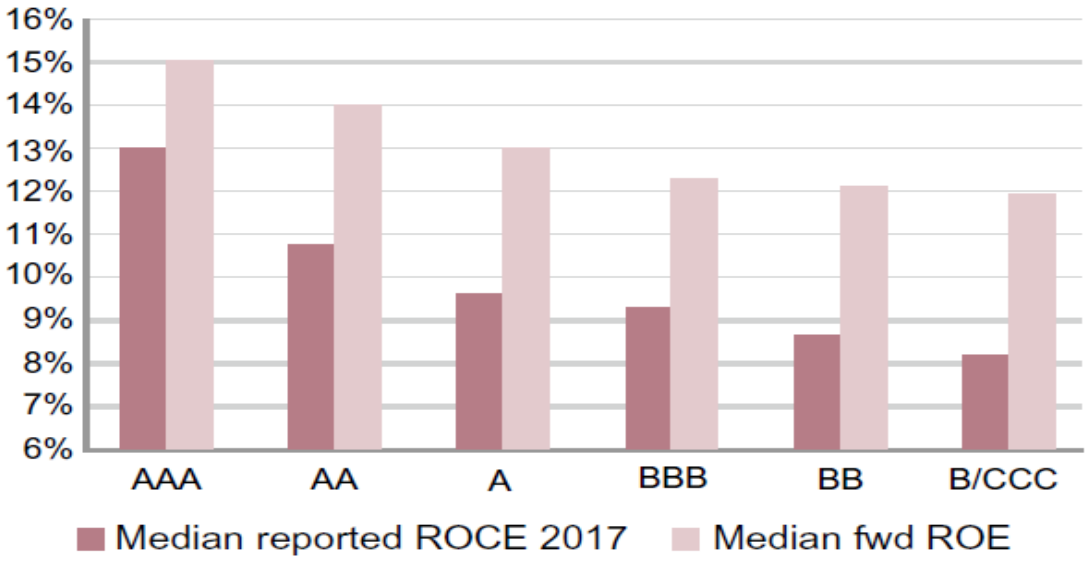


Figure 26 - Source: Nordea

In order to verify these performances, the strategy is to investigate on historical market-data and construct a portfolio of companies with different ESG scores to

find actual results and show the concrete relationship between financial performance and ESG.

3.1.1. Data

The sample of data proposed for the scope of the analysis have been selected using the Workspace software by Refinitiv that comprehends thousands of complete data from the financial market professionally developed. Using the Companies Screener tool in the software have been extracted 4000+ companies from two principal geographical market zone: Europe and North America. In the specific the following criteria have been applied:

1. Europe =
    - Geographical zone: Northern Europe, Western Europe, Southern Europe
    - Asset category: Equities
    - Market Cap: Over 100 million
    - Company Type: Public
    - Company Status: Active
2. North America =
    - Geographical zone: United States of America
    - Asset category: Equities
    - Market Cap: Over 100 million
    - Company type: Public
    - Company status: Active

Once obtained, for every firm in the list, have been extracted: ESG Combined Score by Refinitiv in collaboration with MSCI (absolute number value 0-100), ROCE 1year, for each financial year from 2017 to 2022 (5 years).

The reason of choosing ESG Combined Score respect to simple ESG Score is that the former also considers the weight of ESG Controversy Score discounting the latter. The period of time chosen have been based on the objective to demonstrate also the hypothesis of the better resilience of sustainable companies during the adverse financial periods (2019-2022 COVID-19 crisis).

3.1.2. Methodology

From the universe of 4000+ firms selected, the sample has been restricted to 100 firms both for USA and Eurozone. The goal is to create different portfolios of 100 companies for each geographical zone and colleting the previous explained data. In particular, ROCE per year is presented from the oldest to the newest financial year (FY4 – FY3 – FY2- FY1 – FY0) and from these inputs is possible to obtain two fundamental outputs: Average ROCE (5Y) and ROCE Volatility (calculated though Excel St. Dev. Formula) during the years considered. The 100 companies then, have been (thanks to the ESG Combined Score) divided in four categories: GREEN (80+ score), YELLOW (80-60 score), ORANGE (60-30 score) and RED (30 or less score). Every company with missing data has been excluded from the sample.

(AVG= Average; 5y= 5 years; VOL= Volatility)

EUROZONE:

Company	ESG Combined Score	AVG ROCE (5y)	VOL (ROCE)
Abb Ltd	94,59	11,0%	2,28%
Snam SpA	92,64	8,1%	0,37%
Storebrand ASA	92,64	0,2%	5,87%
STMicroelectronics NV	91,93	15,1%	3,16%
NH Hotel Group SA	91,78	2,2%	7,54%
Signify NV	91,51	12,2%	0,46%
Reckitt Benckiser Group PLC	91,26	12,8%	1,34%
Alstom SA	90,80	6,9%	3,86%
Volvo AB	90,78	13,4%	2,50%
CRH PLC	90,62	8,2%	0,51%
Coca Cola HBC AG	87,71	13,3%	1,03%
Eurofins Scientific SE	87,71	13,2%	4,74%
Mondi PLC	87,61	16,7%	4,36%
Elekta AB (publ)	87,48	12,9%	1,50%
Roche Holding AG	87,44	32,9%	1,75%
Relx PLC	87,29	22,0%	2,52%
Merck KGaA	87,21	9,4%	2,07%
Linde PLC	87,18	7,3%	4,34%
SGS SA	87,18	20,2%	4,70%
Puma SE	87,07	15,1%	4,40%
Hellofresh SE	80,74	4,8%	43,64%
NN Group NV	80,72	8,9%	1,47%
Compagnie Generale des Etablissements Michelin SCA	80,57	11,9%	2,59%
Domino's Pizza Group PLC	80,50	39,9%	13,66%

Neste Oyj	80,46	23,1%	5,30%
Kion Group AG	79,50	7,2%	1,43%
Kering SA	79,44	21,0%	5,48%
Stora Enso Oyj	79,33	9,1%	3,56%
Norsk Hydro ASA	79,32	6,0%	4,23%
Getinge AB	79,32	9,3%	7,25%
Television Francaise 1 SA	79,30	10,9%	4,34%
Rheinmetall AG	79,19	11,5%	1,42%
Poste Italiane SpA	79,05	17,5%	2,45%
DKSH Holding AG	76,60	13,5%	1,88%
NXP Semiconductors NV	76,53	5,7%	4,98%
Banco Comercial Portugues SA	76,52	6,3%	2,73%
CNH Industrial NV	76,51	5,6%	1,48%
Tarkett SA	76,51	8,0%	2,68%
Qiagen NV	76,48	8,4%	3,47%
United Utilities Group PLC	72,78	5,2%	0,51%
Assa Abloy AB	72,76	15,4%	2,18%
AMG Advanced Metallurgical Group NV	72,76	12,7%	8,28%
Anora Group Oyj	60,36	7,1%	0,95%
Casino Guichard Perrachon SA	60,35	5,7%	0,82%
DFS Furniture PLC	60,20	8,0%	8,07%
Terna Energy SA	60,15	7,4%	1,52%
Eastnine AB (publ)	60,00	3,8%	1,79%
B2holding ASA	60,60	9,3%	2,33%
Iren SpA	60,57	6,6%	0,65%
Torm PLC	60,76	3,4%	3,43%
Haldex AB	55,93	6,2%	5,60%
Transocean Ltd	55,91	0,7%	1,21%
Prosegur Cash SA	55,91	23,0%	8,14%
Hannover Rueck SE	55,90	13,0%	3,19%
Tubacex SA	55,89	-0,1%	5,20%
Swisscom AG	55,88	10,9%	1,17%
Arendals Fossekompani ASA	55,83	6,3%	2,05%
Bpost SA	55,78	19,7%	10,87%
Koenig & Bauer AG	46,55	4,6%	8,35%
ESI Group SA	46,53	0,4%	8,48%
Recticel NV	46,52	9,5%	4,23%
Mithra Pharmaceuticals SA	46,52	-8,1%	16,75%
HSBC Holdings PLC	46,51	7,9%	2,16%
Learning Technologies Group PLC	46,47	6,9%	0,88%
Gaming Innovation Group Inc	46,46	-2,4%	11,17%
Gruppo MutuiOnline SpA	33,76	24,5%	6,58%
Naked Wines PLC	33,75	-1,0%	6,68%
NTG Nordic Transport Group AS	33,69	19,8%	24,37%
ITM Power PLC	33,59	-34,5%	18,42%
Foresight Solar Fund Ltd	30,51	5,7%	0,93%

GCP Infrastructure Investments Ltd	30,44	5,7%	3,06%
ADC Therapeutics SA	30,41	-72,6%	18,49%
Kinepolis Group NV	30,39	6,5%	11,01%
Funding Circle Holdings PLC	30,37	-16,8%	8,71%
FINEOS Corporation Holdings PLC	30,09	-2,0%	8,05%
Smithson Investment Trust PLC	26,74	21,9%	4,34%
Bonesupport Holding AB	26,65	-47,2%	21,25%
Jungfraubahn Holding AG	26,63	5,1%	6,06%
Caledonia Mining Corporation PLC	26,46	23,4%	2,53%
Deutsche EuroShop AG	26,39	4,4%	0,09%
Capital Gearing Trust PLC	26,34	5,0%	5,52%
MagnaChip Semiconductor Corp	26,27	7,5%	2,85%
Absolent Air Care Group AB	26,13	21,5%	14,11%
Tele Columbus AG	25,10	3,0%	2,03%
Alzchem Group AG	25,08	11,9%	0,93%
Carr's Group PLC	25,05	8,3%	1,89%
Ceres Power Holdings PLC	25,01	-43,5%	38,68%
Fasadgruppen Group AB (publ)	24,90	12,0%	0,35%
Poujoulat SA	13,34	6,5%	4,89%
Cdon AB	13,33	-15,2%	27,61%
va Q tec AG	13,26	-1,6%	4,71%
Alcadon Group AB	13,12	17,7%	7,11%
Bijou Brigitte modische Accessoires AG	12,78	5,8%	10,39%
EKF Diagnostics Holdings PLC	12,74	13,0%	8,47%
Brait PLC	23,49	-18,2%	26,96%
Freelance.com SA	23,37	12,3%	2,53%
Young & Co's Brewery PLC	23,33	3,0%	6,37%
Crown Energy AB	8,09	0,9%	4,92%
Civitas Social Housing PLC	8,03	4,1%	0,10%
K2A Knaust & Andersson Fastigheter AB (publ)	14,20	1,8%	0,20%

USA:

Company	ESG Combined Score	AVR ROCE (5Y)	VOL (ROCE)
Juniper Networks Inc	84,55	7,45%	2,29%
Kinder Morgan Inc	84,88	5,57%	0,68%
MSA Safety Inc	82,80	10,33%	5,93%
Healthpeak Properties Inc	88,93	5,54%	2,41%
Colgate-Palmolive Co	90,24	38,78%	4,39%
United Rentals Inc	82,59	12,95%	1,09%
Alcoa Corp	88,36	11,32%	6,11%
Xylem Inc	84,04	10,88%	2,30%
Hannon Armstrong Sustainable Infrastructure Capital Inc	82,71	2,60%	0,61%

