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The environmental, social and governance (ESG) investing landscape

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ABSTRACT

This work contributes to the discussion on environmental, social and governance (ESG) investments, intending to form a complete analysis of this phenomenon. The thesis uses a holistic view to identify obstacles and investment opportunities. The first part of the research focuses on the reliability of ESG rating agencies. Particular attention is given to the convergence of the results offered by these agencies, highlighting the lack of a globally accepted definition of ESG investments as a clear and extensive taxonomy. The second part focuses on the performance and role of this class of investments in the asset management field. Concerning performance, previous research has not yet shown consensus. This study suggests different approaches and empirical evidence to show the outperformance of ESG investments over "non-ESG" investments over the past eight years. Furthermore, through portfolio analysis, the effects of the ESG rating on the yield of corporate bonds and the capital structure of companies will be analyzed, opening the door to further research. Finally, thanks to the collaboration of Crèdit-Agricole Italia, experts from the asset management department were interviewed to forecast future developments and scenarios.

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INTRODUCTION

As the world is changing rapidly, finance is moving faster. From the day after *Lehman Brothers' bankruptcy announcement in September 2008*, the attention toward finance has increased considerably. This interest in finance can be conceived as a more significant involvement in the asset allocation decision-making process by investors. Having more awareness in which kind of activity their wealth is going to finance could lead investors to tilt their investment preferences toward more responsible solutions. Hence, the financial crisis had the power of re-emphasise the role of investors. As a consequence, over the past decade, investors are seeking always more socially responsible investment (SRI). Sustainability has now become a key topic in the finance industry. So now, it is not only economic sustainability what matters, but it rather includes environmental, social and governance factors (ESG). This increase in attention towards ESG may have different explanations. First of all, there is a need for a more sustainable economic system. The current system of production and consumption is showing its drawbacks. It has become more apparent that our planet cannot continue to sustain our current lifestyle without significant repercussions. Furthermore, the fall of 2008 highlighted the importance of the so-called "ethical finance". This concept, since the crisis, has received the propulsive thrust needed to expand its public of interested parties and attract the attention of operators in the sector.

Despite this, the practice of ESG investing is not new to the world finance scene. The first "ethical investments" are dated back to the 1920s when a niche of churched investors used to finance only projects with a positive social impact. They were stimulated mainly by religious motivations. In the late 1960s, socially responsible investments began to strengthen, also in light of some events such as the Santa Barbara oil spill in 1969. At that time, investors excluded stocks or entire sectors based on sinful activities, such as tobacco production or involvement in the South African apartheid regime, from their portfolios (MSCI ESG Research, *Introducing ESG investing*). On these years, activists noticed that shareholders had the chance to

influence corporate behaviour. Moreover, in the 1980s, disasters such as the one caused by the American Exxon Valdez tanker, which contaminated 1,300 miles of coasts in Alaska, and the Bhopal disaster which caused the death of over 16.000, turned the spotlight on environmental concerns as well as on the threat from climate change.

Regarding the profitability of ESG investments, since 1970, there have been more than 2000 studies and, although the academic environment has acknowledged the relevance of these themes, the scientific research has not reached a consensus yet whether ESG investments are more performant than conventional ones. Some researchers conclude that ESG investing outperform conventional investing, others highlight shreds of evidence on the scarce performance in comparison with the relative conventional investing.

The prevalent argument for the outperformance of ESG investing is that the stock market is unable to evaluate the effects of positive ESG events. In this way, a strategy based on ESG evaluation can deliver abnormal returns. The hypothesis of under-reaction is in line with past evidence against the efficiency of the stock market, such as momentum (Søren Hvidkjær, 2017). Besides, the intangibility may also play a key role in the valuation since it is less appealing and significant to investors. In an article published in the Journal of Financial Economics in 2011, Edmans proposed evidence on the failure of the stock market in evaluating intangible assets. In particular, Edmans analysed the relationship between employee satisfaction and long-run stock returns finding a positive correlation between them. This means that some socially responsible investing screens may improve investment results. Other studies also prove the fact that the stock market does not fully value intangibles. For instance, Lev and Sougiannis (1996) found abnormal return based on R&D capital, and Chan, Lakonishok, and Sougiannis (2001) showed how firms in the top quintile of R&D flows could earn excess returns.

Another explanation for the high performance of those investments, which can outperform the market, might be given by the popularity gained in the recent year.

The demand for ESG stocks has grown particularly fast. The Social Investment Forum, in January 1992, reported that the value of the so-called “socially responsible” investment portfolio had reached \$600 billion. Today, the demand for integrating Environmental, Social and Governance criteria into investment decision is increasing substantially. Nowadays, in the USA, one dollar of every four of all professionally managed assets is invested following the ESG strategies such that in 2018, they count for \$11.6 trillion¹. This euphoric behaviour may push up the prices of those stocks (accordingly with the clientele hypothesis), even in the absence of new fundamental information.

The underperformance of ESG investments with respect to conventional investments can instead be explained through reverse reasoning. If the attention of all the investors move in a specific sector of the market (ESG), the stocks belonging to other sectors may experience undervaluation, which in turn may guarantee higher future return (relative to high ESG stocks). However, low ESG firms may, in response to the decreased interest of the investors, change their behaviour and becoming more ESG oriented. In this regard, Heinkel, Zechner and Kraus, in a model published in 2001² showed that more than 20% of green investors are required to induce any polluting firm to reform. The main discussion they put toward is that the “non-ethical” firms, will face a higher cost of capital and, in order to finance themselves more cheaply, they may consider taking actions. Such actions could include all the sphere of the ESG.

This work takes into account all the previous discussion with the aim of pooling the existing academic results and set the ambitious goal of contributing, in a discernible way, to the existing research.

1 According to the Harvard Business Review (<https://hbr.org/2019/01/the-state-of-socially-responsible-investing>)

2 The model was published in the journal of Financial and Quantitative Analysis in December 2001. (https://www.researchgate.net/profile/Josef_Zechner2/publication/226649051_The_Effect_of_Green_Investment_on_Corporate_Behavior/links/0fcfd5139eb46c73a0000000/The-Effect-of-Green-Investment-on-Corporate-Behavior.pdf?origin=publication_detail)

In the first part, after having introduced the concept of ESG investing, the market of ESG agencies rating has been analysed. The analysis is firstly focused on the aspects that affect the ESG rating the most, and how they have changed over the years. Secondly, the reliability of the rating that different providers offer has been analysed. In doing so, we explored the components of five ESG indices to look for commonalities and differences. The results of this first part arise some doubts about the reliability of those ratings. Specifically, a relatively strong disagreement has been proved among different agencies. We identify the lack of a clear taxonomy such as a globally accepted standard methodology and minimum technical requirement, the responsible for this divergence. All of this drives us toward a twofold problem. From one side, investors face difficulties in selecting ESG targets for investment, and from the other side, there are companies which in turn face the difficulty to find the information they need to be included into ESG indices.

Regarding the performance, earlier research has offered a broader analysis to prove the outperformance of ESG investments over the last ten years, ending with different conclusions. In Chapter 4, we used a different approach to analyse the performance of such investments. We considered all the stocks excluded by the MSCI World ESG Screened Index³ to build a portfolio of sin stocks. Then, building a *comparable* “ESG portfolio” with all those stocks considered ESG by the same provider, we examined the performance. Concludes the chapter a sectorial analysis with which we can observe how the ESG audience is tilted toward specific industries.

Chapter 5 introduces the theme of ESG into the US bond framework. More than 200 US corporate bonds have been analysed to prove the relationship between high ESG score and corporate bond yield. Moreover, we test the hypothesis that higher ESG engagement may result in a lower cost of capital. Finally, using different measures, we investigate the approach of high rated ESG companies toward debt and equity financing.

³ This class of indices are excluded from the parent indices companies which are associated with “sin” businesses and that are not in compliance with the United Nations Global Compact (UNGC) principles (<https://www.msci.com/esg-screened-indexes>)

For all the analyses, we made intensive use of Bloomberg. In particular, in the bond' analysis, we obtained valuable information about issuer and ESG rating.

The last chapter describes the role of ESG investments in wealth management. Asset managers consider ESG factors during the stock selection process always more frequently. Amundi, for example, has set the ambitious goal of transforming its entire business with an ESG footprint by the end of 2021. This is impressive and leaves us with the desire that other asset managers will follow their example. Finally, we discussed the theme of ESG investments with some experts and asset managers from Credit Agricole Italia.

CHAPTER 1

1. THE ESG INVESTIGN LANDSCAPE

For many jurisdictions, refocusing the economic and financial system, in order to allow a sustainable transition, has long been a priority. The European Union, for instance, claims that a sustainable transition will ensure the competitiveness of the industries, herd job creation over a longer-term, and to guarantee a fair, healthy and good-quality living environment. Sustainable finance sets the ambitious goal of pushing ethical reason toward any financing decision. It can be defined as any form of financial service with integrate environmental, social or governance (ESG) criteria in the investment decision. The main scope of sustainable finance is to raise capital for projects, products and companies which adopt a behaviour coherent with the so-called ESG factors. Although it seems to be a new trend, that was born only in the past decade, the practice of ESG investing began a long time ago. There has always been a niche of investors that have followed these strategies of investing. The first investments with ethical and sustainable scope have their roots on social and ethical motives. Starting from the 1920s, many religious believers began to exclude from their investments all those companies active in sectors such as alcohol, tobacco, gambling and adult entertainment. A very exhaustive example is when some investors in 1977, refused to invest in 350 American companies (Ford, G.E., Coca-Cola, I.B.M. and Mobil among them) which had substantial operations in the South Africa apartheid regime⁴. During these years, the Sullivan Principles were designed. These principles arguably represented the best-know template for addressing social responsibility within a business organization in the US. Conceived by a Black minister and Civil Rights activist, they constitute the most well-known formula for handling the cultural and moral conflicts that MNCs experience in operating globally. The first goal was to apply economic pressure on corporates operating in South Africa with the scope of contrast to the system of apartheid.

⁴ Source: <https://www.nytimes.com/1977/12/06/archives/investing-in-apartheid.html>

In Europe, instead, the attention toward responsible finance gained popularity at the end of the 80s. During the 90s the first indices were developed. In Italy, for instance, the first Social Responsible Investment (SRI) was launched by Sanpaolo asset management in 1997. Today, as the sector is rapidly growing and evolving, ethical considerations, while remaining the main motivation, are occupying a second place as many investors consider environmental, social and governance factors in financial analyzes for a profit theme.

1.1 The meaning of ESG

Preliminary to any supporting argument, there is the need to provide some terminological clarifications. ESG reflects all the faces of ethical finance. In this section, the three ESG pillars will be presented separately, inquiring why it is essential one type of pillar and which kind of benefit we may expect from it.

1.1.1 Inside the “E” – Environmental screens

The letter E indicates the first pillar, the *Environment*. It includes issues such as climate change, the deforestation, air and water pollution, land exploitation and biodiversity loss. It becomes crucial to evaluate the impact of business activities on the environment (efficiency energy, greenhouse gas emissions, resource management water and waste) and business capacity to offer products and services that can respond to climate and environmental challenges. In this context, it becomes vital that a company commit itself to report and disclose its environmental practices.

The environment issues have had a central rule into the financial debate since the first emission, in July 2007, of the first *green bond* of the world by Eib, the European investment bank. The funds collected were used to promote the development of renewable energy. This example was replicated after one year by the World Bank, and since then the market had grown to more than \$160 billion in issuances in 2018. However, the main argument should be if eco-efficient companies are profitable also in terms of returns. In this regard, it should be mentioned that the literature has for long investigated the relationship between environmental and financial performance. One of the most relevant results was proposed by Derwall, Guenster, Bauer and Koedijk in 2005. Defining eco-efficiency as the ratio of the value a company generates (in terms of productivity) to

the waste it generates (both in terms of tangible and pollution), they showed how more eco-efficient firms exhibit higher stock returns than their less eco-friendly counterparts. In order to overcome methodological concerns, they used several enhanced performance attribution models concluding that the difference in performance between large-cap companies labelled “most eco-efficient” and a less efficient portfolio is substantial and cannot be explained by market sensitivity or by industry bias.