KBR Inc	88,48	8,59%	0,87%
Freeport-McMoRan Inc	83,42	10,21%	7,27%
Baxter International Inc	86,89	11,83%	1,85%
Nordstrom Inc	80,05	9,32%	13,69%
Cognizant Technology Solutions Corp	80,04	21,06%	2,23%
Tetra Tech Inc	84,83	15,15%	1,43%
Northrop Grumman Corp	80,82	12,52%	1,06%
NortonLifeLock Inc	80,67	11,99%	11,20%
Applied Materials Inc	80,99	30,11%	5,53%
Best Buy Co Inc	84,51	34,27%	3,68%
Host Hotels & Resorts Inc	81,71	1,75%	12,25%
Lowe's Companies Inc	84,64	33,88%	9,55%
Cadence Design Systems Inc	85,56	22,39%	1,28%
Kellogg Co	81,48	13,21%	1,24%
Amgen Inc	80,69	17,11%	1,98%
DTE Energy Co	82,72	4,57%	0,76%
Wynn Resorts Ltd	74,70	2,92%	9,34%
Herc Holdings Inc	73,69	6,63%	2,67%
McGrath RentCorp	64,33	21,18%	1,61%
Adobe Inc	77,86	25,50%	4,12%
Empire State Realty Trust Inc	63,59	7,17%	2,77%
Duke Energy Corp	68,32	4,14%	0,37%
Moody's Corp	67,95	29,00%	5,69%
McCormick & Company Inc	70,26	11,94%	0,71%
Dominion Energy Inc	75,87	4,56%	0,83%
Las Vegas Sands Corp	60,92	9,51%	13,66%
Glaukos Corp	75,37	-8,18%	4,55%
Compass Minerals International Inc	68,80	5,87%	0,94%
Universal Corp	67,75	8,63%	0,92%
Alexandria Real Estate Equities Inc	70,49	4,49%	0,91%
Tidewater Inc	61,52	-5,05%	2,35%
Comerica Inc	71,91	16,85%	5,23%
Trex Company Inc	60,25	49,25%	11,03%
Halliburton Co	76,22	10,08%	2,10%
Factset Research Systems Inc	68,53	30,53%	3,95%
Sunstone Hotel Investors Inc	79,35	1,07%	5,36%
Equitrans Midstream Corp	69,98	9,06%	2,15%
Qualcomm Inc	68,90	17,15%	10,50%
Rexford Industrial Realty Inc	60,65	3,11%	0,45%
State Street Corp	78,62	13,58%	1,21%
Henry Schein Inc	74,89	14,88%	1,92%
PepsiCo Inc	44,93	18,08%	0,72%
Alnylam Pharmaceuticals Inc	38,71	-39,40%	12,57%
Banc of California Inc	32,82	6,08%	2,89%
PureTech Health PLC	31,88	-58,37%	55,62%
Primerica Inc	46,40	31,50%	0,77%

V2X Inc	37,03	12,51%	2,20%
Artisan Partners Asset Management Inc	50,48	175,91%	16,40%
Archrock Inc	53,42	6,20%	1,69%
Vornado Realty Trust	54,49	8,02%	5,26%
Unum Group	44,06	13,31%	3,68%
UMB Financial Corp	31,75	11,88%	1,36%
Donaldson Company Inc	53,56	23,02%	2,25%
Bio-Techne Corp	45,66	10,88%	2,39%
Valmont Industries Inc	43,66	11,34%	1,07%
Diamondback Energy Inc	44,39	9,75%	7,06%
Korn Ferry	31,68	12,28%	4,98%
Cisco Systems Inc	42,32	18,75%	2,81%
Old National Bancorp	57,97	9,97%	1,07%
PennyMac Financial Services Inc	45,53	37,70%	26,71%
AZZ Inc	42,18	9,42%	2,57%
Expeditors International of Washington Inc	43,12	39,76%	8,95%
Urban Outfitters Inc	45,93	13,37%	8,14%
Minerals Technologies Inc	43,25	8,78%	1,06%
Regal Rexnord Corp	57,24	8,46%	1,55%
Element Solutions Inc	37,70	4,67%	2,03%
Prestige Consumer Healthcare Inc	16,56	8,99%	0,40%
PNM Resources Inc	15,02	4,84%	0,80%
Astec Industries Inc	15,09	2,63%	7,82%
DENTSPLY SIRONA Inc	8,93	5,18%	1,95%
Zillow Group Inc	8,06	-0,64%	2,94%
Bio Rad Laboratories Inc	28,20	4,20%	0,28%
Koppers Holdings Inc	7,19	11,68%	2,93%
WideOpenWest Inc	12,15	3,96%	4,52%
Casella Waste Systems Inc	23,59	8,37%	1,10%
Warner Bros Discovery Inc	25,86	10,44%	2,47%
Independent Bank Corp (Massachusetts)	2,31	13,40%	4,29%
UMH Properties Inc	6,93	4,74%	0,64%
Southwest Airlines Co	5,59	5,31%	18,48%
Berry Corporation (Bry)	21,31	6,47%	7,14%
Mondelez International Inc	14,22	9,23%	0,42%
SiteOne Landscape Supply Inc	0,50	15,48%	3,52%
Rite Aid Corp	0,97	2,25%	1,07%
Helmerich and Payne Inc	8,60	-1,32%	4,42%
Tronox Holdings PLC	19,50	5,92%	3,55%
Avalara Inc	27,93	-40,67%	42,15%
Carlyle Group Inc	0,84	41,62%	31,55%
Live Nation Entertainment Inc	14,62	-3,09%	13,41%
Vontier Corp	2,38	25,70%	3,86%
CECO Environmental Corp	22,65	5,26%	1,38%
Phreesia Inc	11,74	-24,02%	9,35%

Every category have been created through a random picking of firms for every ESG range using Excel: function ***=Random()*** assigned a random decimal number to every firm between 0-1 and then the list have been re-sorted in ascending order, shuffling the positions of every single cell.

Then 4 portfolios have been originated with a ***Score-weighting*** rationale. The logic is: starting from a 100% capital to invest, to compose each portfolio basing the weight of each element on its group of origin (GREEN, YELLOW, ORANGE OR RED). Every group is formed by 25 elements. Each single portfolio is composed investing part of the 100% Capital in different groups following the ***"orientation"*** to represent. In particular, it is based on the ESG-Integration approach by different levels, top – high/middle – middle/low – bottom. The two opposite extreme portfolio are constructed using the *Best-in-class* method and the *Worst-in-class* method, choosing only companies with 80+ Score and 30- Score respectively. This is the reason they are formed by only 25 elements. Other ones are based on a more balanced approach (high/medium and medium/low) and comprehend 100 elements (25 companies for each ESG group), weighted again following the orientation of the Integration-strategy.

PORTFOLIO A (best in class)			
Composition		N elements	single element weight
100%	GREEN (80+)	25	4%
0%	YELLOW (80-60)	25	0%
0%	ORANGE (60-30)	25	0%
0%	RED (30-)	25	0%

PORTFOLIO B (High score-oriented)			
Composition		N elements	single element weight
40%	GREEN (80+)	25	1,60%
30%	YELLOW (80-60)	25	1,20%
20%	ORANGE (60-30)	25	0,80%
10%	RED (30-)	25	0,40%

PORTOFOLIO C (Low score-Oriented)			
Composition		N elements	single element weight
10%	GREEN (80+)	25	0,40%
20%	YELLOW (80-60)	25	0,80%
30%	ORANGE (60-30)	25	1,20%
40%	RED (30-)	25	1,60%

PORTFOLIO D (Worst-in-class)			
Composition		N elements	single element weight
0%	GREEN (80+)	25	0,00%
0%	YELLOW (80-60)	25	0,00%
0%	ORANGE (60-30)	25	0,00%
100%	RED (30-)	25	4,00%

Once formed these 4 portfolios, the aim is to verify some of the assumptions provided in the previous chapter:

1. Is Average ROCE better for ESG high score companies over the time?
2. Is ROCE more stable for ESG high score companies?
3. Is the Best-in-class method the most profitable among the ESG-Integration strategies?
4. Is Europe truly more sensitive concerning ESG practices and are companies more impacted by "ethical investors/customers" respect to the U.S.?

To answer these questions, ROCE have been treated as an Expected Return (r) of a stock hypothesizing that the Expected Return of each portfolio so, depends exclusively on ROCE. In other words, higher the ROCE higher the return from the capital invested in the selected portfolio (A,B,C, or D).

To calculate each portfolio return the traditional formula has been applied:

$$E(r)_p = w_1 r_1 + w_2 r_2 + \cdots + w_n r_n$$

(with E(r)p = Portfolio Expected Return; w = weight; r = return)

Average Return of each portfolio allow to respond the first question, comparing the performances of the different portfolio. To respond the second question, the ROCE Volatility (5y) have been used and Weighted Average Volatility of each portfolio

obtained. It is important to specify that W.A. Volatility do not means Portfolio Volatility, due to the exclusion of covariance between every single element, for reasons of simplicity (it would be a matrix of covariances between 100 elements). The final results have been finally compared between portfolios and between geographical zones.

3.1.3 Results

The findings are the following for Eurozone:

PORTFOLIO PERFORMANCES (Eurozone)				
	A	B	C	D
ESG SCORE	87,82	67,45	44,47	20,63
ROCE(%)=	13,67%	8,69%	4,58%	2,54%
VOL.ROCE(%)=	5,04%	5,34%	6,75%	8,20%

(VOL = Volatility)

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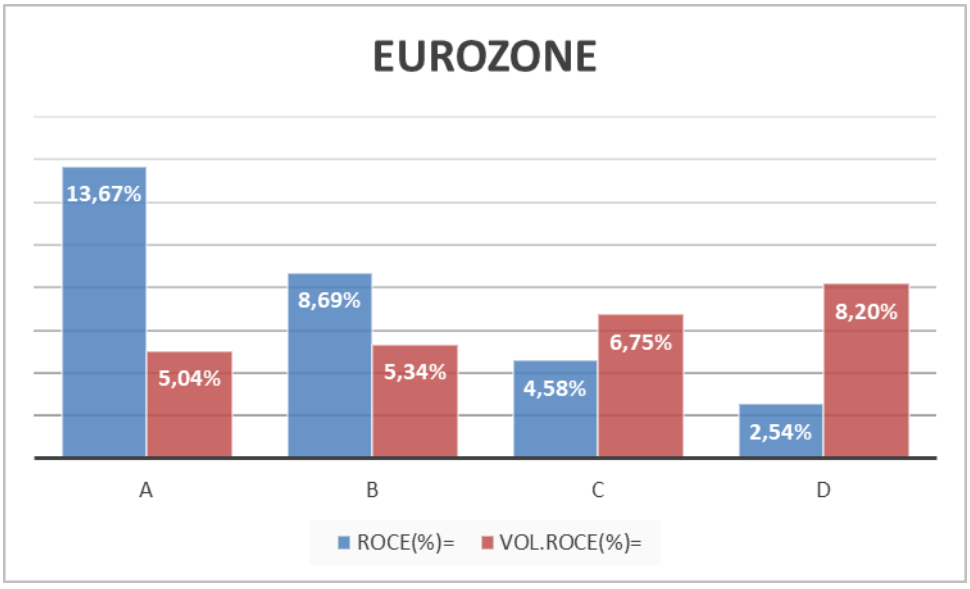


The analysis completed, answer positively to the questions and the results satisfy the hypothesis provided in the second chapter of this dissertation. The first big difference is between Portfolio A and Portfolio D. The strategy of Best-in-class is effectively the most profitable with a AVG ROCE of 13,67% vs. 2,54% of the Worst-in-class portfolio, outperforming by 9% almost during the 5 years. Moreover, also in rebalancing the portfolios with different Integration criteria, several differences are showed. The trend is descending from A to B, and from B to C, concluding with a literal collapse in D. Evidence says that bigger is the weight of ESG high score companies, better are the performances, and re-shaping the portfolio choosing to invest more percentage of capital in a lower ESG category, negatively impacts the average ROCE. The weighted average volatility instead, is negatively related to ESG score: higher the score, lower the volatility, more stable ROCEs during the years. Particularly relevant is the difference with the D portfolio that shows again the worst performance. With these observations is simple to assume that ESG and good financial performances are positively related, even if a statistic analysis and a quantitative demonstration may be necessary to affirm it with empirical certainty. Using Excel Data Analysis tool, the study tries to provide a sort of evidence in this sense. Specifically, the correlation indexes between ESG score vs. Avg ROCE and ESG score vs. ROCE Volatility are:

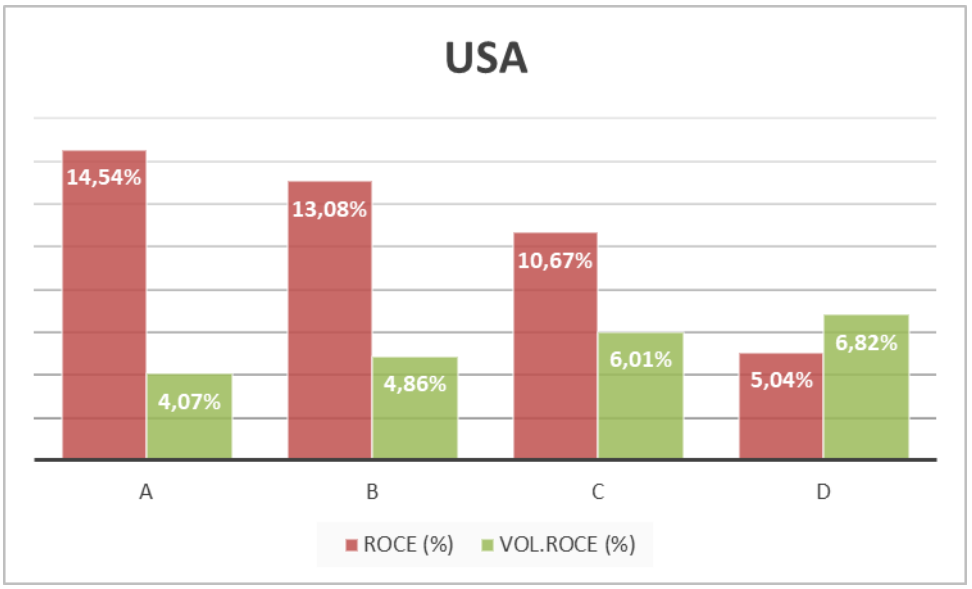
	ESG score	*AVG ROCE*	*VOL (ROCE)*
ESG	1		
AVG ROCE	**0,34**	1	
VOL (ROCE)	**-0,25**	0,47	1

*(**Red** font is used to represent a NEGATIVE correlation, **black** font for POSITIVE correlation)*

The correlation analysis has been conducted on the whole 100 companies sample avoiding to apply the "group" criteria and dividing best ESG performers from others. Considering several scores, which vary from 0 to 100, and an equal number of average ROCEs, the hypothesis is confirmed with a positive correlation between ESG scores and Avg ROCE and a negative correlation between ESG and ROCE's Volatility.

For the United States' companies the outcomes are shown below:

PORTOFOLIO PERFORMANCES (United States)				
	A	B	C	D
ESG	83,86	70,03	44,01	12,83
ROCE (%)	14,54%	13,08%	10,67%	5,04%
VOL.ROCE (%)	4,07%	4,86%	6,01%	6,82%



The scenario related to the USA's observations confirms the previous findings with no relevant differences respect to the European companies. Below the correlation indexes:

	ESG	*AVG ROCE*	*VOL (ROCE)*
ESG	1		
AVG ROCE	**0,13**	1	
VOL(ROCE)	**-0,18**	-0,13	1

3.2. Portfolio analysis: funds

This part of the dissertation aims to analyze another asset category: funds. The rationale is again related to the assumptions expressed in the second chapter, in which the trend to create ESG-based funds, to invest increasing capital flows in the pre-existing ones and to integrate sustainability criteria in Asset Management has been expressed. The study proposed is based on the "risk-adjusted return" concept and on a paper by provided by N.C.Ashwin Kumar et Al. on the Journal Of Sustainable Finance & Investment (2016). According to Kumar et. Al. *combining the two sides of investing – risk and return –the relationship between the two may not actually reflect traditional market thinking. The lower risk brought by better ESG practices may improve the risk-adjusted return of the investments. In today's world, just as a business can no longer excel in isolation from a thick web of stakeholders, so too investors must think in a more comprehensive fashion. The original equation of higher risk – higher return has not considered those constant internal and external interactions. The argument is not about lower risk–lower returns, but rather about lower risk for the same or higher returns: a higher risk-adjusted return. A popular measure for comparing risk-adjusted returns is the 'Sharpe ratio', calculated as the expected return per unit volatility (risk) – higher the Sharpe ratio, the greater the efficiency of the investment. An analysis of the stock returns and volatility during January 2014 to December 2015, reveals that integration of ESG factors can significantly improve the efficiency of investment decisions. […] Another common measure of risk-adjusted return is the Treynor ratio. This measure compares the return earned on a stock against the beta or market risk of a stock as an alternative risk measure to standard deviation.*[40]

On the basis of this assumptions, the intention is to re-propose the research on risk-adjusted performances of funds with a personal approach and verify if ESG impact positively also this asset class.

3.2.1. Data

Data are provided again from Refinitiv and comprehend 624 of which ESG Combined Score is available on the database. All the funds belong to the Eurozone market, and the universe comprehends mutual funds as ETF or Hedge funds both

[40] N.C.Ashwin Kumar et Al., Journal of Sustainable Finance and Investments (2016), *ESG factors and risk-adjusted performance: a new quantitative model*

actively and passively managed. For each fund, the following performance measures have been extracted:

1. Beta 3y
2. Beta 5y
3. Max Drawdown 3y
4. Max Drawdown 5y
5. Sharpe Ratio 3y
6. Sharpe Ratio 5y
7. Treynor Ratio 3y
8. Traynor Ratio 5y

Max Drawdown express the maximum observed loss from a peak to a trough of a portfolio, before a new peak is attained. Maximum drawdown is an indicator of downside risk over a specified time period. Sharpe Ratio, as said, is a measure of risk-adjusted return and in the specific:

The Sharpe ratio for fund p is the expected excess return over a risk-free asset on the fund standard deviation:

$$S_p = \frac{r_p - r_f}{\sigma_p}$$

(Sp= Portfolio Sharpe Ratio; rp= portfolio return; rf= risk-free return; σp= portfolio volatility)

The Sharpe ratio defines the trade-off which is obtained combining in a portfolio the fund with a risk-free asset. If the fund is efficient, and presents the highest Sharpe ratio, it offers the best trade-off between risk and return.[41]

The Treynor ratio for fund p is the expected excess return over a risk-free asset per unit of systematic risk:

$$Tr_p = \frac{r_p - r_f}{\beta_p}$$

(Trp= Portfolio Treynor Ratio; rp= portfolio return; rf= risk-free return, βp= Beta portfolio)

[41] P.Vitale (Luiss University), 2020-2021, *Equity Markets Notes*

So through this two ratios it is possible to find respectively specific risk-adjusted returns and systematic risk-adjusted return.

3.2.2. Methodology

The approach used is quite the same as the company research: portfolio integration. For funds have been constructed two equally-weighted portfolio following the Best-in-class approach and the Worst-in-class approach. Using ESG Combined Scores by Refinitiv have been selected the 100 best rated funds, which form the "TOP 100" Portfolio; and the 100 worst rated ones, which form the "BOTTOM 100" Portfolio. For each portfolio weighted average Beta, Max Drawdown, Sharpe ratio and Traynor ration have been calculated.

TOP 100	ESG Score
iShares Euro Total Mrkt Grwth Lrg UCITS ETF EUR D	73,16
CM-AM Objectif Environnement C	73,14
AXA WF ACT Eurozone Impact A EUR Cap	73,11
WisdomTree Eurozone Qual Div Gro UCITS ETF EUR Acc	73,11
BNP Paribas Actions Entrepreneurs Classic Cap	72,96
Edmond de Rothschild SICAV Euro Sust Equity A EUR	72,82
HSBC SRI Euroland Equity A	72,75
AXA Euro Valeurs Responsables C	72,74
BNP Paribas Euro Mid Cap Classic USD Cap	72,62
AIS Mandarine Active P	72,60
LBBW Dividenden Strategie Euroland R	71,90
DWS Invest ESG Top Euroland LC	71,88
BNP Paribas Sust Euro Low Vol Eq Classic Cap	71,79
Candriam Sustainable Equity EMU C EUR C	71,74
LBBW Aktien Minimum Varianz R	71,52
Xtrackers Euro Stoxx Quality Dvdend UCITS ETF 1D	71,51
DPAM L Equities EMU SRI MSCI Index B EUR Cap	71,49
Natixis LCR Actions Euro ESG I	71,47
BGF Euro-Markets A2 EUR	71,47
Lyxor S&P Eurzn ESG Div Aristocrats DR UCITS ETF D	71,36
DWS Invest CROCI Euro LC	71,28
OFI RS Croissance Durable et Solidaire C	71,18
Epargne Ethique Flexible H	71,18
Allianz Valeurs Durables R C EUR	71,14
NUERNBERGER Euroland A - - EUR	71,13
Fondation Europe C	71,04
Mirae Asset TIGER Euro STOXX Dividend 30 ETF	71,02
Lyxor EURO STOXX Select Dividend 30 UCITS ETF	71,01
Deka EURO STOXX® Select Dividend 30 UCITS ETF	71,01

iShares EURO STOXX Select Dividend 30 UCITS ETF DE	71,01
iShares Euro Dividend UCITS ETF EUR Dist	71,01
R-Co 4Change Inclusion & Handicap Equity C EUR	71,01
Nouvelle Strategie 50 C	70,89
UBS (Lux) Eq SICAV - Euro Cntrs Inc Sust (EUR) Pa	70,88
Sycomore FdSICAV Sycomore Selection Responsable RC	70,83
Best Business Models SRI RC	70,81
Deka Oekom Euro Nachhaltigkeit UCITS ETF	70,80
Sycomore Selection Responsable R	70,77
Aviva Valeurs Immobilieres A	70,76
ECOFI ENDURANCE EURO C	70,56
AXA WF Framlington Euro Selection A EUR C	70,49
CS (Lux) Eurozone Quality Growth Equity Fd B EUR	70,40
ODDO BHF Immobilier CR-EUR	70,40
BNPP Easy FTSE EPRA/NAREIT Eurozone Capped ETF QDD	70,35
Lyxor MSCI EMU Growth (DR) UCITS ETF - Dist	70,34
Lyxor MSCI EMU ESG Broad CTB (DR) -IE	70,31
HI-Aktien Low Risk Euroland-Fonds	70,31
Fourpoints Euro Global Leaders R	70,29
AMM Finance Sicav - Amazone Euro Fund	70,13
iShares EURO STOXX Mid UCITS ETF EUR (Dist)	70,06
Candriam Equities L EMU Innovation C Cap	70,05
8a+ Eiger - Classe R	69,99
OFI RS Dynamique RC EUR	69,97
UniNachhaltig Aktien Europa	69,86
Medi Immobilier	69,85
Epsilon QEquity	69,84
AXA Valeurs Euro AC	69,82
AXA WF Framlington Sustainable Eurozone A EUR Cap	69,81
AXA ACT Carbon Offset Eurobloc Equity QI	69,77
Waverton European Capital Growth R GBP	69,70
AXA IM Optirisk Actions Euro A	69,66
Allianz Actions Euro Convictions C EUR	69,65
Candriam Business Equities EMU C Dis	69,64
Mirova Euro Sustainable Equity R/A (EUR)	69,61
Epargne Ethique Actions C	69,58
R-Co Conviction Equity Multi Caps Euro C EUR	69,42
SG Actions Euro Selection C	69,40
G FUND Equity Convictions ISR N C	69,39
Vontobel Fund Green Bond B EUR	69,37
iShares DJ Eurozone Sust Screened UCITS ETF (DE)	69,35
Generali EURO Stock-Selection T	69,31
iShares MSCI EMU Mid Cap UCITS ETF EUR (Acc)	69,23
Faim et Developpement- Equilibre	69,19
Amundi Actions Euro - P (C)	69,18
Deka-Euroland Aktien LowRisk CF (T)	69,13

CMT - European Market Maximum Yield	69,12
NN (L) Euro Income P Cap EUR	69,11
NN Premium Dividend Fund	69,11
UBS LFS - MSCI EMU Soc Responsible U ETF (EUR) Ad	69,10
UBS LFS-Factor MSCI EMU Quality UCITS (EUR) Ad	69,07
Eleva Euroland Selection Fund R EUR Acc	69,05
NN (L) EURO Equity P Cap EUR	69,02
Fidelity Funds - Sust Eurozone Eqty A-ACC-EUR	69,01
DPAM B Equities Euroland B	68,96
CNP Actions EMU UBS A	68,94
EuroPlus 50 T	68,94
Allianz Wachstum Euroland - A - EUR	68,91
Kutxabank Bolsa Eurozona Estandar, FI	68,89
Allianz Euroland Equity Growth AT-EUR	68,88
WisdomTree Europe Equity UCITS ETF EUR Acc	68,88
OFI FI - RS Euro Equity Smart Beta RC EUR C	68,86
DPAM B Real Estate EMU Sustainable B	68,76
UBS (Lux) Eq Fd - Euro Co Opportunity Sust (EUR)Pa	68,73
Deka EURO iSTOXX ex Fin Dividend+ UCITS ETF	68,72
Palatine Planete I	68,72
LBPAM ISR Actions Euro Large Cap R	68,71
Mandarine Improvers R	68,70
LBPAM Actions Euro R	68,70
Euro Convictions ISR GF	68,61
LBBW Zyklus Strategie R	68,56