1.1.2 Inside the “S” – Social screens

The letter S stands for *Social*. It includes aspects related to gender policies, to the protection of human rights, labour standards and relationships with the local community. Assessing the impact of company activities on its employees, customers, suppliers and relationship management is not an easy task. It needs a qualitative analysis that is performed individually for each company. The pattern is to address the investments towards businesses which promote the education and the healthcare of the community. However, social issues such as safety in the workplace, health public and local community, income distribution and product safety are increasingly at the centre of public attention in terms of corporate social responsibility. Apart from the ethical argument, a financial one arises. Edmans (2010) proved that there exists a relationship between employee satisfaction and long-run stock return. Coherently with the human capital theories of the firm, the results highlighted by Edman are supported by the empirical evidence that a value-weighted of the “100 best companies to work for in America” earned 2.1% above industry benchmark between 1984 and 2009 and a 4-factor alpha of 3.5% per years.

1.1.3 Inside the “G” – governance screen

The G’ sphere of the third pole of social sensitivity includes aspects such as the independence of the board of administration, shareholder rights, remuneration of managers, control procedures and practices contrary to principles of free competition and respect for the law. It refers to good *Governance* practices. The role of companies in the

⁵ Source : https://papers.ssrn.com/sol3/papers.cfm?abstract_id=985735

protection of other stakeholders is also examined. Assessing good governance requires much information regarding the board structure, such as inside information. In 2003 Gompers, Ishii and Metrick suggested a firm-level index called the “governance index” (G-index) which is built on factors which may have a negative influence on shareholder right. In this way, a firm with stable and good governance would have a low G-index. With a sample of 1500 large firms during nine years, it is showed that an investment strategy which sells firms with weakest rights (high G-index) and buys firms with strongest right (low G-index) would have earned an abnormal return. Although it is not proved that this difference can be due to market differences and market anomaly, it seems logically clear that good governance together with the prevention of human rights, preserve, and sometimes promote, the corporate image. In this light, the higher returns performed both by social and governance screening may be explained by a long-term vision which prevents those companies performing good (in terms of governance and social activities) against future disputes which may damage the business image.

1.2 Why should we care?

The importance of sustainable investments was firstly accepted among the world of finance for the risks linked to the “climate change” and Planet contamination. The financial industry can play a fundamental role in the mission of contrast and fight the negative consequences which may arise from these environmental problems. There are plenty of scientific sources which underline how the weather is changing. The first defendant for this “crime” is the increase in the concentration of greenhouse gases registered in the past years. At the Paris climate conference (COP21) in December 2015, has been presented a study which shows how a “business as usual” scenario may lead to an increase in temperatures of 5/7 degrees in respect with the temperatures in the pre-industrial era. The COP21 has set the goal to keep this level at 2 degrees, which imply the zeroing of emissions by 2050. In January 2019, the World Economic Forum has released the Global Risks Report 2019 (14th edition) which reported the Global Risks Perception Survey 2018–2019. The picture which comes out is that environmental risks, such as extreme weather phenomena, the lack of climate action and the loss of biodiversity, represent the greatest, ever-growing challenges that humanity must face.

Top 5 risks in terms of Likelihood	Top 5 risks in terms of Impact
<ul style="list-style-type: none"> • Extreme weather events • Failure of climate-change mitigation and adaption • Natural disasters • Data fraud or theft • Cyber-attacks 	<ul style="list-style-type: none"> • Weapons of mass destruction • Failure of climate-change mitigation and adaptation • Extreme weather events • Water crises • Natural disasters

Source: The Global Risks Report 2019 (14th edition)

Three out of five of the most probable events are related to the environment. If we look at the top 5 risks in terms of impact, it is straightforward that ESG investments are built in order to exclude investments related to these kinds of risks. Until now, too little has been done to mitigate these risks. For this reason, it is correct that also finance should deal with these issues. The economic model is “linear”, meaning that you can buy at a low price a product and waste it when you do not need it. The circular economy is, instead, designed to regenerate the products without wasting materials and eliminating negative externalities such as pollution.

1.2.1 Financing climate change action

Nowadays, it is well-acknowledged by scientists that climate change is a significant risk. The global temperature increased by 1.1 Celsius’ degrees by the end of the XIX century. This change is due to the human activities which cause high emission of carbon dioxide. Environmental consequences will have significant impacts on humanity. The risks associated with climate change cannot be overlooked anymore. It is a very complex challenge, and it needs the collaboration of everyone: government, corporates, investors and asset managers. In this regard, governments are making many improvements. The conference for climate change (COP21) has underlined the global energy transaction. For the first time, all governments have agreed to take actions against climate change through two steps:

- Keep the warming trend below the 2 Celsius degrees for the current century,
- Reduce the emission of carbon dioxide by at least 40% by 2030⁶.

In this context, we could be faced with an unprecedented investment opportunity. For the first step, as a matter of fact, there will be required investments for 53 billions of dollars, while for the second, more than 1.000 billions of dollars. However, how could we invest in those opportunities? The next section will deepen this question.

1.3 Investing opportunities

The investment universe is vast, and there are several ways to invest in the low carbon and circular economy. The most popular instruments are:

Green bond

They are aimed to finance green initiatives borrowing money from investors for a defined time, at a fixed or variable interest rate. They differ from other bonds because with green bond one is going to finance exclusively projects which have a good impact on the environment, the so-called “green” project. As mentioned, the first emission of green bond dates back to 2007 by The European Investment Bank, followed by the World Bank. The turning point came in 2013 when other parties entered the market, bringing the market value of the securities issued above 10 billion dollars.

Regarding the private sector, the launch of the first green corporate bonds was held by EDF, Bank of America and Vasakronan. In the same year, the State of Massachusetts issued the first green municipal bond, and the Swedish city of Gothenburg issued the first green bond "City". The fixed income solution has gained rapid growth. The rise in popularity of this instrument made sure that the market reached 92 billion US dollar in 2016. However, green bonds still constitute only 0.14% of the overall bond market.

Equities and index funds

Many listed companies operate in the circular economy sector, such as renewable energy or waste recycling. Investors may invest in those companies by purchasing equities or, if

⁶ Paris Agreement Evaluation – Climate Strike. <https://www.climatestrike.net/paris-agreement-evaluation/>

they do not want to take such a specific risk, they can also invest in an index fund that is a portfolio of securities which represent a specific industry. In 2016, the Luxembourg Stock Exchange launched the Luxembourg Green Exchange (LGX), a dedicated platform for green, social and sustainable securities. For ensuring maximum transparency, the platform excludes all the issuers and asset managers that do not provide full disclosure and do not fulfil their reporting obligation.

Green lending

The lending sector represents other exciting private sector initiative devoted to advance environmental and social issues. Starting in 2015, major American banks starting to be more inclined to the issue of energy-efficiency loans and mortgages that are linked to the energy-efficiency labelling of buildings. A very interesting initiative of the European Mortgage Federation and the European Covered Bond Council is looking to create a standardized ‘energy-efficient mortgage’ based on preferential interest rates for energy-efficient homes and additional funds for retrofitting homes at the time of purchase⁷. In September 2018, the Italian A2a group, for instance, has signed a sustainable loan of 400 millions of euro. The credit was linked not only to the ESG performance but also to the achievement of specific corporate goals related to the decarbonization, green energy and circular economy.

Green securitization

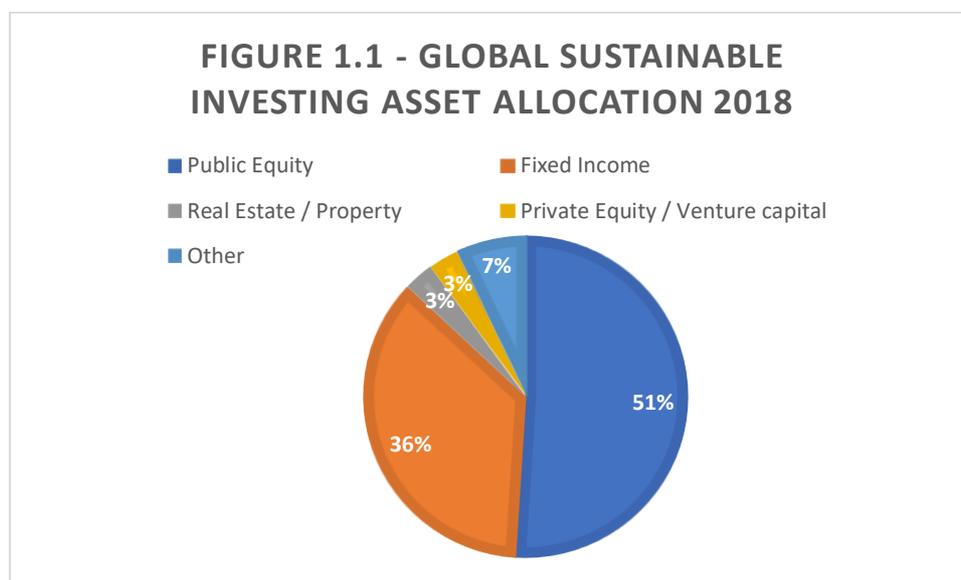
Green securitization is, compared with other forms of investments, growing at a slower pace. However, it turns out to be a handy and profitable tool because the aggregation of several loans to small-scale project to reach an adequate size for the bond market. In a synthetic green ABS, the bank aggregate different loans which have ESG scope (such as mortgage financing for energy efficiency upgrades, loans/leases on electric vehicles and hybrids or on solar and wind assets)⁸. In this context, it can be mentioned the deal that Credit-Agricole closed in 2017 with Mariner Investment Group in which it set free 75% of the capital it holds against a USD 3 billion portfolio. This synthetic ABS is the only one so far. Until that moment, there has been the only issuance of “true-sale

⁷ From EPSC Strategic Notes

⁸ https://www.climatebonds.net/files/files/Green%20securitisation_CBI%20conference_final.pdf

securitizations” meaning that the portfolio of loans is moved off the bank’s balance sheet into an SPV (special purpose vehicle). In a synthetic securitization instead, it remains on the issuer’s balance sheet, transferring just a portion of the risk. The framework that is going to be financed includes renewable energy, energy efficiency loans, sustainable waste, water treatment facilities and public transportation. This instrument could open the gate for more green loans, accelerating the financing of a greener economy.

In order to provide a global picture regarding preferred investing solutions of ESG investors, Figure 1.1 exhibits the asset class allocation in Japan, Europe, the USA and Canada in 2018 as it was published by the Global Sustainable Investment Review 2018⁹. Overall, in these regions, more than half of the assets were allocated in public equities (51 per cent, in 2018). Fixed income is the second most used asset allocation with 36 per cent. This first construction, suggests a definite change in trend considering that in 2016 (in Europe and Canada) 64 per cent of the sustainable investing asset were allocated in fixed income, and only the 33 per cent were in public equities. The universe of sustainable investments also includes hedge funds, cash or depository vehicles, commodities and infrastructures (represented as “other” in figure 1.1).



Source: “Global Sustainable Investment Review 2018”

⁹ http://www.gsi-alliance.org/wp-content/uploads/2019/03/GSIR_Review2018.3.28.pdf

What is mentioned above represents the most popular green investment solutions on the market right now. However, it is clear that financing sustainability should not be considered only as a small area of trade, with a little focus on green bonds or ESG index funds. It is also about reallocating capital towards longer-term ESG activities, and about integrating sustainability into the investment decision-making process.

1.3.1 Investment strategies

From an asset management perspective, a well-defined universe of instruments available is not enough. In the stock market, recognizing a company which perform good in term of all the ESG dimensions, is no easy task. During the years, we observed an evolution in the investment strategy used by the asset manager. The following are the principal strategies used according to the Global Sustainable Investment Alliance (GSIA).

Negative/exclusionary screening

It provides for the exclusion from the Fund (or portfolio) of specific sectors, companies or business areas whose activities may harm the environment such as in the society as a whole. Nowadays, there are plenty of asset managers and rating providers who are adopting this strategy, avoiding those companies involved in activities deemed unacceptable or controversial.

Positive/best-in-class screening

This approach aims to select the best companies from an ESG perspective within a specific business area. Therefore, it is an investment in companies selected based on a positive ESG performance compared to other subsectors, companies or projects that are comparable in terms of commercial activity. This approach excludes companies that do not meet certain performance thresholds.

Sustainability themed investing

Thematic investments related to sustainability such as clean energy, pollution reduction, low carbon emissions, water resources management, sustainable agricultural activities.