BOTTOM 100	**ESG Score**
VDK Pension Fund	59,14
Siemens EuroCash	59,05
LAM-EURO-CORPORATES-UNIVERSAL	59,02
BGF Euro Corporate Bond A2 EUR	59,01
RMM Corporate Variable P	58,84
BNY Mellon Small Cap Euroland A EUR	58,77
Hermes Pension funds	58,55
R-co Conviction Credit 12M Euro C EUR	58,40
Eurizon AM Sicav Euro Corporate Bond R	58,38
TRUSTEAM OBLIGATIONS COURT TERME C	58,33
Vilhena Euro Income Class A Quarterly Dis	58,27
ODDO BHF EURO Short Term Bond FT CR-EUR	58,08
BNP Paribas Euro Short Term Corp Bd Classic Cap	57,98
T. Rowe P Responsible Euro Corporate Bond A EUR	57,96
ERSTE BOND EURO CORPORATE EUR R01 (T)	57,94
Tocqueville Olympe Patrimoine P	57,92
Fidecum SICAV - Contrarian Value Euroland A	57,84
iShares € Corp Bond Large Cap UCITS ETF EUR Dist	57,76

HSBC Euro Credit Non-Financial Bond AC	57,72
SPDR Bloomberg 0-3 Year Euro Corp Bd UCITS ETF Dis	57,62
Ecofi High Yield	57,31
Rentoblig Part C	57,25
Amundi RI - European credit SRI - P (C)	57,23
LO Funds - Euro BBB-BB Fundamental (EUR) PA	57,16
DNCA Evolutif C	56,96
Groupama Credit Euro CT N C	56,94
Global Fund Selection Alpenbond T	56,90
Robeco Euro Credit Bonds DH EUR	56,83
LAM-EURO-SMALL CAPS-UNIVERSAL I	56,76
DPAM B Corporate Bonds EUR 2023 A	56,76
DPAM B Bonds EUR Short Term 1 Y B	56,74
Caixagest Obrigacoes	56,62
LAM-EURO-CORPORATE HYBRIDE	56,53
iMGP European Corporate Bonds C EUR	56,32
AAF Kempen Euro Corporate Bds Dur Hdgd A EUR Cap	56,27
AAF Kempen Euro Corporate Bds A EUR Cap	56,27
LGT European Investment Portfolio	56,25
NEF - Risparmio Italia R	56,23
Ecofi Taux Variable I	56,11
Mediolanum Flessibile Futuro Italia LA	56,05
Eurizon AM Sicav Euro Corporate Bd Hg Potential R	56,02
Bestinver Bestinfund R	55,87
HSBC Euro PME AC	55,78
Deka-CorporateBond Euro CF	55,76
Lazard Low Delta 12 Mois	55,68
Amundi Credit Green Bonds - P (C)	55,66
LUX IM Small-Mid Cap Euro Equities DL Cap EUR	55,58
Lazard Sustainable Euro Short Duration IC	55,32
AXA WF Euro Credit Short Duration A EUR C	55,32
Amundi Euro Corp S T Green Bond - A EUR (C)	55,31
Eurizon AM Sicav Euro Corporate Short Term R	55,31
FBG Euro Bond	55,23
LBPAM 3 Mois R	55,21
Metzler Euro Corporates ShortTerm Sustainability A	55,21
Vontobel Fund - Euro Corporate Bond B	55,13
LCL Developpement PME (C)	54,96
SG Actions Euro PME C	54,96
SPDR Bloomberg Euro Corporate Bond UCITS ETF Dist	54,74
Deka iBoxx EUR Liq Non-Financials Divers UCITS ETF	54,69
GAN Equilibre N C	54,49
Pareturn GVC Gaesco Euro Small Caps Equity U-B EUR	54,39
JPM Euro Corporate Bond A Acc EUR	54,37
Allianz Cash Facility Fund R1/D EUR	54,35
Interfund Euro Corporate Bond	54,27

Eastspring Investments-European Inv Grade Bd AE	54,25
DWS Euro Flexizins NC	54,24
PGIM India Em Mkts Equity -Reg-Gth	54,08
Camgestion Oblicycle Credit Classic	53,87
ERSTE RESERVE EURO PLUS EUR R01 A	53,69
Lyxor EuroMTS Covered Bond Aggregate UCITS ETF D	53,68
Consultinvest Ritorno Assoluto C	53,66
BNP Paribas Actions PME Part Camgestion PME O	53,64
La Francaise Carbon Impact Floating Rates R O	53,44
Amundi Credit Euro - P (C)	53,38
Allianz Euro High Yield Bond AT-EUR	53,29
Amundi Actions PME (C)	53,08
AS SICAV I - Euro Short Term Bond A Acc EUR	52,95
Etoile PME C	52,73
NBG International Fds Income Plus A Cap	52,72
Lazard Small Caps Euro SRI I	52,57
Consultinvest Risparmio Italia C	52,24
Raiffeisen-Euro-Rendite R T	52,14
Standard Life SLI European Corporate Bond S4-PEN	52,11
Standard Life SLI European Corporate Bond S1-LIFE	52,11
Erasmus Small Cap Euro R	52,07
DWS Invest Euro Corporate Bonds LC	51,90
SG Oblig Corporate 1-3 P	51,89
Amundi SF Diversified Short-Term Bond E ND EUR	51,83
eQ Floating Rate B	51,67
Zantke Euro High Yield AMI P(a)	51,36
ERSTE RESERVE EURO EUR R01 (T)	51,30
Deka iBoxx EUR Liq Corporates Divers UCITS ETF	51,29
H&A Small Cap Equity EMU B	50,69
Corner Funds Short Term Maturity EUR	50,19
BarReserve T	49,62
Vontobel Fund Euro Short Term Bond B EUR	49,19
BlueBay Investment Grade Bond R EUR	48,84
HANSAdefensive	48,73
Aviva Oblig International	48,10
Prevoir Perspectives C	45,42

3.2.3. Results

These are the summarizing results:

Indicators	TOP	BOTTOM
BETA 3y	0,91	1,00
BETA 5y	0,91	1,01
MAX DD 3y	-30,86	-26,79
MAX DD 5y	-32,61	-28,60
SHP 3y	2,63%	-6,45%
SHP 5y	3,11%	-2,55%
TR 3y	17,28%	-10,17%
TR 5y	17,47%	-4,60%

(3y = 3 years, 5y = 5 years; DD = Drawdown; SHP = Sharpe Ratio; TR= Treynor Ratio)

This analysis confirms the previous hypothesis too. TOP 100 portfolio, representative of the Best-in-class strategy, shows both higher Sharpe and Treynor Ratio, performing better against both systematic and specific risk. Moreover, BOTTOM 100 have negative ratios in both the time periods. There is also a slight difference between the Betas, suggesting the TOP 100 to be less exposed to systematic risk in general. The one thing in which BOTTOM 100 performs better seems to be the Max DD size. In addition, with same rationale of the previous paragraph, the correlation indexes confirm the positive relation between ESG and risk-adjusted ratios:

	ESGScore	*BETA3*	*BETA5*	*DD3*	*DD5*	*SHP3*	*SHP5*	*TYN3*	*TYN5*
ESGScore	1								
BETA3	**-0,01**	1							
BETA5	**-0,02**	**0,99**	1,00						
DD3	**-0,37**	**-0,05**	**-0,04**	1,00					
DD5	**-0,29**	**-0,08**	**-0,07**	**0,89**	1				
SHP3	**0,32**	**-0,06**	**-0,05**	**-0,09**	**-0,14**	1,00			
SHP5	**0,20**	**-0,03**	**-0,03**	**0,01**	**0,02**	**0,92**	1,00		
TYN3	**0,34**	**0,02**	**0,04**	**-0,05**	**-0,12**	**0,60**	**0,37**	1,00	
TYN5	**0,42**	**-0,03**	**-0,02**	**0,03**	**0,10**	**0,50**	**0,39**	**0,86**	1,00

***BLUE* = Zone of interest, correlations between ratios and ESG Score**

*(The **Red** font represents NEGATIVE correlations, the **black** one represents POSITIVE correlations)*

These outcomes confirm that the Best-in-class strategy is highly effective in Sustainable investing and the correlation between sustainability and performance is

real in different asset classes. It has positive effects both for companies and funds supporting what assumed in the second chapter of the dissertation:

- Companies acquire value investing in new sustainable technologies and increase their return
- These returns are more stable over time, especially during crisis because investors/customers base trust the firm and keep staying stakeholders
- Bad ESG performing companies are riskier and they may be not able in future to face the change
- The best funds are ESG integrated respecting management policies and investor need of ethical investments
- ESG factor often coincide with better risk-adjusted return, with lower risk and higher returns against the old paradigm of "safe" investments that sacrifices profits.
- The market is feeling the change and sustainability is one of the best choices of investment in 2022.

CONCLUSION

Since the analysis have been completed and all the data are shown in the different tables provided, it is possible to establish several conclusion using the results obtained. To comment these outputs is probably better to use a schematical approach.

1) Companies Analysis:

In the Eurozone: Portfolio A has an average ROCE in the 5 years of 13,67% vs 2,54% of the Portfolio B. The former represents 25 companies of the ''Best-in-class group", the latter is formed by 25 "Worst-in-class" companies concerning the ESG Combined Score. The difference in the two outputs is quite huge and relevant and confirms the assumptions of the research in affirming that the Best-in-class methodology is the more profitable in sustainable investing, with a spread of about 11% between the two ROCEs. Comparing instead, this results with the ones of the two other portfolios, B and C, the differences are lower in magnitude but still

present. Portfolio B, formed by each ESG Score category but with a higher concentration of good score companies, has an average ROCE of 8,69%, while Portfolio C, more oriented to low scores, totalizes an average ROCE of 4,58%. It is observable a decrease of about the 40-50% in the ROCEs passing across better to worsen portfolios, providing results similar to the Nordea's estimates illustrated as introduction of the analysis. Trying to provide explanation of these results, it is sufficient to look at what ROCE aim to represent: profitability on capital employed, that is in other word the amount invested by the company during its operating cycle. Why this performance is better in high ESG score companies? Supporting the rationale of the second chapter, sustainable companies with a higher ESG rating show a better governance and a better company culture. This affects indirectly the tendency to be innovative and to invest in work-life's quality, increasing the motivation of the employees. Innovation is often obtained through adopting modern technologies that repay in the medium-long term, and this could be the direct element that triggers higher ROCEs. A modern approach to products and services is useful to beat the competitors, the strong and "green" identity meet the needs of the customers, attract sales, often engaging groups of brand-supporters willing to pay "premium" prices. Furthermore, the satisfaction of the workforce is fundamental in lowering the job-turnover and in increasing productivity, and it is clear that these factors put together contribute to enhance cashflows and margins. The other interesting outcome is that these ROCEs, are more stable overtime for the ESG leaders, showing a volatility of 5,04% vs. 8,20% (Portfolio D, Worst-in-class). The reasons are attributable to the capability of sustainable companies to reduce risks such as policy risk, environmental risk and bad-publicity risk, while maintaining a strong relationship with both investors and customers. The first ones believe that "green" companies are less exposed to risks and more prepared to unexpected externalities, the second ones maintain fidelity to the brand and its products avoiding relevant contractions in the level of sales and revenues. Comparing these "euro" data with the U.S. ones, the differences between the behavior of the average ROCE per Portfolio are not truly relevant: 14,54% for Portfolio A, 13,08% for Portfolio B, 10,67% for Portfolio C and 5,04% for Portfolio D. Similar outputs are obtained for the volatility of the ROCEs. At this point, the spontaneous question is: is ESG truly determinant in increasing these performances or these several assumptions are only conjectures? The evidence is provided thanks

to the correlation tests: Eurozone shows a positive correlation of 0,34 between ESG score and average ROCE, and a negative correlation of -0,25 between the score and volatility of the ROCEs. In the U.S.: positive correlation 0,13 ESG score vs. ROCE and negative correlation -0,18 ESG vs. Volatility of ROCE, confirming in a quantitative way the assumption that ESG impact the performances and providing a measurable level of this impact.