These are targeted investments, intended to exclude, consequently, all those activities that do not respect the theme

Impact/community investing

Investments with the scope of realizing a positive environment impact together with a financial return. Specifically, they are investments, mostly private, which purport to solve the social and environmental problem by financing specific projects. They include renewable energy, social housing investments where capital is bound to encourage individuals and peripheral communities.

ESG integration

It consists of the systematic and explicit inclusion of ESG factors into financial analysis. Integrating non-financial data is, as it will be shown in the next chapter is quite complex. for this reason, many ESG rating agencies have been set up that undertake to provide the investor with an evaluation on the incorporation of ESG factors into the companies.

Corporate engagement and stock activism

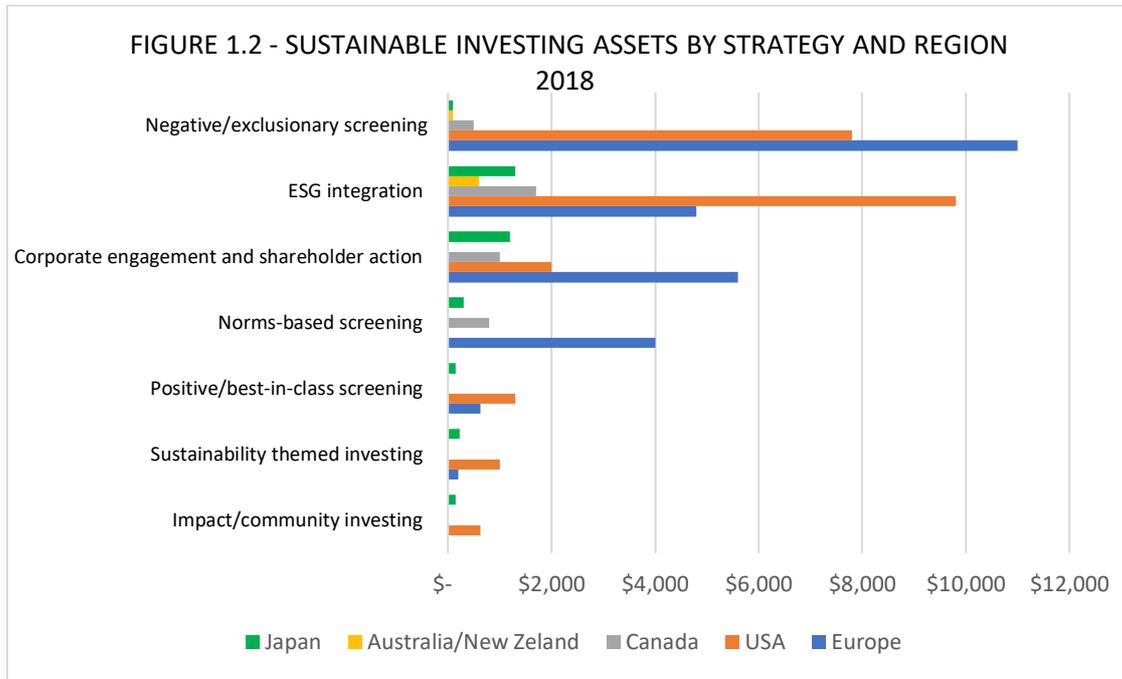
It directly involves the “usage” of shareholder’s rights to affect and change corporate behaviour throughout a direct dialogue with the corporate management and submitting proposals.

Norm-based screening

It consists of investing only in stocks that respect the minimum standards of ethical business practices based on international principles.

Figure 1.2 shows the sustainable investing assets by strategy and region. As it is shown, nowadays, the most popular strategy for open-ends funds is the exclusionary screening, with a combined \$19.8 trillion in asset under management. This achievement may be due to the easiness of its implementation. Nevertheless, ESG integration is always raising more interest. ESG integration has effectively grown by 69 per cent during the last three years, and it is now the most used strategy in the United States, Canada, Australia and New Zeland; meanwhile, Europe still prefers negative screening. Japan is instead more

tilted toward different strategies such as corporate engagement and shareholder action. Recently, also strategies such as “multi-strategy” and “contrarian” approach¹⁰ have been incorporated in the ESG field.



Source: “Global Sustainable Investment Review 2018”

1.4 The sin stock

Figure 1.2 highlights the success of exclusionary screening at an international level. This strategy is the most quoted, and it is primarily designed in order to identify, and then exclude, the so-called “sin stocks”. We can consider a sin stock as the opposite of an ESG investment. Sin stocks can be defined as “any publicly traded companies, which are either involved in or associated with an activity that is considered unethical”¹¹ and sinful. They are generally involved in arms production, tobacco or in gaming businesses”. The exclusion of these assets from ESG indices may cause a reduction in their share prices, opening the gate to two possible scenarios. In the first scenario, the demand effect may create competitive advantages. Using the Merton (1987) arguments, one may think that

¹⁰Contrarian investing means going against the prevailing market trends by selling when others are buying. Asset managers use an algorithm with which establish up and down threshold. In this regard, the Italian Fund “Eurizon Approccio Contrarian ESG” was one of the first ESG Fund to use this strategy.

¹¹ Definition by Investopedia.com

at the first stage, the demand effect leads to initial low returns, afterwards, those stocks will have high returns relative to high ESG stocks. Besides, a low stock price signifies a high dividend to price ratio, hence higher returns. In the second scenario, the demand effect may lead to low ESG companies to take action. According to this approach, a firm excluded by an ESG index may respond to falling investor interest, and thus lower stock price, by changing behaviour such as business model.

This work will bestow further arguments regarding this issue. Further analysis will be presented in the next chapters at a deeper level.

CHAPTER 2

2. THE INDUSTRY OF ESG RATING

In response to the rising demand for quality ESG data, the market of sustainability rating, albeit a new trend, has grown noticeably, and it is now in a phase of consolidation. Investors, shareholders and asset managers request new information, not only regarding financial performance but also about aspects which may impact all the three ESG dimensions. Since the ESG investors trust the analysis made by agencies and they take systematically into account the data they offer into their investments decision process, the reliability issue becomes of primary importance.

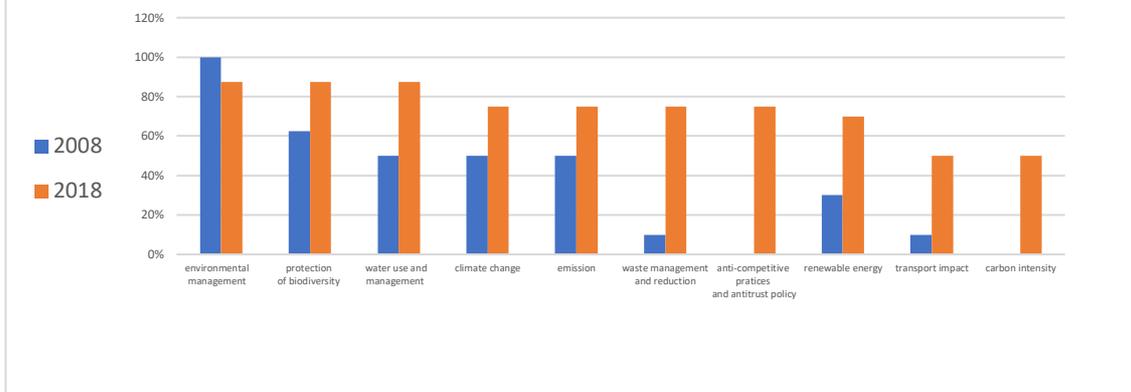
The importance of having a clear and a trustable rating cross the financial market needs, since the impact of these assessments may also hit the society as a whole. However, if these ratings are not valid, then, all the capital invested in these instruments are misallocated, all the academic findings may be misleading, and the promise of doing good will be unfulfilled. Today, there exist a large number of companies which provide ESG rating. Usually, the agencies rate firms along several dimensions, which are then grouped into the three spheres of ESG. The first provider was KLD which started ratings in 1990. In the most recent period, the phase of consolidation of this market has made sure that a large number of agencies have arisen, while others have been taken over by competitors. It is the case of Innovest and KLD, both acquired by RiskMetrics Group, which in turn was acquired in 2010 by MSCI, such as SAM, acquired by Rebeco in 2006. This consolidation process has the merit of having developed further and broader assessments of corporate sustainability. However, despite the growing interest in ESG, little research examines whereas raters measure these parameters correctly. This chapter proposes a view to understanding how the ESG criteria are evaluated, and if the data offered by the agencies are reliable. In doing so, this research first suggests an overview of the most relevant issues observed by the agencies. Secondly, methodologies used, as well as the business assessment process, are illustrated in order to make conclusions about consensus achieved among all the players.

2.1 The role of the ESG rating agencies

Within the ESG investments framework, it is essential to acknowledge that choosing a specific index as a benchmark, means to choose also a specific methodology and approach of ESG selection. Behind the development of a sustainability index, there is long research aimed to identify, measure, and classify hundreds of quantitative and qualitative metrics among a wide range of products. The rating agencies have specialized in working either independently or inside the companies which provide indices. From the complexity of this analysis, it may happen that sustainability rating is not always punctual. Besides, information systems of agencies are not the same, and it means that output from different agencies may differ. The ESG rating industry is growing continually and, although agencies are more tilted toward equities, some of them are providing sustainability rating also for private companies, NDOs, and even projects.

In order to meet market's needs and to deliver a more reliable output as coherent as possible with the current normative, ESG raters have been forced to change the focus of their analysis several times during the past decade. Before any analysis, hence, it might be useful to understand how the "raters" have evolved the focus of the assessment process during the years. For this purpose, using the results of the research made by Olmedo et al. (2019), the changes in the trend over the past ten years will be illustrated in this section. The authors, in order to answer the research question, firstly analyzed the information provided by the agencies in 2008 and then, they have compared them with those published in 2018. The overall picture which comes out is not changed that much, but it may help to develop further consideration regarding the next alienations. The first dimension considered is the Environmental one (figure 2.1). In the effect of a greater interest in the environmental issues, this dimension is the one which has undergone more changes. These alignments are in line with the agreement signed at the 21st Conference of the Parties held in Paris in 2015. The impact on the assessment of corporate sustainability performance is detectable by some aspects that have been incorporated during the last few years, such as carbon intensity and anti-competitive practices.

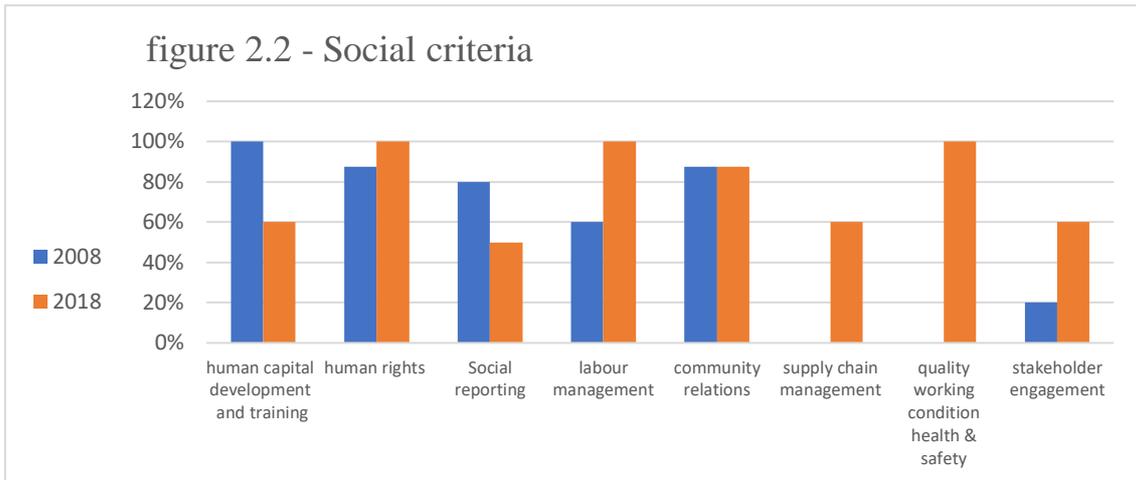
figure 2.1 - Environmental criteria



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

The reduction in interest toward environmental management is compensated with the increase in waste management, climate change and CO₂ emissions. Moreover, the involvement of new themes such as carbon intensity and anti-competitive practices and antitrust policy suggests an inversion on the most relevant issues that will be taken into consideration in the years to come. In this regard, for instance, it can be mentioned the negative relationship between carbon emission and corporate financial performance showed by Ganda and Khazamula (2018) for 63 South African CDP companies. It seems that integrating green investment initiatives in order to lower carbon emission may lead to an improvement in terms of financial performance.