2) Funds Analysis:

If the analysis of companies seems more appropriate to show a 360° approach of the economic environment to sustainability, for what about funds there is a focus that allows to understand better the benefits both for institutional/private investors and fund managers. In other words, this approach is more "financial" from the moment that consider as a major aspect some financial profitability indicators excluding obviously any operational assumptions in justifying the returns. The "TOP 100" Portfolio represent 100 best-in-class funds in ESG scoring for the United States of America with no distinctions concerning the asset class, while the "BOTTOM 100" is exactly the opposite. The funds that belong to the fist portfolio have a range of scoring that goes from 73,16 to 68, the other ones from 59 to 45. Sharpe Ratio and Treynor Ratio both of a 3 and 5 period of time have been collected for every fund to calculate the average ratios of each portfolio with equal weights. They are the most appropriate representation of "risk-adjusted return" and indicate the returns adjusted for specific and systematic risk respectively. The results could be summarized as:

- Sharpe Ratio (3 year) = TOP 100 2,63% vs. –6,45% BOTTOM 100
- Sharpe Ratio (5 year) = TOP 100 3,11% vs. –2,55% BOTTOM 100
- Treynor Ratio (3 years) = TOP 100 17,28% vs. -10,17% BOTTOM 100
- Treynor Ratio (5 years) = TOP 100 17,47% vs. -4,60% BOTTOM 100

The clarity of the outputs confirms again the assumptions of the study. TOP 100 performs better both in Sharpe Ratio and in Treynor Ratio for every period of time, with a huge difference and even negative results for BOTTOM 100. ESG best-in-class funds seems to provide better returns over specific risk but also over systematic risk, outperforming by 100% and more the other portfolio. ESG in facts, perceived as guarantee of stability and risk protection, attracts more investors and again maintains their trust over years, against period of bear market too. Furthermore, an increasing number of asset managers, choose to select only

sustainable funds for investment activities in order to respect their own policies or the one imposed by local governments or fund's main shareholders. Shareholder's activism encourage investments in sustainability and this may be another factor that explain the constant increasing capital flows into "green" funds. Another aspect to consider is that among the asset classes embraced by funds, there is a huge percentage of equities and if companies perform better when they got a higher ESG score, funds investing in them necessarily replicate these good results. It is interesting to observe, in conclusion, that both the portfolios present very similar Betas (0,91 vs. 1,00). Similar Beta means same exposition to systematic risk but the difference in the two Treynor Ratios reveals opposite response to this risk. TOP 100 has a very positive ratio in contrast with the negative one of the BOTTOM 100 Portfolio. The point is that, even being similar exposed to market-risk, the first one performs absolutely better than the second and possibly this confirms the assumption that in market-downturn scenarios, ESG could be a fundamental factor in ensuring resilience, stability and sometimes really good performances for the investors. The evidence of the ESG impact is again provided by the correlation test in the last table: positive correlations of 0,32 vs. Sharpe Ratio 3y; 0,20 vs. Sharpe Ratio 5y; 0,34 vs. Treynor Ratio 3y and 0,42 vs. Treynor Ratio 5y.

This dissertation and the analysis proposed aim to offer an original point of view about sustainability. It is important to understand that it has some limitations and must be considered an attempt to bring a sort of concrete evidence to the personal considerations developed by the candidate through his academic experience. Profitability of financial instruments need different data to be proved without any relevant margin of error. There are several other ratios and measures, market conditions and sector considerations to do in order to affirm with the maximum certainty that an investment strategy works better respect to another. Moreover, companies are influenced by numerous exogenous and endogenous variables individually, and a lot of different exceptions may occur. Another fundamental aspect to understand is that both ESG reporting and its framework are still in evolution and they will face for sure a future rich of changes and non-predictable transformations. One of the most severe issues about ESG and sustainability is the "green-washing" phenomenon: companies may advertise social and environmental-friendly policies and processes, different in the facts from their operational reality.

This misleading behavior could trigger a false green-reputation with an undeserved engagement. Furthermore, ESG reporting is often internal and some aspects could be stressed respect to others in order to create advantages in rating through distortions. The purpose of this expressed point of view is to change the way of looking at finance. It is not about pure profit anymore, and pursuing only margins in the long-term is not a winning strategy in 2022. Capitalism is reshaping quickly and sustainable business is the key to success. As explained, ESG represents not only a sort of "harmony" with the economic-environment but also means social engagement and good governance. Satisfied stakeholders and virtuous management constitutes a strong competitive advantage in beating the competition for the long-run. Being sustainable means to maintain stability beyond the market downturns, assure resilience to customers/shareholders and propose innovative solutions to face unpredictable risks. COVID-19 is the proof that being prepared is fundamental to avoid any collapse and the incredible rhythms of progress impose to pursue a visionary approach in doing business. The point is: do sustainability, in 2022, represents the innovation or the "new normal"? Are the victims of the old mentality in charge of not being able to adapt to the modern standards? Or are they not sufficiently prepared to resist against disruptive innovators? Sustainability, at this point, is not a way to take care of the world renouncing to returns but it seems the key to invest with success and the best innovative strategy to ensure the "take profit".

References

ISPI (2021) - https://www.ispionline.it/it/pubblicazione/fact-checking-i-cambiamenti-climatici-10-grafici-32170

United Nations Climate Change - https://unfccc.int/about-us/about-the-secretariat

United Nations Climate Change - https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change

United Nations climate change, What is Kyoto Protocol? (2022) - https://unfccc.int/kyoto_protocol

United Nations climate change, The Paris Agreement (2022) - https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

Official Journal of the European Union - 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

Iberdrola, The importance of the 2030 Agenda and the Sustainable Development Goals (2022) - https://www.iberdrola.com/sustainability/committed-sustainable-development-goals/what-is-agenda-2030

United Nations publications – UN Global Compact 20th Anniversary Campaign Overview (2021), https://www.unglobalcompact.org/docs/publications/UN-Global-Compact-20th-Anniversary-Campaign-Infosheet.pdf

J. Fernando, UN Principles for Responsible Investment (PRI), Investopedia (2022) - https://www.investopedia.com/terms/u/un-principles-responsible-investment-pri.asp#:~:text=The%20UN%20Principles%20for%20Responsible%20Investment%20(PRI)%20is%20an%20international,)%20into%20investment%20decision%2Dmaking.

Principles for Responsible Investment, About Us (2022) - https://www.unpri.org/about-us/about-the-pri

“Task Force on climate-change related financial disclosures” website , About (2022) - https://www.fsb-tcfd.org/about/

EUROSIF website, SFDR (2022) - https://www.eurosif.org/policies/sfdr/

CONSOB website, Sustainable Finance Action Plan (2022) - https://www.consob.it/web/consob-and-its-activities/sustainable-finance-action-plan#:~:text=In%20March%202018%2C%20the%20European,view%2C%20by%20contributing%20to%20the

UNEPFI website, Net Zero Banking Alliance (2022) - https://www.unepfi.org/net-zero-banking/

Brown D. & Brown D. (2021), ESG Matters (1st ed.), Governance Solutions Inc.

Alva Group (2021), What is an ESG score and how is it calculated? - https://www.alva-group.com/blog/what-is-an-esg-score-and-how-is-it-calculated/

W. Kenton, Investopedia (2022), MSCI - https://www.investopedia.com/terms/m/msci.asp

MSCI ESG Researching LLC (2022), MSCI ESG Ratings methodology

Sustainalytics (2021), ESG Risk Ratings - Methodology Abstract vers. 2.1 - https://connect.sustainalytics.com/hubfs/INV/Methodology/Sustainalytics_ESG%20Ratings_Methodology%20Abstract.pdf

S&P Global Ratings (2021), *ESG Evaluation brochure digital*

S&P Global Ratings (2022), *S&P Global ESG Scores Methodology*

Silvola, H., Landau, T., & ProQuest (2021), Sustainable investing: Beating the market with ESG. Palgrave Macmillan.

Morningstar Manager Research, 2022, *Global Sustainable Fund Flows: Q2 2022 in Review*

S. Collins, K. Sullivan - Deloitte Center for Financial Services (2020), *Advancing environmental, social, and governance investing*

Deloitte (2019), *Do sustainable banks outperform? Driving value creation through ESG practices*

Florian Kiesel, Felix Lucke (2019), *ESG in credit ratings and the impact on financial markets*

MSCI ESG Research (20221, *Climate Value-at-Risk brochure*

GCA Altium (2021), *ESG report*

Bain Company (2022), *Global M&A Report 2022*

N.C.Ashwin Kumar et Al., Journal of Sustainable Finance and Investments (2016), *ESG factors and risk-adjusted performance: a new quantitative model*

P.Vitale (Luiss University), 2020-2021, *Equity Markets Notes*

Moro-Visconti, R., & Visconti, R. M. (2022). Augmented corporate valuation: From digital networking to ESG compliance. Springer International Publishing AG.

Bassen A., Hölz H.M., Schlange J., Meyer K., Zamostny A. 2006. The Influence of Corporate Responsibility on the Cost of Capital. An Empirical Analysis [G]. Universitat Hamburg.

Bauer R., Hann D. 2010. Corporate Environmental Management and Credit Risk [R]. European Centre for Corporate Engagement (ECCE).

Berchicci, L., Dowell, G., and King, A. A. 2012. Environmental capabilities and corporate strategy: Exploring acquisitions among US manufacturing firms [J]. Strategic Management Journal, 33: 1053-1071.

Berman S.L., Wicks A.C., Kotha S., Jones T.M. 1999. Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance [J]. Academy of Management Journal, 42 (5): 488–506.

Bettinazzi E, Zollo, M. 2017. Stakeholder orientation and acquisition performance [J]. Strategic Management Journal, 38: 2465 2485.

Betton S., Espen Eckbo B., Thorburn K.S. 2008. Handbook of Corporate Finance: Empirical Corporate Finance, Vol. 2 [M]. Eckbo, ed., Elsevier/North-Holland Handbook of Finance Series.

Bird R., Hall A., Momente F., Reggiani F. 2007. What Corporate Responsibility Activities Are Valued by the Market? [J]. Journal of Business Ethics, 76: 189–206.

Bitecktine A., Haack P. 2015. The macro and micro of legitimacy: Toward a multilevel theory of the legitimacy process [J]. Academy of Management Review, 40: 49–75.

BlackRock. 2016. Exploring ESG: A Practitioner's Perspective [EB]. BlackRock.

Paradis, G.; Schiehll, E., ESG Outcasts: Study of the ESG Performance of Sin Stocks. Sustainability 2021, 13, 9556.

Zhao, C.; Guo, Y.; Yuan, J.; Wu, M.; Li, D.; Zhou, Y.; Kang, J. (2018), ESG and Corporate Financial Performance: Empirical Evidence from China's Listed Power Generation Companies. Sustainability, 10, 2607.

Yoon, B.; Lee, J.H.; Byun, R. (2018), Does ESG Performance Enhance Firm Value? Evidence from Korea. Sustainability, 10, 3635.

Jang G-Y, Kang H-G, Lee J-Y, Bae K. (2020), ESG Scores and the Credit Market. Sustainability; 12(8):3456.

D'Amato, V., D'Ecclesia, R. & Levantesi, S. (2021), Fundamental ratios as predictors of ESG scores: a machine learning approach. Decisions Econ Finan 44, 1087–1110.

Anon (2019), ESG in credit ratings and the impact on financial markets. [Online] 28 (3), 263–290.

Regalli M., S. M. (s.d.). I fondi etici: caratteristiche, spazi di mercato, ritorni finanziari. Parma: Dipartimento di Economia, Università di Parma. 21

Rizziato E., N. E. (2012). Un quadro internazionale, europeo ed italiano sulla responsabilità sociale delle organizzazioni con focus sull'etica dello sviluppo organizzativo. Moncalieri: CERIS Istituto di Ricerca sull'Impresa e lo Sviluppo.

Rossi F., T. L. (2013). Gli investimenti sostenibili e responsabili. Verona: University of Verona.

DEPARTMENT OF BUSINESS AND MANAGEMENT

Chair of Equity Markets and Alternative Investments

Sustainable Investment: Analysis of the ESG factor impact on financial profitability

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INTRODUCTION

Kyoto's Protocol, Paris Agreement and 2030's Agenda, are only three that the several initiatives behind the changing that the world is meeting. This change is triggered by a tragic environmental crisis generated by consumption. Consumption is the first pillar of economics and for this principle also financial actors and corporates have moved toward the direction of change. A lot of research provided by OWI and other environmental-agencies make clear the actual situation and suggest the urgence of a deep transformation in our economic system at a global level. Principles of Responsible Investing are one of the multitude of frameworks created to allow more sustainable finance and respond to the needs of the society. After analyzing the several frameworks and regulations related to sustainable economics in the first part of the study, the ESG concept will be introduced and deeply illustrated. ESG is the acronym of Environmental, Social, Governance and enclose all the corporate issue related to these topics. A high ESG score means a high ability to face these issues and the opportunity to be better rated by Agencies. ESG score methodologies are heterogeneous and some of the most adopted will be described in the first chapter of the dissertation. These scores are fundamental to judge a company for the investor that want support a sustainable and responsible investment approach and entrust their capitals to the "green innovation". There are different strategies for sustainable investing: among them the Best-in-class and the Portfolio Integration will be tested in the final chapter of the study. The aim of the dissertation is to give answer at the following questions: is sustainable investment profitable? Do investing in sustainability reduce profits? How much impactful is the ESG factor? After a series of theories and historical evidence about the performances related to the high ESG companies and financial instruments under several aspects, the third chapter close the study with an analytical approach that uses average returns to verify the performances on a concrete basis and without any distortion. The approach uses established inputs and criteria but random samples to maximize the credibility of the results. The outcomes satisfy the theories and represent the candidate contribution to support the importance of sustainability and ethics in economics and finance.