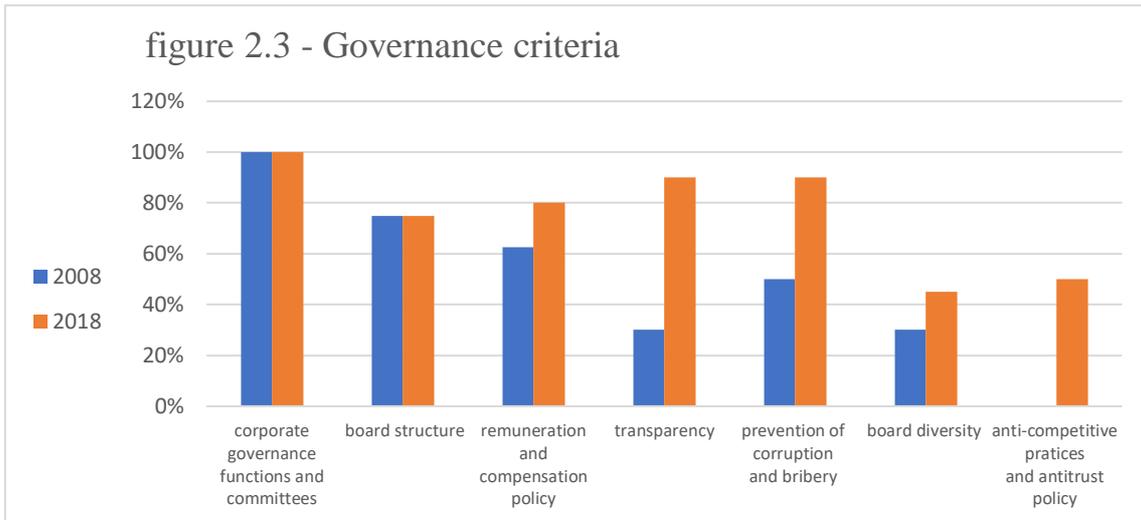
Also, regarding social issues, there have been substantial changes. Figure 2.2 shows how, although some aspect remained almost the same, the attention toward stakeholder engagement and labour management is stronger now than before.



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

In turn, human capital development and training such as social reporting were stronger criteria in 2008. Besides, after the definition of Sustainable Development Goals (SDGs), some criteria have been introduced. These criteria reflect the reduction of inequalities such as quality working condition and the supply chain management which now, play an essential role in the assessment process and are indispensable to measure how companies contribute to sustainable development. Another critical inclusion during the last years in this regards is privacy and data security (44%).

Unlike the first two spheres, the corporate governance criteria have not changed that much. The corporate governance function and committees and the board structure remain the main aspects to focus on when raters screen for governance. However, the increasing attention in the prevention of corruption and bribery and transparency underline a significant change since now they are respectively the second and the third most analyzed aspects. These changes are illustrated in figure 2.3.



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

From these illustrations, it seems that ESG vendors are integrating new criteria into their assessment models to respond to new global challenges. However, the growing attention toward anti-competitive practices and antitrust policies suggests that the ESG factors will be included in the financial analysis more frequently as a risk factor. Besides, a company with a high ESG rating may consider itself to be at low risk of suffering scandals and therefore to damage its image.

The sustainability criteria are moving with time, depending on information regarding sustainability, corporate management and normative. In the same way, the constituents of ESG indices tend to change according to the universe of reference and the ESG ratings. Therefore, even if ESG indices are used in the context of passive management, these investments are considered semi-active since their composition, in respect with traditional indices, generates tracking error and change to varying of sustainability rating assigned to companies.

2.2 Managing non-financial reporting

Knowing all this, it is not surprising that many investors complain that the ESG data universe is getting too complicated and confusing. Whereas International accounting standards define companies’ disclosure of financial information, non-financial data, such

as ESG information, are still unorganized. For this reason, some organizations are committing themselves with the explicit goal to standardize non-financial reporting. The most renowned is the Global Reporting Initiative (GRI), which release the GRI standards that are the most widely adopted global standards for sustainability reporting. Despite these signs of progress, there are no globally accepted standards with which we can obtain a univocal judgment of corporate sustainability. Today, most ESG assessments are still very different in application and terms of indicators measured, the methodology used, and weight applied. An ESG provider should also consider the industry and the location where a given company operates. The industry, in particular, is determinant in the weighting process. For instance, the environmental sphere would be less critical for the bank sector than for the mining industry. For the same reason, the social criteria would be over-weighted for the pharmaceutical industry while for the bank and finance sector, the governance criteria would be the most important to be evaluated.

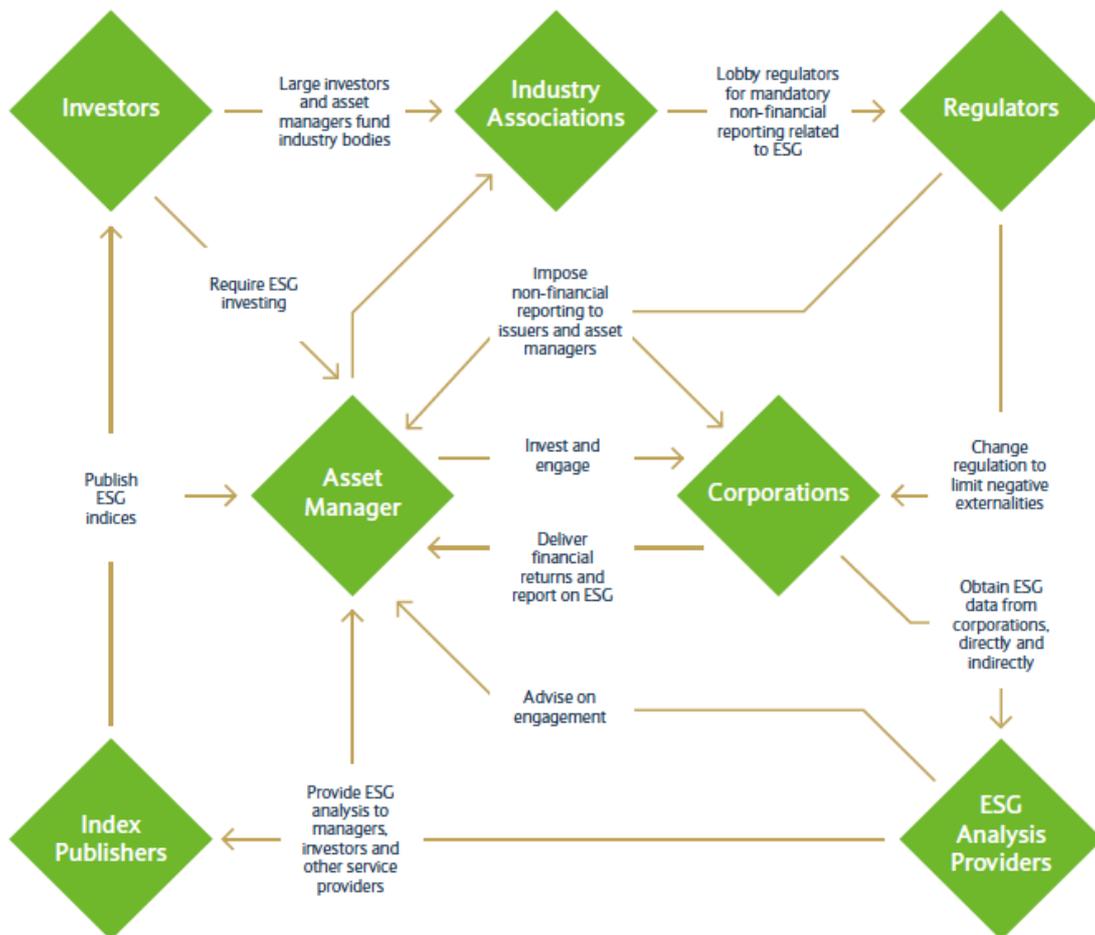
In this regard, the Sustainability Accounting Standard Board (SASB), publish the SASM Materiality Map which identifies sustainability issues “that are likely to affect the financial condition or operating performance of companies within an industry”. Hence, on the website, one may evaluate the incidence of a different dimension, divided by sub-category, inside a given industry. Although always more organizations are committing themselves with the explicit goal to standardize non-financial reporting, the ecosystem of organizations that provide ESG data is still vast and in disagreement on some issues. Nowadays, there exist various agencies, depending on the scope and focus, and each of them has developed a proprietary assessment procedure. Although all the agencies base their analysis on a two-dimensional materiality framework, i.e. a company exposure to an ESG risk in one side and the management approach toward this risk in the other, the methodology used by each agency in order to score the performance of a given company differ considerably. The first difference is related to the source of information. The most used channels of information are sustainability reports provided by external consultant companies or from the company itself and data from NGOs dataset. Others, use the survey to companies such as interviews with company personnel and other stakeholders and still others both of them.

2.3 A new sustainable investment model

Providers of ESG rating play a very important role in the market of sustainable investments. However, if we compare their business model with that of credit rating agencies a peculiar distinction is straightforward. Indeed, while credit rating agencies are paid by issuers, ESG rating providers are generally funded by investors. This is a very interesting and important difference because it may result to be a more efficient model since it avoids all possible conflict of interests. Furthermore, this business model could result better adjusted with investor goals and priorities.

Figure 2.4 illustrates the information flow across the ESG investment process between all the market participants.

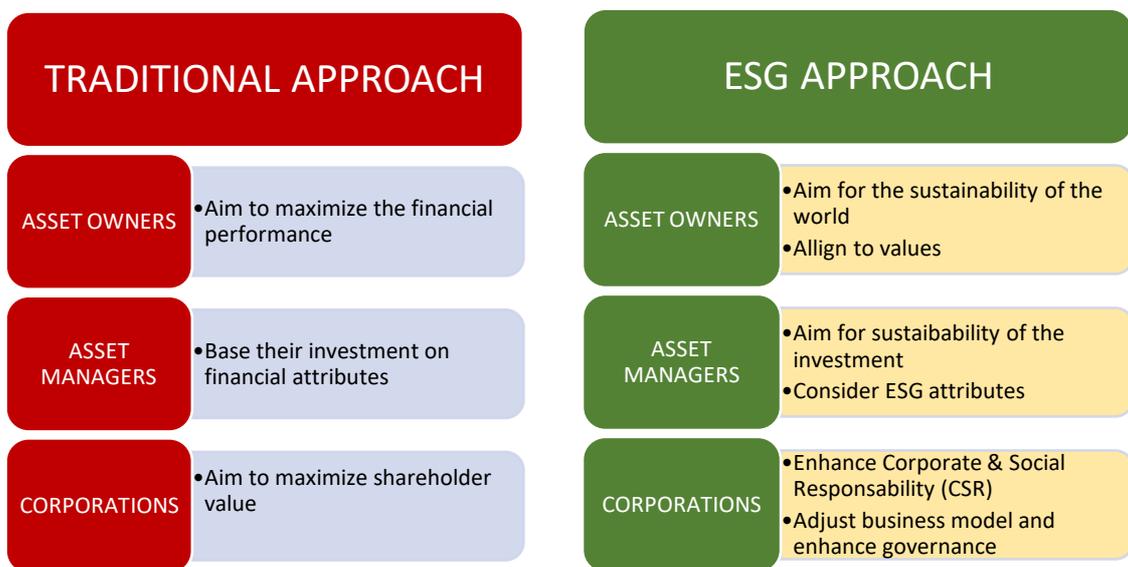
Figure 2.4



Source: Barclays Research - “Sustainable investing and bond returns”

Figure 2.5 describes, therefore, the changes brought by the new sustainable approach. From an asset owner point of view, the aim to maximize the financial performance now is sustained by ethical consideration, weighting the ESG factors according to her values and preferences. Asset managers on their side try to get more information from the market about the sustainability of their investment. Finally, corporations enhance their Corporate & Social Responsibility, adjusting their business model.