INTRODUCTION OF THE ESG TOPIC

Negative effects of capitalism and production on the world

World is changing, more quickly in the last two decades than in two entire centuries. Behind this incredible transformation there is the progress, more specifically speaking: the Great Industrial Revolution. From that moment, our ability to produce has extremely

increased, bringing to an economic development never seen before, expanding capitals, wealth and access to products. People have begun to increase their status and quality of life is growth almost for everyone. More production needs more workforce that means more employment that means more people able to gain salaries. The spread of wealth is obviously related to a higher expenditure capacity, that must be absorbed by production to keep the entire process in function. Companies, in response, started to satisfy every possible need for their costumers and in certain cases, to create new ones for them to compensate the industrial growing trend. In this way started the actual society that has developed using the consumption as the principal source of life, transforming our lives, improving them, and pushing the level of science and technology at their best like never in history. This whole process has surely been positive, bringing to globalism and making access to data, human capital and financial resources, incredibly simple and fast. Being part of this generation is for several aspects a huge fortune and sort of privilege, but on the other hand, requires a new kind of responsibility and a bigger awareness of what this "power" is generating. Capitalism and industrial revolution indeed, have created as many benefits as terrible consequences. This statement does not set up a position against the capitalism itself, on the contrary recognize is value and is incredible transforming capacity in every field. It is not possible to refuse it, but it is necessary to believe in it shaping its direction using social responsibility and forward-looking choices. If it is true that capitalism can cause damages, it is also true that is the only effective instrument to fix them, in a way that would be explained by the next chapters of this work.

The heaviest consequence however, is climate changing. Levels of pollution in the air exponentially increasing due to the rising emissions observed in these decades carried by industrial production and individual consumption. The average annual concentration of CO2 (ppm) in the atmosphere is of 416 ppm in 2022, and have risen exponentially in the last centuries. In the last two decades, CO2 emissions have risen to extreme levels with an increment of about 57% respect to the previous years. This phenomenon links directly with temperature rising that is happening with a speed of 0,2 degrees Celsius per decade and has augmented already of 1 degree since the 19th century. Forecasts include an increase up to 2,7 degrees until 2100, without any change. Energy has the record in spreading GHG emissions over the other sectors, with almost 40 Gt detected in 2019. Agriculture is following with about 6 Gt, and Industrial Processes in the third position (about 3 Gt).

Frameworks and actions to drive the change

Governments and other economic actors, like companies and financial institutions, started to take serious actions to change the society and fight the climate change through the business environment. Sustainability is strongly encouraged and year by year is becoming almost mandatory. This is the only way to avoid dramatic consequences. Among the most important initiatives lead by international organizations there are: the UNFCCC, the Kyoto Protocol and the Paris Agreement. Moreover the 2030's Agenda provide Sustainability Development Goals which must be pursued by enterprises in order to reach important results against global-warm and inequalities within the 2030. The UN Principles for Responsible Investment (PRI) is an international organization that works to promote the incorporation of environmental, social, and corporate governance factors (ESG) into investment decision-making. It was announced in 2005 and definitively launched in 2006, counting about 4,900 institutions in 2021. They are, more precisely, signatories of the key-six principles of the organization and provide reports every single year to disclose the results achieved in following the guidelines. The focus of the organization is to promoting environmental and social responsibility among the world's investors and the disclosures are totally voluntary. The Sustainable Finance Disclosure Regulation (SFDR) is a European regulation introduced to improve transparency in the market for sustainable investment products, to prevent greenwashing and to increase transparency around sustainability claims made by financial market participants. It imposes comprehensive sustainability disclosure requirements covering a broad range of environmental, social & governance (ESG) metrics at both entity- and product-level. The industry-led, UN-convened Net-Zero Banking Alliance brings together 43 banks from 23 countries with US$28.5 trillion in assets to deliver the sector's ambition to align its commitments with the Paris Agreement. Member banks are committing to: transition the operational greenhouse gases emissions from their lending and investment portfolios to align with pathways to net-zero by 2050; Set 2030 targets and a 2050 target, with intermediary targets to be set every 5 years from 2030 onwards; Engage with their clients' own transition and decarburization, promoting real economy transition.

ESG and Sustainability in Investments: the concrete side

The call to action provided by governments and international alliances is strictly related to the needs of a new generation of investors. People are informed and aware of the damages occurred by the bad management of resources, and by an "egoistic'' attitude in capitalism. For this reason, investment choices are not only influenced by profit but also by sustainability, in the logic that ''financing the change'' is the best way to reach it. Trying to seek for companies that shows a good approach in contributing to re-shaping

economy and respect the new regulations, is of course necessary one single or a group of parameters, as for governments such as for investors. ESG is the answer to this need and refers to environment, social, and governance features when measuring the sustainability and ethical impact of an investment in a business or company. It is a generic term that is used primarily in capital markets where it originated. Investors commonly use ESG to evaluate the behavior of companies and determine an organization's future performance and thus their worth—their value. It covers the three main factors that socially responsible investors measure when deciding whether to invest in a company.

The E in ESG, or environmental criteria, includes the energy an organization takes in, the waste it discharges, the resources it needs, and the consequences for the planet and living beings as a result of an organization's activities. It encompasses issues such as carbon emissions and climate change. The S in ESG, or social criteria, addresses the relationships an organization has and the reputation it fosters with people and institutions in the communities where it does business. Social criteria include elements like labor relations, diversity, equity, and inclusion. The G in ESG, or governance criteria, is the system of direction and control of the organization. Governance criteria go further to include the operating system of practices, controls, policies, and procedures your company adopts to govern itself—to make effective decisions. It includes ethics, transparency, and going beyond complying with the letter of governing laws to fulfilling the spirit of them. Investing and chasing opportunities engaging projects and companies which better perform in satisfy the previously listed features requires an objective and quantitative method to avoid false information and allow to compare the options in the market. To this purpose an aggregate output has been produced: the ESG Score. "An organization's ESG score is, simply put, a numerical measure of how it is perceived to be performing on a wide range of environmental, social and governance (ESG) topics." It can be material for the company as for its stakeholders, helping at the same time the organization internally and the wider corporate ecosystem, to assess and understand ESG performance. With the growing need to quantify a business's ESG performance, different scoring systems have emerged. The most important and recognized are: MSCI Rating, Sustainalytics' Score and S&P Global ESG Rating.

Bid is the core element of every market direction and if people demand sustainability, if customers reward ESG practice, offer must adapt and improve to stay competitive. The real change has been started by investment and investors awareness, with a stunning up-trend of sustainable choices in employing capital. In order to understand how they can influence the market, it is necessary to investigate the different approaches to sustainable

investments. At this purpose, the principal division to do is between Social Responsible Investing (S.R.I.) or Ethical Investing and Sustainable Investing. Ethical investing or S.R.I., arises from the investor's values. Ethical investors are willing to compromise on their expected returns in order to invest their assets in good conscience. They refuse to invest in five sin stocks: alcohol, tobacco, the arms industry, adult entertainment and gambling. Based on ethical choices, they may also exclude other companies, such as finance companies (payment of interest), pharmaceutical companies (birth control), meat industry companies (pork or all animal-based products) and companies selling cannabis for recreational use. Initially, ethical investors often used to have a religious set of values, but their selection of investments is increasingly affected by views related to environmental objectives, such as combating climate change. Sustainable investing refers to the consideration of environmental, social and governance (ESG) factors in investing, as well as to the connection between the risks and opportunities arising from these factors and the value of the investee. Sustainable investors often refer to a set of international norms or an international framework, such as the Principles for Responsible Investment. They seek good returns on their capital, but they also seek to consider ESG aspects by favoring investees that promote sustainability. There are various methods of sustainable investing, and investors can put more weight on the methods that are suitable for them. *Exclusion (or negative screening)* of unethical or low ESG score companies, is the oldest method of sustainable investing and stems from methods of ethical investing. Coal and other forms of fossil energy involve the transition risk, which forces investors to assess their investments in terms of both values and investment risks, and the ultimate reason for exclusion may also be (partly) financial. Exclusionary approach is also related to the fact that investment managers and asset managers, particularly on the institutional level, are often guided by investment policies that are constructed to adhere to the needs or objectives of their clients, plan participants, governing bodies, or counterparties. Policy risk, or ESG-based policy risk, represents the risk that an investment will violate the policies to which investors are accountable. Headline risk can be understood as any risk to the reputation, and subsequently the sustainability and profitability, of an organization. Performance risk is the risk of underperforming benchmarks, peer groups, and investment mandates. Investors may utilize ESG investment policies if they believe that ESG investing methodology will benefit the performance of their investments. *ESG integration* is the explicit inclusion of securities based on factors of ESG risks and opportunities, into an investment portfolio. Investors often choose this strategy to mitigate risk and/or to help generate alpha. *Positive screening (or best-in-class)* is one method for systematic ESG integration. Investors may also choose to systematically integrate ESG factors through

filtering a universe of securities in order to integrate elements with favorable ratings on ESG factors into a portfolio. An investor chooses to only include securities of a certain rating hurdle: for example, an investor might conduct positive screening to integrate only securities rated AA or AAA into an investment portfolio as part of their systematic ESG integration process. *Engagement-based* ESG investing is the third approach to ESG investing. Investors choose engagement-based ESG investing so that they may communicate their beliefs on a particular issue in order to serve as a catalyst for change. The tone of engagement can vary greatly: in some cases, the engagement process is collaborative, other times the engagement process can be hostile, as investors maximize pressure on a corporation to effect change. Furthermore, engagement can be private or public. Private engagement may include confidential communications on constructive ESG issues, intellectual capital and strategy sharing, and research and development. Public engagement may entail open letters, use of media platforms and social media channels to communicate desired engagement and goals for change. It may also come in the form of activism, which may be collaborative or hostile in nature: investors buy large amounts of a public company's stock and then attempt to obtain seats on the company's board with the goal of creating a major change in the company. Thematic investing (or theme investing) means that certain themes are favored in the selection of investments as companies operating in certain sectors or producing certain products and services. Impact investing is a hybrid form of investing that combines returns with benefits for society: investors will invest in companies, or practice specific investment strategies, that combine both social and financial returns. An investor might prefer impact-based ESG investing methodology for a variety of reasons, but the two most significant reasons are: to meet the social or environmental objective of the asset owner (or the investor's belief system) or to yield the best risk-adjusted return compared to other investment choices. On the other hand, also financing activity have been reshaped in order to bring more commitment to the sustainable metamorphosis of the economic system and meet the needs of the investors at the same time. New financial instruments of debt in fact, have been created and issued to attract ESG-oriented capital: Green Bonds, Social Bonds, Sustainability Bonds, Sustainability KPI-Linked Bonds, Transition Bonds.

IS ESG-BASED INVESTING PROFITABLE? THEORIES AND FINDIGS

Market perspective: historical performance indicators

Assuming the largely demonstrated benefits for the world in general and for a long-term sustainable economy more in the specific, the debate concerning the ESG-based investing financial outlooks is still very controversial. The old school of economic theory, stated

that sustainability sacrifices performance and profitability in order to take care of ethical issues, bringing no financial benefits to the organizations. This view has been rejected in the modern days, firstly by scholars of the new economy and later by markets. Governments, corporates, financial institutions and not less important, the investors (the heart of financial system), understood the relevance and the benefits of investing using sustainable strategies, and started to re-allocate their capitals generating an exponential trend that supports ESG-based theory. The aim of this study is to verify if the trend is justified, observe the financial data of the very last years and trying to respond at the question: is ESG profitable? What are the factors that brings concrete value to the organizations after the adoption of sustainability-oriented strategies? After the possible answer the objective is to empirically verify the relation between good performances and ESG high profiles and to assign approximated weight to this factor in affecting performance measures. The first answers come directly from some insights on the last market trends. Starting from a pure social-surveying premise, nowadays 79% of U.S. individual investors and 99% of millennial investors are interested in sustainable investing (Morgan Stanley Institute for Sustainable Investing, 2021). The two-third of investors, furthermore, choose a value-based approach, with the 63% of them oriented to buy stocks aligned with their values and 68% of them trying to avoid investments that contradicts these values (Gallup, 2021). 50% of investors, more specifically, are likely to buy sustainable funds (Gallup, 2021). This kind of awareness is observed also in companies, that are moving towards the trend for several reason. The largest pressure come from governments: the new regulatory framework success into re-shape the market thanks to a "double incentive" approach. The first incentive is positive: ESG high performance allow to obtain tax benefits and form of subsidy (i.e., in purchasing "green" PPE or assets). The negative approach instead, is represented by hard sanctions for new environmental or social principles violation. Financing is the other constraint that push corporates to increase their ESG performance because banks and financial institutions are more likely to erase capitals in project with sustainable purposes in order to increase their amount of sustainability in assets, generating an effective chain-reaction. The last, but not less important, factors are investors and costumers: high ESG companies appear as more stable in the time, more innovative and often meet the values of the environment they face, attracting more capitals and generating a higher number of sales. The main question that the study aims to answer is: are sustainable investing strategies profitable? In order to respond is not enough to find a large number of positive performances in the market related to the "green" investment products. In fact, a series of good market indicators or a simple growth in market value cannot be satisfying for the purpose, considering that a

"bullish" trend could be affected by heterogeneous factors which may not involve ESG score or sustainable practice. The point is to find a sufficiently explicative relation between ESG-thematic features and market performances. A process of research in literature, reports and several insights has built the theoretical basis to support this dissertation and provide conclusions about the effectiveness of sustainability for investment purposes. The first assumption is that exists a studied correlation between sustainable practices and financial performance. In particular, ratios explicative of investing outcomes show a positive correlation in this sense. Several extensive summary analyses of published scientific articles have come to the conclusion that there is a statistically significant positive association between sustainability and financial profitability. Margolis, Elfenbein, and Walsh (2007) compiled 167 studies from 1972 to 2007 for their article. They noticed that these studies typically examined the association between the company's financial performance (e.g. Tobin's Q, ROA) and the sustainability aspects reported by the companies.[42] Friede, Busch, and Bassen (2015) later analyzed a considerably larger sample that covered around 2,000 studies that showed this positive correlation in the majority of the results. The main question that the study aims to answer is: are sustainable investing strategies profitable? In order to respond is not enough to find a large number of positive performances in the market related to the "green" investment products. In fact, a series of good market indicators or a simple growth in market value cannot be satisfying for the purpose, considering that a "bullish" trend could be affected by heterogeneous factors which may not involve ESG score or sustainable practice. The point is to find a sufficiently explicative relation between ESG-thematic features and market performances. A process of research in literature, reports and several insights has built the theoretical basis to support this dissertation and provide conclusions about the effectiveness of sustainability for investment purposes. The first assumption is that exists a studied correlation between sustainable practices and financial performance. In particular, ratios explicative of investing outcomes show a positive correlation in this sense. Several extensive summary analyses of published scientific articles have come to the conclusion that there is a statistically significant positive association between sustainability and financial profitability. Margolis, Elfenbein, and Walsh (2007) compiled 167 studies from 1972 to 2007 for their article. They noticed that these studies typically examined the association between the company's financial performance (e.g. Tobin's Q, ROA) and the sustainability aspects reported by the companies. Friede, Busch, and Bassen (2015) later analyzed a considerably larger sample

[42] H. Silvola, T. Landau (2021), *Sustainable Investing - Beating the Market with ESG*, Palgrave Macmillan

that covered around 2,000 studies that showed this positive correlation in the majority of the results. What is particularly determinant for better financial performance are public ESG Ratings. With the born of this score methodology, related information is publicly available for investor, affecting their perception and their propension to invest or divest in the company. A study completed by Nordea (2018) conducted on S&P 500 index's companies shows the higher financial profitability of the top-scorer respect to the worst competitors. Financial profitability is measured considering both operating performance indicators and changes in market value. Choosing MSCI ESG Rating as a score, is observed that AAA" rated companies outperformed by 35% the companies with "B" and "CCC" scores. A study by Serafeim (2018) at Harvard University scientifically confirms the phenomenon mentioned above concerning the association between ESG level and financial profitability. According to Serafeim, the financial success of sustainable companies has increased over time and is affected by positive public information. In his model, Serafeim examines how changes in companies' sustainability levels (ESG level) affected the companies' market values measured using end-of-month values. Companies with a higher ESG level also have a higher market-to-book value and return on equity (ROE). An improvement in the ESG level had a twofold or threefold impact on the market-to-book value of companies whose sustainability had received positive publicity compared with companies whose sustainability aspects had been discussed in a negative light. From this it could be concluded that a company's reputation as a responsible company and its media image have a positive impact on its market-to-book value. According to research-based information, the materiality of ESG data has a significant impact on returns. Khan, Serafeim, and Yoon (2016) published an article in the prestigious academic journal The Accounting Review in which they analyzed 2,000 US companies between 1993 and 2013. According to the results of their study, companies that outperformed the benchmark companies in their sector in terms of material ESG factors increased their profit margins more rapidly and generated better risk-adjusted returns. Correspondingly, high ESG ratings for immaterial factors did not produce the same reaction and sometimes even decreased returns. Academic research shows that a sustainable company has lower market value volatility than a company with a low ESG rating. According to Verheyden, Eccles, and Feiner (2016), the volatility and the loss risk of an investment portfolio are lower using the best-in-class method based on ESG levels than for unscreened portfolios. Nordea's study (2018) based on MSCI data also illustrates that share price volatility was eight percentage points lower for "AAA" rated companies than for S&P 500 Index companies with the lowest ESG rating (B/CCC) between 2012 and 2018. This lower volatility unlocks its positive potential especially during bad market

cycles or periods of generalized crisis, as mentioned before (Albuquerque, Durnev, & Koskinen, 2012). The customers of sustainable companies are more loyal to a sustainable brand and are willing to pay a higher (premium) price for products. The difference between sustainable and less sustainable companies was evident during the 2008 recession in particular. Stable net sales development and share price performance decrease the cost of capital, reduce the company's overall risk and make the share more attractive. Cheema-Fox, LaPerla, Serafeim, and Wang (2020) observed that sustainable companies have recovered rather well from the stock exchange slump caused by the Covid-19 pandemic in March 2020. They analyzed more than 3,000 companies from around the world. According to the study, investees that actively communicated about their crisis response and showed credible commitment to their stakeholders were the least affected by the slump in terms of returns.

Internal perspective: effects on corporate intrinsic valuation

The observation collected on the market through the analysis of historical data are the image of how much ESG could enhance the value produced and perceived by the stakeholders. The rationale is that to perform better in the result, a company must enhance the effectiveness of its processes in quality and stability. For this reason, it is appropriate to analyze from a "fundamental" point of view what ESG could impact in three main statements of a firm: balance sheet, income statement and cashflow statement. Mentioning the voices impacted positively by sustainability, the following assumptions aim to support the theory that wants the improvement of a company's intrinsic value provided by ESG compliance. Sustainable companies are better able to shape their business operations as the world and operating conditions change. Sustainability affects net sales through sales volumes and sales prices. The global challenges of sustainability offer new business opportunities: companies can offer products and services related to renewable energy or clean water, for example. In addition, some companies require sustainability from their suppliers: this makes sustainability a prerequisite for sales, as well as enabling higher sales volumes for sustainable companies. Some consumers are also willing to pay a higher price for a product or service if it is produced responsibly. Ecolabels, domestic origin, ecological and renewable raw materials—as well as favoring products and services produced in the home country of the consumers—are typical ways of appealing to consumers to increase sales. According to some studies, during recession, consumers remain most loyal to products that they consider sustainable. Many companies seek to reduce costs through sustainable operations. Typical means include reducing the consumption of energy and water, as well as reducing waste or pollution. It is easier to

motivate employees to save costs when reducing consumption is justified on environmental grounds. Similarly, poor sustainability management or indifference can unnecessarily increase costs while also reducing the return on investment. Typical negative impacts include an unnecessarily high level of energy consumption and emissions, high employee turnover and environmental protection taxes. The materialization of even a single sustainability risk can cause the company to incur significant costs and loss of income. Naturally, costs also arise from the company's sustainability efforts. However, through these efforts, the company seeks to increase its net sales beyond the cost of sustainability work. The materialization of ESG risks may reduce net sales and increase costs, in which case the company is no longer able to meet its loan repayments or other financial obligations. Consequently, the investee may end up in a situation where the return on the capital invested in the company is lower than the weighted average cost of capital and creates no value for its owners. All these single voices impacted in the balance sheet are, as known, fundamental for a complete valuation of the company. In particular, the case analyzed, is the intrinsic form of valuation, that is obtained largely through the use of the ''Discounted Cash Flows'' or DCF model. . ESG investments impact this traditional scenario, and they may worsen initial payoffs (if the initial investments for starting up the ESG project are higher than the traditional ones), even if in the long run sustainable investments may have compensating higher profitability. The way through which ESG affects the DCF valuation is to increase the NPV impacting both the capitalizing part of the model and the discounting part. In fact, it is observed that sustainability enhances the capacity of generate higher positive cashflows reducing at the same time the cost of capital used to discount the project, that in this case is the WACC. Focusing firstly on the cost of capital issue, its reduction is due to the higher trust putted by investors in the firms with a satisfying level of sustainability. These companies appear as less risky, because they are resilient and, as seen in the precedent paragraphs, they are protected against threats like regulation risks, climate and environmental shocks, scandals of public domain, and loss of customers in bad market cycles. The cost of capital, both cost of equity and cost of debt, represents the cost in terms of interests from collecting capital from new or pre-existing shareholders (i.e., stocks) and from debtholders respectively (i.e., bonds) but at the same time the expected return required from fund providers to face the relative risks. Ignoring ESG aspects exposes firms to risks that diminish value, shrink returns, and even lead to failure. Firms considering ESG aspects are perceived as less risky by capital providers. In the numerator part of the DCF model instead, the cashflow generated is affected in a positive way by the ESG factors. Sustainable companies, even if the payback of ESG investments may be

longer (at least till when economies of experience can be incorporated in ecological projects) are able to generate higher payoffs in the medium-long term respect to those of the traditional investments, once the break-even cut-off rate is surpassed. The ability to improve cashflows come both from cost savings and revenue increase. ESG in fact, refers also to the Governance and Social issues of a company, as known. A better governance means quite always a higher quality management, better human capital resources and better innovation policies that contributes to an augmented EBITDA. New technologies implementation and more satisfied (and so more productive) workforce are associated with cost savings and wider production, while the perception of innovation and quality attracts more costumers boosting the sales. In this sense sustainability provides "scalability" to the firms, a process for which in the long-term a growing in production and a decrease in sales drive to improved profit margins. Summarizing, ESG factors can contribute to changing DCF in two ways—modifying either the cash flows in the numerator and/or the corresponding cost of capital in the denominator.

Transaction perspective: effects on relative valuation

ESG also impacts relative valuation in transaction perspective. M&A deal are more and more affected by sustainability requirements and a good ESG performance is capable to increase the value of the company, increasing the valuation multiples and in other words, the final deal price in acquisitions. In particular, acquirers are more interested and willing to pay premiums for two type of approach*: ESG-motivated approach* and *ESG-conscious approach.* ESG-motivated deals are pursued explicitly to advance the buyer's ESG agenda. In this approach acquirers are interested in: Synergies, Shareholder's Activism, Engagement. Meanwhile, ESG-conscious M&A incorporates an ESG angle across the M&A value chain, even if the motivating deal thesis is not ESG related. For example, acquirers may perform due diligence to determine if a target's carbon footprint is aligned with the acquirer's sustainability goals, unrelated to the deal rationale. Due diligence in this case, is interested in: Culture-Proxy, Financial Costs, Regulatory Risk, Post-Integration process.

ANALYSIS OF ESG POSITIVE IMPACT ON FINANCIAL PERFORMANCES

The third chapter of this study aims to provide a personal contribution to the assumptions showed in the previous parts of the dissertation. In the specific it is focused on a personal analysis which investigates if ESG brings financial stability and profitability. The study is divided into 2 approaches: companies' analysis and funds' analysis. Both have been conducted using Refinitiv database and Microsoft Excel.