Figure 2.5



2.4 Greenwashing

In a recent survey on hedge funds, the Alternative Investment Management Association¹² (AIMA) identified, between the major obstacles to the adoption of ESG investment strategies, the inadequate methodologies for calculating sustainability risk and the lack of relevant disclosures by firms. Moreover, AIMA concludes with the wish that asset managers of alternative funds could solve “some structural problems from the responsible investing sectors such as the lack of ESG metrics”. Another study from Swiss Sustainable

¹² From Niche to Mainstream: Responsible Investment and Hedge Funds, 2018.

Finance¹³ identified considerations linked to financial performance and the difficulty in analyzing ESG data as obstacles to overcome in order to adopt an ESG investment strategy. This lack stimulated the growth of the so-called “greenwashing”. Greenwashing is the practice of making a false or misleading declaration about the environmental benefits of company practice. According to Hortense Bioy¹⁴, there are cases in the framework of mutual funds, in which some products have really been changed to follow an ESG mandate, others are not, claiming that "the investment objective has included the ESG language, but when you look at the portfolio, nothing or very little has changed".

This practice could be solved by integrating a clear and compressive taxonomy thanks with all the companies are evaluated according to the same metrics.

¹³ Suisse Sustainable Finance, CFA Institute Research Foundation and CFA Society Switzerland, Handbook on Sustainable Investments: Background Information and Practical Examples for Institutional Asset Owners, 2017.

¹⁴ London-based director for passive strategies and sustainable research at Morningstar.

CHAPTER 3

3. INSIDE THE ESG RATING

“ESG ratings have gained increasing popularity as indicators for firm risk and as measures to reduce information asymmetries in firm valuation during the last decades” (Sebastian Utz, 2017). With the attention of all the players turned toward ESG investing, the number of actively managed strategies that combine environmental, social and governance considerations into their investment processes is growing considerably. However, Guillermo Cano (MSCI’ Executive Director, Equity Solutions) reports that: "institutional investors and managers have been benchmarking many of these ESG-tilted strategies against standard market-cap-weighted indexes. While these indexes provide a broad basis for evaluating performance, they cannot provide insights that might be gained from ESG-focused benchmarks". Today, there are over 1,000 ESG indexes, matching the increasing desire of investors for ESG products and the demand for measurement tools that correctly reproduce the objectives of sustainable investors. Nevertheless, there is still a little disagreement between providers regarding what can be defined ESG.

This chapter proposes a view to understanding how the ESG criteria are evaluated, and if the data offered by the agencies are reliable. In doing so, this research first suggests an overview of the most relevant issues observed by the agencies. Secondly, methodologies used, as well as the business assessment process, are illustrated in order to make conclusions about consensus achieved among all the players.

3.1 How agencies judge corporates

Rating agencies have developed their own assessment methodology to evaluate ESG engagement. Hence, summarizing some features to get an overview of the current situation becomes very important. For this reason, Table A explores some peculiar differences regarding methodology and products offered by seven ESG rating providers. This analysis includes the most relevant agencies in the market. All the information have

been pooled from companies’ websites. The goal of this first analysis is to check whether the agencies converge in methodology and if the ratings they provide are valid.

Table A

	MSCI ESG RESEARCH	VIGEO- EIRIS	RIFINITIV	SUSTAINALYTICS	ISS OEKOM	REBECOSAM	ECPI
RATING	AAA TO CCC	-- to ++	D- to A+	0 - 100	A+ to D-	0 - 100	F to EEE
METHODS AND DIMENSIONS	37 key issues. 10 relevant themes: -climate change, -natural resources -pollution and waste management -environmental opportunities -product liability -human capital -stakeholder needs -social opportunities -corporate behavior -corporate governance	38 key sustainability criteria. Six focus: -human resources, -human rights -environment -business behavior -community involvement -corporate governance	More than 400 ESG metrics. 10 categories: -Environmental resource use, emission, innovation -Social workforce, human rights, community, product responsibility -Governance management, shareholders, CSR strategy ESG CONTROVERSY controversies across all 10 categories are aggregated in one category score	40 industry-specific indicators. Identification of exposure to each material ESG issues. Informs what companies are doing or not doing to manage risk effectively. Rigorous controversy research identifies and evaluates relevant material ESG issues.	100 sector-specific criteria in 2 categories that are: -Social with a focus on society and product responsibility and business ethics -Environmental with major in eco-efficiency	Survey approach. Each question receives a score from 0 – 100 and is assigned a pre-defined weight within the criterion. For relevant criteria, an MSA impact (media and stakeholder analysis) is applied using an MSA multiplier calculation. Each dimension weight is the sum of the criterion weights within the respective dimension. -Economic dimension (38/100) -Environmental dimension (27/100) -Social dimension (35/100)	2 dimensions: environment, social and governance. - 8 categories 80/86 indicators () -environmental strategy policy (7) -Environmental - Management (13) -Products (4) -Production Process(11) -Employees and Human Capital (9) -Community Relations (12) -Markets (11) -Corporate Governance & Shareholder (19)
PRODUCTS FOR INVESTORS	Management of Responsible investment strategies; ESG Indices and ranking; company reports; investment and portfolio performance analysis	Management of Responsible investment strategies; ESG Indices and ranking; investment and portfolio performance analysis	Management of Responsible investment strategies; ESG Indices and ranking; investment and portfolio performance analysis	Management of Responsible investment strategies; ESG Indices and ranking; company reports; ESG integration and policy; Country reports; technology solutions	Management of Responsible investment strategies; ESG Indices and ranking; company reports; ESG integration and policy; Country reports	Management of Responsible investment strategies; vast number of sustainable mutual funds	Management of Responsible investment strategies; ESG indices and ranking; country rating; company reports
PRODUCT FOR COMPANIES		Green Bonds; Social Bonds; CSR evaluation and consultancy;		Green and social bonds	Reputational risk advisory; Green and social bonds.	investment products	

Source: publicly available information on agencies websites

MSCI

The MSCI' ESG rating framework is concocted in order to identify the most significant ESG risk and opportunities a company faces in conjunction with the industry it belongs with and how the company is exposed to those key risks and opportunities. Before any analysis, a data point on ESG policies is collected from different sources. MSCI uses three information channels, which are:

- Macro data from NGO datasets, government and academic (e.g. World Bank and Transparency International),
- Company disclosure (e.g. sustainability report, proxy report), and
- Government databases including more than 1600 media sources monitored daily.

Secondly, both exposure and management metrics are assessed. These measures are computed after a meticulous investigation, also taking into account respectively, the exposure toward ESG risk and the extent to which a company has developed strategies for managing its specific risk and opportunity. Hence, the risk is measured based on the exposures a company faces, such as the location of its operations, the core product or business segment and reliance on government contract. The risk exposures for each pillar is then scored on a 0-10 scale. Once each pillar has received a score, the ESG Rating model uses a weighted average approach to reach a final score, which is finally adjusted for the industry. Companies are also monitored daily on controversies since they may indicate structural problems, and they underwent an in-depth quality review process annually. The final score is expressed in letters (AAA – CCC).

Vigeo – EIRIS

Vigeo and EIRIS merged in 2005. Vigeo was founded in French in 2002 while EIRIS was created in 1983 by charities who set up a foundation to fund researches to find sustainable investment opportunities. Today Vigeo-Eiris offers a wide range of services regarding responsible investments. In order to evaluate a company, its research is divided into six domains which activate 38 generic criteria. Three factors structure the weighting criteria. The first looks at the nature of stakeholders' rights, interests and expectations. The second evaluated the sectorial vulnerability of stakeholders, while the last one is centered on the risk categories for the company (Human Capital Cohesion, Reputation, Legal security, Market security, Transparency). A score of "-" is assigned to the worst-performing company while a score of "+" is assigned to those companies which fully integrate social responsibility issues into managerial system.

RIFINITIV

It provides a variety of ways to access its ESG information. Also, this provider is the result of a series of M&A. The indices they offer are the Thomson Reuters ESG family. Its ESG dataset cover 7000 public companies globally. To assess companies, they use 400 different ESG metrics combining ESG score with ESG controversies score.

SUSTAINALYTICS

The approach used by Sustainalytics comprises three central blocks that are corporate governance, material ESG issues and idiosyncratic issues. ESG rating is categorized across five risk level based on the risk's severity. After having proven the exposure to each material ESG issues, Sustainalytics lingers a lot on the management dimension. For those companies which may have unmanageable risk (e.g. a coal dependent company), that risk is factored out. Sustainalytics discounts the effect of controversies as they show that the company's policies have not been effective. Finally, the unmanaged risk for each material ESG issue is added at the overall company's ESG risk Rating.

OEKOM – ISS

Oekom was founded in Germany to provide environmental ratings. Before 2002 the clients were just church investors. Since 2002 the research was tilted toward a more comprehensive concept of corporate responsibility. ISS was launched in 1985 in the UK as an organization to promote good corporate governance. Since they are dated companies, the synergy between them, made sure that more than 20.000 companies had been analyzed so that it can boast a wide range of products. During the assessment process, 100 sector-specific criteria are measured and split between two dimensions, environmental and social.

RebecoSAM

It is sustainability investing asset manager with more than \$120 bn in asset under management. As it is reported on the website of the agency "RobecoSAM's research focuses on the link between sustainability and financial materiality". Intangible factors must have an impact on a company's core business value to be defined as financially material. The approach toward ESG issues for RebecoSAM is articulated from a long-term perspective, and it is a questionnaire approach. The criteria used to determine the impact rating are mostly related to the company's reputation. In evaluating the company's response to the case, they declare, "the goal is to assess whether the communication is timely and useful to understand the company's position and action". In order to reach a final score, each criterion and score is eventually adjusted by a multiplier. What makes reliable the results this provider offers is the systematic updating of the ratings that take

place periodically. As a matter of fact, 3400 companies are invited every year to answer their questionnaire. The analysis is divided into three dimensions: economic, environmental and social. The first one is focused more on the aspects which may affect the health of a corporation such as cybersecurity, corporate governance, innovation management, market opportunity and anti-crime policy. The environmental dimension measures the management of the risk, which may arise once the impact of corporate activity on the environment has been observed. It includes criteria such as climate strategy, biodiversity and electricity generation. The social dimension is assessed by criteria such as health outcome distribution, human rights, social reporting and talent attraction and retention.

The insights are used for internal investment decisions and to create indices such as which the Dow Jones Sustainability Indices (DJSI). The number of companies analyzed is currently 4500.

ECPI

The ECPI's methodology framework is twofold; it considers an environmental dimension and an aggregate social and corporate governance. Each section is divided into four categories, which in turn are divided into micro-aspects, each of them producing different indicators. In total, the agency evaluates more than 100 indicators. Finally, as they declare: "a company must be assessed against all the ESG categories and aspects in order to achieve the final ESG score and rating"¹⁵. The overall rating is then the sum of the scores forms each indicator. The sources are found on sustainability reports, annual reports and company websites.

From this first investigation, it is visible that the agencies use different approaches to measure the sustainability of a company. Among other things, it is important to note that no one equates the three ESG components. Based on their research, each one weight each spheres differently.

¹⁵From the ECPI ESG methodology, available at https://www.ecpigroup.com/wp-content/uploads/2019/05/ECPI_ESG_Rating_Methodology_Companies.pdf

3.2 Indices overlap

Overall, all the providers analyzed use different methods to assess ESG risk. Because there is not a global accepted standard methodology to assess this risk, it would be interesting knowing how the results of these providers, differ between each other. In order to find alignments among ESG ratings from diverse sources, the following analysis investigates indices developed by four from the providers mentioned before. The universe taken into account is a broad benchmark representative of developed market companies that satisfy the criteria of the respective agency. The indices considered in this analysis are:

1) Dow Jones Sustainability Indices

This family of indices were launched in 1999, thanks to the partnership between S&P Dow Jones Indices and RobecoSAM (Sustainable Asset Management). This family include nine indices, divided for geographical location. The dataset taken into account is the one from the Dow Jones Sustainability World Index.

2) ECPI World ESG Equity Index

It satisfies the ECPI ESG criteria. Its components display a higher concentration in the United States since 61.5% of them are located in the USA, as it is reported in the factsheet of the index¹⁶.

3) MSCI 'WORLD ESG LEADERS'

This index¹⁷ identifies companies with the highest MSCI ESG Rating in the sector they operate compared with competitors. In order to achieve replicability, the index has designed a parent index construction rules.

4) 'STOXX® Global ESG Leaders

It is composed of three specialized indices for the three dimensions of ESG, which are STOXX Global ESG Environmental Leaders, Social Leaders and Governance Leaders.

¹⁶ https://www.ecpigroup.com/wp-content/uploads/2019/05/ECPI_ESG_Rating_Methodology_Companies.pdf

¹⁷ https://www.msci.com/documents/1296102/1362201/MSCI_ESGLeaders_Factsheet-May-2018.pdf/6d0c8724-105c-60d0-7c57-67a09ba0a3ce

In this index are excluded all those companies involved in controversial weapons or which do not comply with the UN Global Compact Compliance Principles. The country weighting is tilted toward Europe (14.5% of the components are from France¹⁸). Moreover, the index is more focused on sectors such as Industrial goods and services and real estate and includes only those companies which have passed the section criteria consisting of 134 relevant key performance indicators provided by Sustainalytics.

In order to obtain a more fair level playing field, indices have been adjusted for size meaning that companies which have little influence on the total performance of the index, as well as those weighted less than 0.15%, have been excluded from the indices. In this way, four samples of 315 companies each have been obtained. The results are summarized in the following table.

Figure 3.1

index 1	index 2	overlap	%
Dow Jones Sustainability Indices	'STOXX® Global ESG Leaders	64	20.317%
ECPI World ESG Equity Index	Dow Jones Sustainability Indices	87	27.619%
MSCI 'WORLD ESG LEADERS'	ECPI World ESG Equity Index	54	17.143%
'STOXX® Global ESG Leaders	ECPI World ESG Equity Index	15	4.762%
MSCI 'WORLD ESG LEADERS'	Dow Jones Sustainability Indices	48	15.238%
'STOXX® Global ESG Leaders	MSCI 'WORLD ESG LEADERS'	39	12.381%

The most similar, in terms of components, are the indices developed by ECPI group and RebecoSAM (DowJones Sustainability index) which have more than the 27% of components in common, followed by the ones developed by Sustainalytics and RebecoSAM. Those percentages are relatively high if we think the vast universe these companies have been taken. The least compatibility (15 companies out of 315) is

¹⁸ Source: <https://www.stoxx.com/document/Bookmarks/CurrentFactsheets/SXWESGP.pdf>

observed between the indices STOXX Global ESG Leaders and the ECPI World ESG Equity Index. In this case, the geographical location of the components could explain this as one is more oriented to the USA while the other prefers European companies. However, it can be seen how there is a strong misalignment of opinions. For instance, among the top-weighted companies in the ECPI World ESG Equity index, there are some companies which are wholly excluded from other indices. For instance, Apple turns out to be the second most weighted of the entire ECPI World ESG Equity Index (more than 2%) such as Facebook (around 1%) and Amazon.com (1,75%). All the others do not include these stocks at all.

Moreover, if we go to investigate in detail, the situation is much more serious than it appears. There exist several cases in which the judgements toward a company is completely different between agencies. For instance, Figure 3.2 illustrates some extreme cases in which the rank of a company differs dramatically between two companies.

Figure 3.2

Name	RobecoSAM	Sustainalytics	MSCI
DTE ENERGY COMPANY	33	71.9	AA
SHANGRI-LA ASIA LTD	40	83.5	AAA
SEVERN TRENT PLC	22	80	CC

Source: Bloomberg

The table above highlights the underlying problem of rating discrepancy. These results arise plausible doubts about the achievement of a consensus, while it is evident that ESG agencies provide heterogeneous information. The lack of a globally accepted standard methodology and minimum technical requirement drives us toward a twofold problem. From one side, investors face difficulties in selecting ESG targets for investment, and from the other side, there are companies which in turn face the difficulty to find the information they need to be included into ESG indices.

3.3 ESG and corporate scandals

In this section, with “corporate scandals” we refer to company activity that produces negative externalities as well as social or environmental effects. According to Sustainalytics¹⁹, the number of scandals are increasing and it identifies social scandals as the most sensible theme. Furthermore, in the same research, it is proved that scandals are associated with important share price effects.

3.3.1 Governance and Environmental scandals: the case of Volkswagen

In September 2015, the United States Environmental Protection Agency (EPA) charged the German company Volkswagen of violation of the Clean Air Act. The company, when admitted the installation of a "defeat device", saw the share price falling by 30%. In this scenario, two-sphere of the ESG were impacted. Firstly, weak governance caused the manipulation of the documentation. Secondly, the impact this decision may have had in the environment is of relevant interest. This scandal arose some doubts about the reliability of non-financial disclosure made by firms. From a retrospective analysis, before the discovery of the emission violation all the ESG rating providers did not signal anything. The company's ESG rating turned out to be rather average²⁰. However, in August 2015 some agencies began to decrease the G-score of the company. Overall, this scandal underlines the difficulty of anticipating scandals, also in presence of non-financial disclosure and ESG rating.

3.3.2 Social scandals: the case of Facebook

The "s" letter from the acronym ESG encompasses also security and data protection. In this regard, Sustainalytics identifies loosely governed private data as one of the major ESG risks. In 2018, Facebook was involved in the Cambridge Analytica scandal. Cambridge Analytica used to gather personal data of millions of facebook' accounts without consensus, using the information for political advertising purposes.

¹⁹ “Understanding ESG Incidents: Key lessons for investors” - Doug Morrow, Martin Vezér, Andrei Apostol & Kasey Vosburg December 2017

²⁰ Source: https://www.sicm.com/docs/Sustainable_Perspective_ESG_Data_and_VW.pdf

When the first news related to this scandal broke, Facebook stock went down 16%. This data scandal has had a very impressive impact on Facebook' shareholders. However, before the news broke, many ESG indices included Facebook in their top ten holdings. Also today, most of the ESG rating providers attribute high ESG rank to Facebook and until now, despite the downside risk due to its business activity, it is included in some ESG indices. Once again we want to highlight the inability of ESG ratings to anticipate and predict negative events or any scandals due to ESG issues.

CHAPTER 4

4. THE PERFORMANCE OF ESG STOCKS

In Chapter 1, some discussions about sin stocks have been anticipated. Many social scientists sustain that social norms shape economic behaviour and market outcomes. For instance, Hong and Kacperczyk, in an article published in 2009 in the journal of financial economics, proved that there exist some social norms against sin stocks. Coherently with the clientele hypothesis that social norms recede away investors from sin stocks, the authors, using 80 years observations, proved that norm-constrained institutions less hold those stocks. In particular, pension funds are less likely to fund this kind of activities in comparison with neutral arbitrageurs such as hedge funds. In literature, a consensus about whether ESG stocks are more profitable than sin and conventional ones is not reached yet. However, there exists also evidence that sin stocks can outperform various benchmarks. In their work, Hong and Kacperczyk, find that sin stocks outperform comparable to 3-4% per year. Merton (1987) explained that these type of anomalies occur because a large segment of investors leaves a portion of the market. This has the effect of depressing prices generating higher future returns. This article, although heavily criticized because “the outstanding performance (of the sin stocks) could be due to an over-weighting of small-cap stock and underweighting of large-cap stock” (Adamsson and Hoepner, 2015) highlights the other face of the coin, emphasizing a fascinating effect of ESG negative screening strategy. Beside, Fabozzi, Ma and Oliphant (2008), using a one-factor model in which the respective national index adjusts each stock returns, showed how sin stock could outperform the market by 1% per month. Trinks and Scholtens (2017) in their work “The Opportunity Cost of Negative Screening in Socially Responsible Investing” explore the impact of negative screening on the investment universe. Moreover, using a broader sample of 1634 stocks across 94 countries, the authors proved high return during 1991-2012 of sin stocks. Nevertheless, several studies cannot confirm the above findings. Humphrey and Tan (2014) applied the *Triumvirate of Sin plus Defense screens* to benchmark indexes concluding that this exclusion does not impact the performance.

All these arguments together need to be interpreted with caution since they may lead to controversial conclusions.

This chapter will bestow further arguments regarding this issue, investigating the relation between ethical investments and performance. The analysis proposed hereby answers the question of whether “sin” or “non-ESG” stocks can exhibit higher performance than comparable ESG stocks. The concept of sin stock has been extended and includes all those stocks that cannot be considered ESG and that are excluded through a negative screening strategy. MSCI ESG Research has been used for the construction of portfolios, while data regarding the performance have been taken from Bloomberg.

4.1 Data and Method

In this section, we describe the samples construction process and the method used to investigating return performance. Previous studies have used industry classification to construct a “sin portfolio”. Most of them focus their attention on the classical *Triumvirate of Sin* (tobacco, alcohol, and gambling), building a portfolio only with securities associated with one of the three activity considered as sinful. We think, however, that for the scope of this analysis, this approach is questionable for various reasons. Firstly, including only three industries may lead to an incomplete representation of the actual universe of “sin stocks”. Secondly, a large number of controversial issues cannot be classified and since the scope is to obtain a broader sample of “non-ESG” stocks, using only a controversial issue may lead to inconclusive results. Third, the final goal of this chapter is to compare ESG with non-ESG; therefore, it would not be appropriate.

In this analysis, two portfolios have been built and compared. Firstly, it was built the “SIN Portfolio”, and then, the components of it were used to produce a comparable “ESG Portfolio”. The sample of sin stocks is constructed as follows.

The identification process was made more accessible by the usage of two indices developed by Morgan Stanley Capital International. The indices considered are:

- MSCI World ESG Screened Index, and its parent index
- MSCI World Index.

Both of them include large and mid-cap securities across 23 Developed Markets countries. However, the MSCI World ESG Screened Index, as its factsheet reports, excludes “companies from the parent index (the MSCI World Index) that are associated with controversial, civilian and nuclear weapons and tobacco, that derive revenues from thermal coal and oil sands extraction and that are not compliant with the United Nations Global Compact principles”. In this way, It is possible to identify the “sin” stocks by separating all of those companies belonging to the MSCI world that have been excluded by the MSCI World ESG Screened Index.

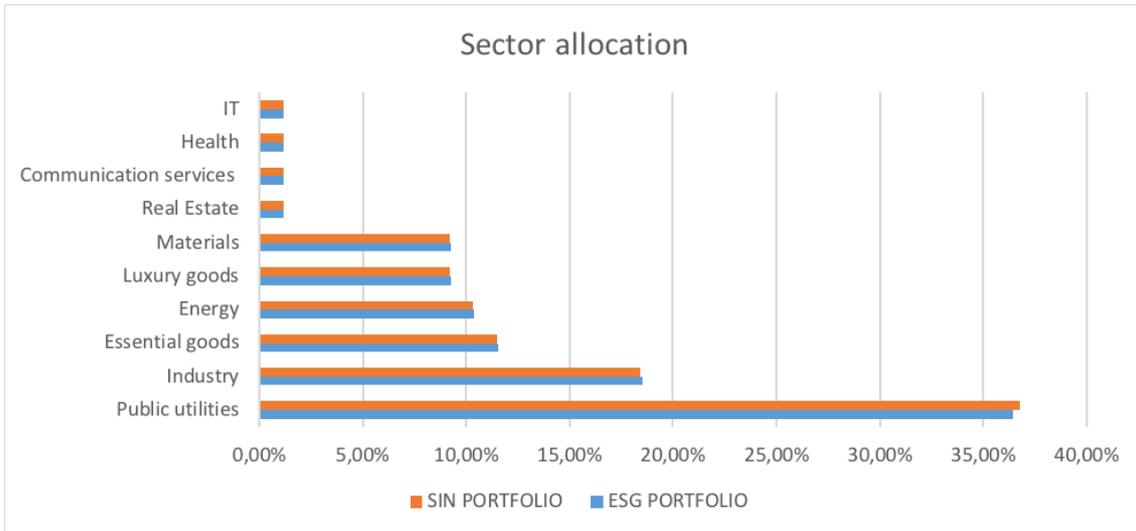
In doing so, two ETFs²¹ which track the performance of the indices have been employed into the analysis. This is justified by the fact that the members of the ETFs, unlike what happens with the indices, must be publicly available. In this way, the MSCI World Index was screened by sin stocks.