Portfolio analysis: companies

In the companies' analysis the methodology consists into creating different portfolio using ESG-Integration and Positive Screening (Best-in-class) methods. Both for Eurozone and USA, From the universe of 4000+ firms selected, the sample has been restricted to 100 firms. The goal is to create different portfolios of 100 companies for each geographical zone and colleting ESG Combined Score by Refinitiv in collaboration with MSCI (absolute number value 0-100) and ROCE (Return on Capital Employed) 1year, for each financial year from 2017 to 2022 (5 years). ORANGE (60-30 score) and RED (30 or less score). Then 4 portfolios have been originated with a Score-weighting rationale. The logic is: starting from a 100% capital to invest, to compose each portfolio basing the weight of each element on its group of origin (GREEN, YELLOW, ORANGE OR RED). Every group is formed by 25 elements. Each single portfolio is composed investing part of the 100% Capital in different groups following the "orientation" to represent. In particular, it is based on the ESG-Integration approach by different levels, top – high/middle – middle/low – bottom. The two opposite extreme portfolio are constructed using the Best-in-class method (PORTFOLIO A) and the Worst-in-class method (PORTFOLIO D), choosing only companies with 80+ Score and 30- Score respectively. This is the reason they are formed by only 25 elements. Other ones are based on a more balanced approach (high/medium and medium/low) and comprehend 100 elements (25 companies for each ESG group), weighted again following the orientation of the Integration-strategy. ROCE have been treated as an Expected Return (r) of a stock hypothesizing that the Expected Return of each portfolio so, depends exclusively on ROCE. In other words, higher the ROCE higher the return from the capital invested in the selected portfolio. Portfolios created are:

PORTFOLIO A (best in class)			
Composition		N elements	single element weight
100%	GREEN (80+)	25	4%
0%	YELLOW (80-60)	25	0%
0%	ORANGE (60-30)	25	0%
0%	RED (30-)	25	0%

PORTFOLIO B (High score-oriented)			
Composition		N elements	single element weight
40%	GREEN (80+)	25	1,60%
30%	YELLOW (80-60)	25	1,20%
20%	ORANGE (60-30)	25	0,80%
10%	RED (30-)	25	0,40%

PORTOFOLIO C (Low score-Oriented)			
Composition		N elements	single element weight
10%	GREEN (80+)	25	0,40%
20%	YELLOW (80-60)	25	0,80%
30%	ORANGE (60-30)	25	1,20%
40%	RED (30-)	25	1,60%

PORTFOLIO D (Worst-in-class)			
Composition		N elements	single element weight
0%	GREEN (80+)	25	0,00%
0%	YELLOW (80-60)	25	0,00%
0%	ORANGE (60-30)	25	0,00%
100%	RED (30-)	25	4,00%

To calculate each portfolio return the traditional formula has been applied:

$$E(r)_p = w_1 r_1 + w_2 r_2 + \cdots + w_n r_n$$

(with E(r)p = Portfolio Expected Return; w = weight; r = return)
Average Return of each portfolio allow to respond the first question, comparing the performances of the different portfolio. To respond the second question, the ROCE Volatility (5y) have been used and Weighted Average Volatility of each portfolio obtained. It is important to specify that W.A. Volatility do not means Portfolio Volatility, due to the exclusion of covariance between every single element, for reasons of simplicity (it would be a matrix of covariances between 100 elements). The final results have been finally compared between portfolios and between geographical zones. The correlation analysis has been conducted on the whole 100 companies sample avoiding to apply the "group" criteria and dividing best ESG performers from others. Considering several scores, which vary from 0 to 100, and an equal number of average ROCEs, the hypothesis is confirmed with a positive correlation between ESG scores and Average ROCE and a negative correlation between ESG and ROCE's Volatility.

Portfolio analysis: funds

The second approach is the fund analysis and it is based on the "risk-adjusted return" concept and on a paper by provided by N.C.Ashwin Kumar et Al. on the Journal Of Sustainable Finance & Investment (2016). According to Kumar et. Al. combining the two sides of investing – risk and return –the relationship between the two may not actually reflect traditional market thinking. The lower risk brought by better ESG practices may improve the risk-adjusted return of the investments. A popular measure for comparing risk-adjusted returns is the 'Sharpe ratio', calculated as the expected return per unit

volatility (risk) – higher the Sharpe ratio, the greater the efficiency of the investment. An analysis of the stock returns and volatility during January 2014 to December 2015, reveals that integration of ESG factors can significantly improve the efficiency of investment decisions. […] Another common measure of risk-adjusted return is the Treynor ratio. This measure compares the return earned on a stock against the beta or market risk of a stock as an alternative risk measure to standard deviation. The approach used is quite the same as the company research: portfolio integration. For funds have been constructed two equally-weighted portfolio following the Best-in-class approach and the Worst-in-class approach. Using ESG Combined Scores by Refinitiv have been selected the 100 best rated funds, which form the "TOP 100" Portfolio; and the 100 worst rated ones, which form the "BOTTOM 100" Portfolio. For each portfolio weighted average Beta, Max Drawdown, Sharpe ratio and Traynor ration have been calculated. TOP 100 portfolio, representative of the Best-in-class strategy, shows both higher Sharpe and Treynor Ratio, performing better against both systematic and specific risk. Moreover, BOTTOM 100 have negative ratios in both the time periods. There is also a slight difference between the Betas, suggesting the TOP 100 to be less exposed to systematic risk in general. The one thing in which BOTTOM 100 performs better seems to be the Max DD size. In addition, with same rationale of the previous paragraph, the correlation indexes confirm the positive relation between ESG and risk-adjusted ratios.

CONCLUSION

To comment the results is probably better to use a schematical approach.

1) Companies Analysis:

In the Eurozone: Portfolio A has an average ROCE in the 5 years of 13,67% vs 2,54% of the Portfolio B. The former represents 25 companies of the ''Best-in-class group", the latter is formed by 25 "Worst-in-class" companies concerning the ESG Combined Score. The difference in the two outputs is quite huge and relevant and confirms the assumptions of the research in affirming that the Best-in-class methodology is the more profitable in sustainable investing, with a spread of about 11% between the two ROCEs. Comparing instead, this results with the ones of the two other portfolios, B and C, the differences are lower in magnitude but still present. Portfolio B, formed by each ESG Score category but with a higher concentration of good score companies, has an average ROCE of 8,69%, while Portfolio C, more oriented to low scores, totalizes an average ROCE of 4,58%. It is observable a decrease of about the 40-50% in the ROCEs passing across better to worsen portfolios, providing results similar to the Nordea's estimates illustrated as

introduction of the analysis. Trying to provide explanation of these results, it is sufficient to look at what ROCE aim to represent: profitability on capital employed, that is in other word the amount invested by the company during its operating cycle. Why this performance is better in high ESG score companies? Supporting the rationale of the second chapter, sustainable companies with a higher ESG rating show a better governance and a better company culture. This affects indirectly the tendency to be innovative and to invest in work-life's quality, increasing the motivation of the employees. Innovation is often obtained through adopting modern technologies that repay in the medium-long term, and this could be the direct element that triggers higher ROCEs. A modern approach to products and services is useful to beat the competitors, the strong and "green" identity meet the needs of the customers, attract sales, often engaging groups of brand-supporters willing to pay "premium" prices. Furthermore, the satisfaction of the workforce is fundamental in lowering the job-turnover and in increasing productivity, and it is clear that these factors put together contribute to enhance cashflows and margins. The other interesting outcome is that these ROCEs, are more stable overtime for the ESG leaders, showing a volatility of 5,04% vs. 8,20% (Portfolio D, Worst-in-class). The reasons are attributable to the capability of sustainable companies to reduce risks such as policy risk, environmental risk and bad-publicity risk, while maintaining a strong relationship with both investors and customers. The first ones believe that "green" companies are less exposed to risks and more prepared to unexpected externalities, the second ones maintain fidelity to the brand and its products avoiding relevant contractions in the level of sales and revenues. Comparing these "euro" data with the U.S. ones, the differences between the behavior of the average ROCE per Portfolio are not truly relevant: 14,54% for Portfolio A, 13,08% for Portfolio B, 10,67% for Portfolio C and 5,04% for Portfolio D. Similar outputs are obtained for the volatility of the ROCEs. At this point, the spontaneous question is: is ESG truly determinant in increasing these performances or these several assumptions are only conjectures? The evidence is provided thanks to the correlation tests: Eurozone shows a positive correlation of 0,34 between ESG score and average ROCE, and a negative correlation of -0,25 between the score and volatility of the ROCEs. In the U.S.: positive correlation 0,13 ESG score vs. ROCE and negative correlation -0,18 ESG vs. Volatility of ROCE, confirming in a quantitative way the assumption that ESG impact the performances and providing a measurable level of this impact.

2) Funds Analysis:

If the analysis of companies seems more appropriate to show a 360° approach of the economic environment to sustainability, for what about funds there is a focus that allows to understand better the benefits both for institutional/private investors and fund managers. In other words, this approach is more "financial" from the moment that consider as major aspect some financial profitability indicators, excluding obviously any operational assumptions in justifying the returns. The "TOP 100" Portfolio represent 100 best-in-class funds in ESG scoring for the United States of America with no distinctions concerning the asset class, while the "BOTTOM 100" is exactly the opposite. The funds that belong to the fist portfolio have a range of scoring that goes from 73,16 to 68, the other ones from 59 to 45. Sharpe Ratio and Treynor Ratio both of a 3 and 5 period of time have been collected for every fund to calculate the average ratios of each portfolio with equal weights. They are the most appropriate representation of "risk-adjusted return" and indicate the returns adjusted for specific and systematic risk respectively. The results could be summarized as:

- Sharpe Ratio (3 year) = TOP 100 2,63% vs. –6,45% BOTTOM 100
- Sharpe Ratio (5 year) = TOP 100 3,11% vs. –2,55% BOTTOM 100
- Treynor Ratio (3 years) = TOP 100 17,28% vs. -10,17% BOTTOM 100
- Treynor Ratio (5 years) = TOP 100 17,47% vs. -4,60% BOTTOM 100

The clarity of the outputs confirms again the assumptions of the study. TOP 100 performs better both in Sharpe Ratio and in Treynor Ratio for every period of time, with a huge difference and even negative results for BOTTOM 100. ESG best-in-class funds seems to provide better returns over specific risk but also over systematic risk, outperforming by 100% and more the other portfolio. ESG in facts, perceived as guarantee of stability and risk protection, attracts more investors and again maintains their trust over years, against period of bear market too. Furthermore, an increasing number of asset managers, choose to select only sustainable funds for investment activities in order to respect their own policies or the one imposed by local governments or fund's main shareholders. Shareholder's activism encourage investments in sustainability and this may be another factor that explain the constant increasing capital flows into "green" funds. Another aspect to consider is that among the asset classes embraced by funds, there is a huge percentage of equities and if companies perform better when they got a higher ESG score, funds investing in them necessarily replicate these good results. It is interesting to observe, in conclusion, that both the portfolios present very similar Betas (0,91 vs. 1,00). Similar Beta means same exposition to systematic risk but the difference in the two

Treynor Ratios reveals opposite response to this risk. TOP 100 has a very positive ratio in contrast with the negative one of the BOTTOM 100 Portfolio. The point is that, even being similar exposed to market-risk, the first one performs absolutely better than the second and possibly this confirms the assumption that in market-downturn scenarios, ESG could be a fundamental factor in ensuring resilience, stability and sometimes really good performances for the investors. The evidence of the ESG impact is again provided by the correlation test in the last table: positive correlations of 0,32 vs. Sharpe Ratio 3y; 0,20 vs. Sharpe Ratio 5y; 0,34 vs. Treynor Ratio 3y and 0,42 vs. Treynor Ratio 5y.

This dissertation and the analysis proposed aim to offer an original point of view about sustainability. It is important to understand that it has some limitations and must be considered an attempt to bring a sort of concrete evidence to the personal considerations developed by the candidate through his academic experience. The purpose of this expressed point of view is to change the way of looking at finance: it is not about pure profit anymore, and pursuing only margins in the long-term is not a winning strategy in 2022. Capitalism is reshaping quickly, and sustainable business is the key to success. As explained, ESG represents not only a sort of "harmony" with the economic environment but also means social engagement and good governance. Satisfied stakeholders and virtuous management constitutes a strong competitive advantage in beating the competition for the long-run. Being sustainable means to maintain stability beyond the market downturns, assure resilience to customers/shareholders and propose innovative solutions to face unpredictable risks. COVID-19 is the proof that being prepared is fundamental to avoid any collapse and the incredible rhythms of progress impose to pursue a visionary approach in doing business. The point is: do sustainability, in 2022, represents the innovation or the "new normal"? Are the victims of the old mentality in charge of not being able to adapt to the modern standards? Or are they not sufficiently prepared to resist against disruptive innovators? Sustainability, at this point, is not a way to take care of the world renouncing to returns but it seems the key to invest with success and the best innovative strategy to ensure the "take profit".