Therefore, after clearing the sample for available return data (as provided by Bloomberg) and sufficient available return data (considering zero-returns), we left with a total of 87 controversial stocks which will constitute the “SIN Portfolio”. In order to avoid allocation bias, the ESG comparable portfolio was built to mirror the SIN’s one. We considered market capitalization and the industry where any single component operates into the selection process of the ESG comparable. The list of companies included in the two portfolios can be consulted in Appendix A. Although the Indexes give different weights to its constituents, both portfolios are equally weighted to wipe out any further allocation biases. The time frame analyzed covers a period from December 2010 to August 2019. This period of time was selected because it incorporates observations from the post-crisis to the present.

The next illustration shows the sector allocation of the two portfolios.

²¹ The ETF used to replicate the first index is: iShares MSCI World ESG Screened UCITS ETF, while Invesco MSCI World UCITS ETF was used to replicate the parent index.

Figure 4.1



As the illustration suggests, more than the 65 per cent of the securities operates in the public utilities, industry and energy. This happens because of the Index screens all those companies with intensive usage of carbon. Moreover, the figure shows that the two groups are reasonably balanced in terms of sector allocation. However, the portfolios do not correctly weight the technological, health, communication and real estate industries. This could cause biases in results and conclusions.

4.2 Results

This section presents and discusses the results. Figure 4.2 shows that for a period of about eight years, from December 2010 to August 2019, the ESG portfolio far exceeds that of the "sin" in performance. During the first two years considered, the ESG portfolio seems to replicate the performance of the sin portfolio. This means that for that period of time, the ESG factors were not financially relevant. Starting from August 2013, the ESG portfolio exhibited higher returns. As the matter of facts, this impressive and steady growth was triggered around 2013 when George Serafeim, Ioannis Ioannou and Bob Eccles published the first studies in which they demonstrate that corporate social responsibility (CSR) could increase company's profits. This growth is highlighted in Figure 4.3, which emphasizes the enormous outperformance exhibited by the ESG portfolio in comparison with the sin portfolio. This difference became even more impressive in 2018.

Figure 4.2

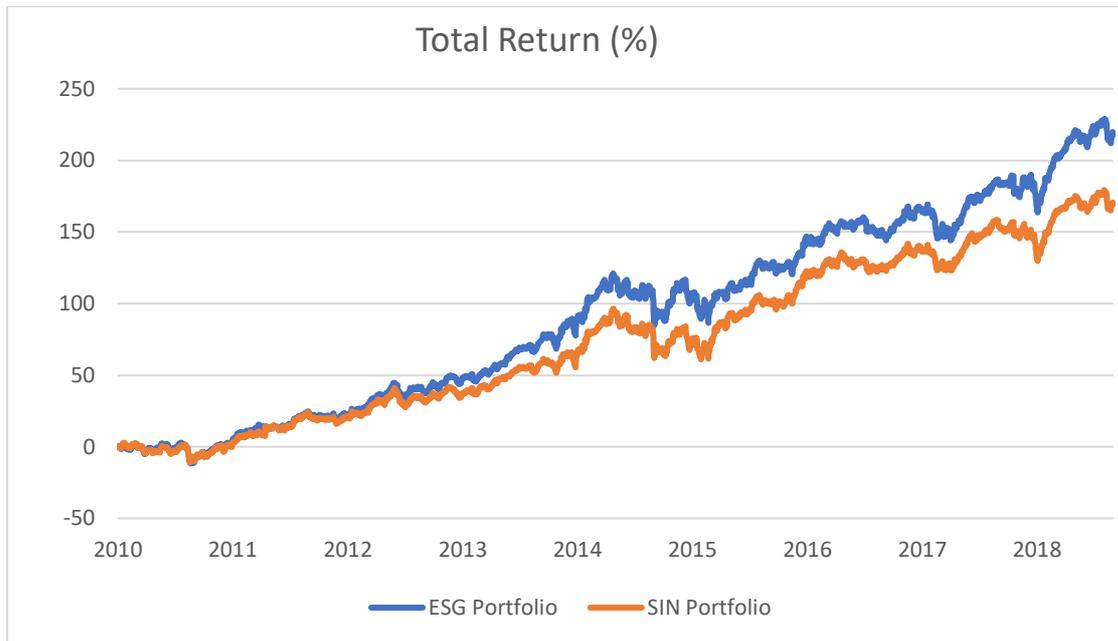
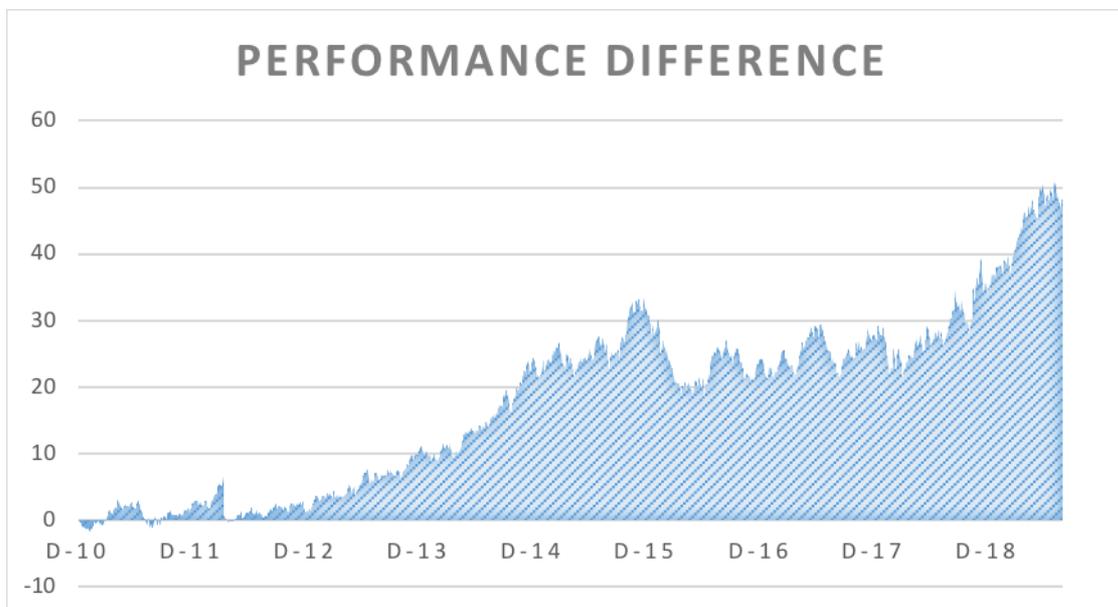


Figure 4.3



Source: data taken from “Bloomberg”

In terms of risk, however, the ESG portfolio exhibit higher volatility (Table B). The annualized standard deviation is higher for the ESG portfolio than for the SIN’s one. Also, the downside risk is slightly higher for the ESG portfolio, as it is reported in Table B.

Besides, the statistics reported in the table empathize the difference between the two portfolios in terms of performance, especially for the last six months. This change in trend is ideally in line with the rise in popularity of this type of investments.

Table B

	6 months		5 years	
	ESG - portfolio	SIN portfolio	ESG - portfolio	SIN portfolio
Total returns	7,5731	3,3301	85,7733	72,1372
standard deviation (ann)	9,2018	7,9937	12,3770	11,7014
VaR 95% (ex-post)	-0,8025	-0,7593	-1,2297	-1,1042
Sharpe Ratio	1,7911	0,9285	1,1540	1,0653

Source: Data from Bloomberg

Nevertheless, those sample measure of risk does not tell as the entire story. To measure how much return the two portfolios have made relative to the amount of risk taken, we use measures of risk-adjusted return. Therefore, we need to consider the Sharpe Ratio for further evaluations. The Sharpe ratio is the excess return investment can generate above the risk-free rate, per unit of standard deviation. Both for the two periods, the Sharpe Ratio is higher for the ESG-portfolio which confirm that given the risk taken, the ESG investments represent the most profitable solution. In particular, in the last six months, the Sharpe Ratio is considerably higher.

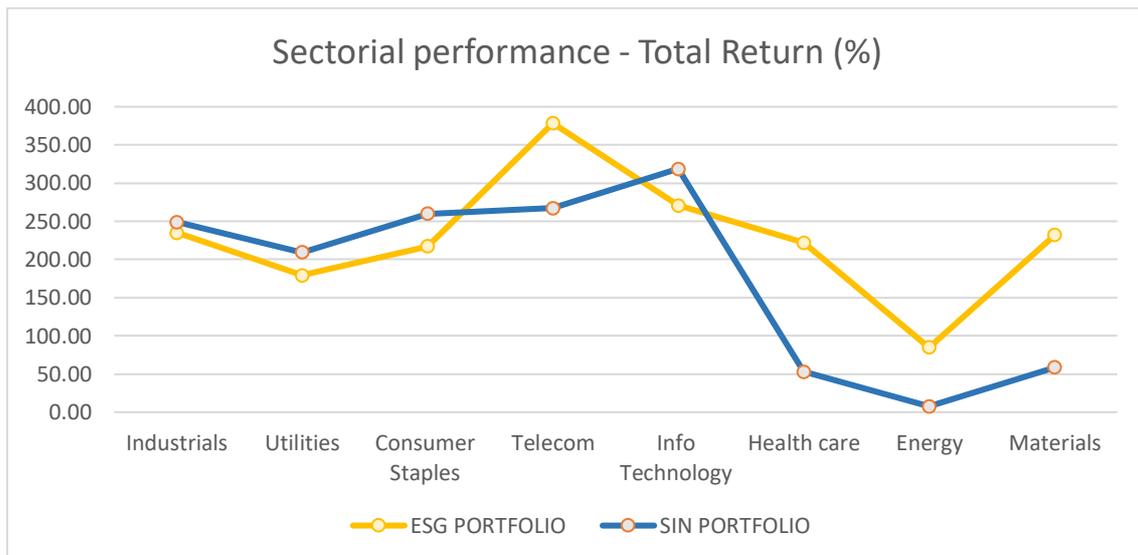
In order to demonstrate the outperformance, it might be useful to regress the returns of the ESG portfolio on those of the SIN portfolio to understand if there is a positive performance differential. The results of the regression are reported in Appendix A.2. It is proved that the intercept is positive and higher than 1, confirming that the ESG Portfolio, over the period considered, exhibited higher returns in comparison with the SIN Portfolio.

4.3 Sectorial analysis

In order to investigate where this outperformance comes from, we investigated the difference in performance over the last eight years of the two portfolios broken down by sectors. In the first part of this analysis, more attention will be paid to sectors such as public services, industry, materials and energy, since the allocation of the two portfolios is oriented towards those segments.

In contrast, the least relevance will be given to the sector where their minimum components may lead to ambiguous results. For instance, there is just one stock per portfolio which operates in the consumer discretionary (luxury goods sector). In this, specific case the higher performance of the ESG portfolio may be symptomatic and cannot be taken into our analysis. This section will try to explain the difference in performance between the two portfolios, attributing the reasoning for the sectorial gaps. The results of this analysis are summarized in Figure 4.4. The yellow line represents the total return on an investment of 8 years, of companies, considered with a high ESG commitment, working in that specific sector. The blue line in the Figure 4.4 describes instead the total return divided by sectors, on an investment of 8 years of those companies, which are considered not worthy of being included in the ESG index by MSCI.

Figure 4.4

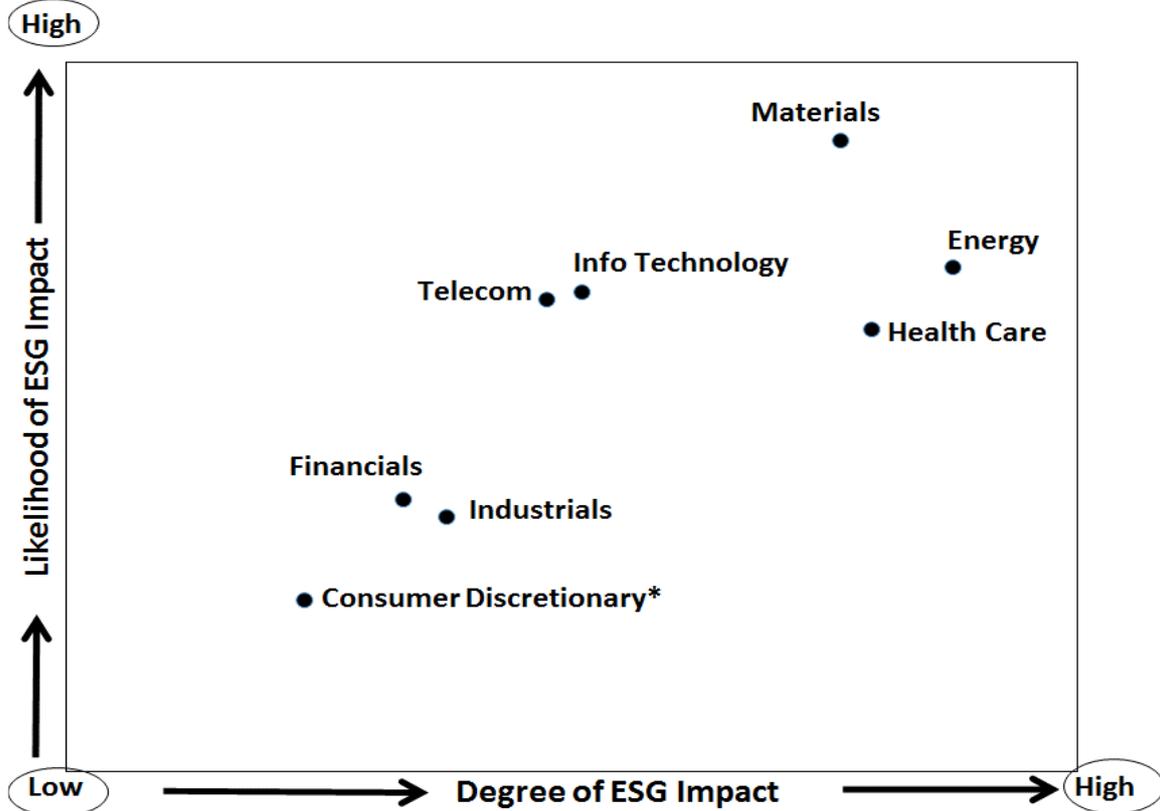


It can be notice that some sectors are more sensitive to ESG factors. Companies belonging to the ESG portfolio operating in the sectors of industry, technology and consumer goods have reported worse results than their "non-ESG" comparable. In contrast, ESG companies operating in the telecommunications, healthcare, energy and materials sectors have achieved significantly better results than their comparable "non-ESG". In the next section, we will try to explain these differences through ESG materiality.

4.3.1 Explain performance through ESG materiality

Figure 4.5 shows the two-dimensional materiality matrix developed by Cornerstone Capital Group for eight MSCI GICS. It is essentially "the probability that a material sustainability problem will occur with respect to the potential financial impact of an ESG event". The ESG issues are relevant to the sector in the top-right section of the plot. Therefore, it would not be a surprise if these sectors had higher returns according to Figure 4.4. In turn, ESG issues are less relevant to those sectors in the lower bottom-left of the plot. Using these arguments, we can explain the underperformance (outperformance) of the ESG portfolio compared to the "non-ESG" for the industrial segment.

FIGURE 4.5 – ESG Materiality Matrix for Eight MSCI GICS



Source: Cornerstone Capital Group

Comparing the two figures, one may spot the relationship between ESG materiality and financial performance straightforwardly. The higher the likelihood and the degree of ESG impact, the higher the relation with financial performance.

The energy sector, for instance, is constituted by companies, which mostly operate in the business of oil. It occupies the top-right position in Figure 4.5, meaning that companies in this sector will suffer a very high impact in the event of an ESG event and that the likelihood that it occurs is high. The screening made by MSCI, in this case, is based on the managerial behaviour of a given company and its effort in converting its operations in a greener and more sustainable business, with the environment factor dominating the others. The companies considered “ESG” by the provider have performed better, confirming the importance for those companies in integrating ESG.

Also, for companies operating in the materials, the probability that a significant sustainability event may arise is very high. In turn, firms that integrate ESG factors performed almost four times better than their counterparties over the last eight years.

In the health care field, there are a large number of ESG issues that could potentially be material and this cause the better performance of those firms that integrate ESG in their business models.

Regarding public utilities, instead, further discussions need to be presented. The constitutes of this segment are mostly power companies. Utilities are responsible for 31% of total global greenhouse gas emission²². Many companies are struggling to adapt to this change. To rate companies which operate in this sector, agencies usually use three material issues which are GHG emissions, community Relations and product sustainability. In this case, companies labelled as “sin” are those that produce more actively, generating more GHG emissions. This may help to understand the underperformance of the ESG portfolio compared to the “sin” ones.

Finally, industrials are in the bottom-left part of the plot meaning that the implementation of ESG issues in the business model is not financially crucial because of the low likelihood and the degree of ESG impact

In conclusion, from the sectoral distribution of the performance, we can deduce that investors, from this perspective, are considering ESG as a risk factor rather than a sustainability bonus. In particular, it is clear that where the non-inclusion of ESG factors may affect the commercial activity of the company and its solidity, the inclusion of these factors is therefore decisive for returning better performance.

²² Source: Sector Report: Utilities The Great Transformation Begins Doug Morrow, Reginald-Michel Koizumi & Dr. Hendrik Garz March 2015

CHAPTER 5

5. THE EFFECT OF ESG RATING ON CORPORATE BOND YIELD AND CAPITAL STRUCTURE

Bond investors, such as equity investors, concern themselves with ESG management of borrowing firms for various reasons. Firstly, from an environmental point of view, any violation may lead to clean-up costs and fines. In the light of the last environmental catastrophes due, especially by climate change, investors insist that firms assess and publish their relative risk position to environment. Regarding social and governance, any violation may lead to damage awards as well as disputes with workers' unions. Moreover, being involved in a bribery case as well as in human right violations may lead to a very detrimental situation. In a credit risk framework, this may have a critical relevance. The ESG score may be seen as both the probability of not incorporating the current normative and the probability of being involved in scandals, where higher score signals low probability. Using an appropriate ESG risk management into the investment decision could, therefore, help to avoid being exposed in corporate scandals. With statistical and empirical evidence, we will deepen the goodness of what has just been stated.

In terms of costs, do not implement ESG corporate management means to face unexpected expenses that can compromise the ability of a company to repay its debt. For instance, McKenzie and Wolfe in 2004 showed that some banks are reluctant in financing firms with poor environmental practices because, for them, the probability of being involved in reputational litigations and repayment losses is higher. Furthermore, in the past decade, the normative framework is always becoming stricter. Despite this, the results of a global survey made by CFA Institute and Principle for Responsible Investment (PRI) on ESG issues, show how lenders are not as concerned about ESG as much owners do. Before making the above conclusion, the CFA Institute and PRI surveyed more than 1.100 financial professionals, practitioners and stakeholders over the world.

Earlier research tried to identify the relationship between the cost of debt and corporate environmental management. Hann et al. (2010), analyzing 582 U.S. public corporations,

documented that environmental concerns are related to the higher cost of debt financing and lower credit ratings. As well as Skaife et al., which in 2004 published a study in which demonstrate the positive relationship between firms strong governance and credit rating. Helfin et al. (2015) confirm that the inference made by Sengupta (1998), according to which disclosure score is related to the cost of debt, is robust even after controlling for earnings quality (Henriksson et al. 2018).

Considering this conceptual framework, in this chapter, we will exploit the following hypothesis:

H1: There exists a negative relationship between the nominal spread of corporate bond and ESG score;

H2: In general, companies that incorporate ESG factors in business management pay a lower cost of capital;

H3: ESG companies taking advantage of the previous hypothesis, increases their exposure to debts.

At the cornerstones of this analysis are the Sustainalytics and RebecoSAM ESG rating scores. All results are strictly connected with the goodness of the rating offered by these providers. The score offered ranges from zero (indicating a high risk of experiencing material financial impacts from ESG factors) to hundred (indicating a low risk). However, we decided to use two rating agencies to obtain more reliable results.

In order to exploit the hypothesis above, we selected 249 US corporate bonds. In order to get a larger sample and to collect as much information as possible, we will consider the universe of the XTRACKERS USD High Yield Corporate Bond ETF. The decision to concentrate the analysis in a specific region is conceived to avoid any country biases. For each bond, issuer information about debt and ESG rating score have been collected from Bloomberg.

5.1 The relationship between nominal spread and ESG score

As first step, we will focus more on the relationship between ESG score and G-Spread. The G-spread (also known as nominal spread) is the difference between the yield on corporate bonds and the yield on Treasury Bonds calculate at the same point of the yield curve.

$$[1] \quad G\text{-spread} = Yield_{\text{corporate}} - Yield_{\text{government}}$$

In this chapter we will consider the G-spread of corporate bonds of different issuers but with similar maturities.

In the secondary market, the bond's yield can fluctuate for several reasons. First of all, it is affected by the prevailing interest rates. When interest rate increases, bond's prices will go down since investors will prefer newly issued bonds. Secondly, the bond's rating plays a central role. If the credit rating of issuer decreases during the bond' life, the bond loses value.

We obtained all the information from Bloomberg. In order to make our results more reliable, we will consider two ESG rank providers.

We will consider ESG score and credit rating separately, assuming that rating agencies do not take into account the ESG factors into their assessment of the creditworthiness of businesses. The issuers' credit ratings were collected from Standard & Poor. The ratings were eventually transcoded in a one to twenty-six scale in order to fit them into the regression.

If companies which implement ESG policies into corporate management are seen as more stable and less risky, this perception should also impact their bond yield.

To test this hypothesis, we used the following cross-sectional regression:

$$[2] \quad G - Spread = \alpha + \beta_1 ESG + \beta_2 CR + \varepsilon$$

Where:

- $ESG = \begin{cases} \text{if Sustainalytics rank} > 50 \text{ and RebecoSAM rank} > 50 = 1 \\ \text{otherwise} = 0 \end{cases}$
- CR = Credit risk of the bond' issuers provided by Standard & Poor. In order to obtain a more coherent result and to simplify the regression, the score has been transcoded on a one to twenty-six scale, where one identifies a company with rating “NR” while twenty-six represents the “AAA” score.

The dummy variable “ESG” was developed in the light of the past results presented in chapters 2 and 3. In particular, we realized that given the different methodologies in achieving an ESG rank, it would be more accurate to take into account at least two ESG rank providers. Since both Sustainalytics and RebecoSAM offer an ESG score between 0 and 100, the ESG dummy will assign one to every company which ranks above the average (50), according to both agencies, and zero to those companies which a rank under the average score. The results are summarized in Table 5.1.

Table 5.1 – ESG rating and Credit Risk as determinant of bond’ yield.

<i>Regression Statistics</i>	
Multiple R	0.34231
R Square	0.11718
Adjusted R Square	0.11000
Standard Error	255.89931
Observations	249

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	527.46	69.953	7.540	9.01E-13
Dummy 1	-76.43	33.810	-2.261	2.47E-02
Credit Risk	-17.93	4.051	-4.425	1.45E-05

Note: the dependent variable is the nominal spread expressed in basis point.

Table 5.1 presents the statistical results of the regression constructed to highlight the impact of ESG rating on the corporate bond yield. The coefficient -17 on credit rating,

confirms that the higher the credit rating, the lower the G-spread, meaning that an higher credit rating has the effect of reducing the G-Spread by 17 basis point. This is completely coherent since we know that riskier companies have higher cost of debt. Similarly, the -76 coefficient on ESG rating, is consistent with the assumption that higher ESG score is associated with lower G-spread. In particular, we proved that if the two providers assign an ESG rank greater than 50, this has the effect of reducing the G-Spread by 76 basis point. The significance of the two coefficients is supported by a p-value close to zero, while the model is supported by a relatively low R-Squared, equal to 0.1.

Finally, because we are also interested in the interaction between different rating providers we run another regression which implies a series of dummy variables aimed to explain the effect of discordant ESG scores on the spread of corporate bond yield over treasury yields. The dummies are defined as follows:

$$D1 = \begin{cases} \text{if Sustainalytics ESG rank} > 50 \text{ and RebecoSAM ESG rank} > 50 = 1 \\ \text{otherwise} = 0 \end{cases}$$

$$D2 = \begin{cases} \text{if Sustainalytics ESG rank} < 50 \text{ and RebecoSAM ESG rank} > 50 = 1 \\ \text{otherwise} = 0 \end{cases}$$

$$D3 = \begin{cases} \text{if Sustainalytics ESG rank} > 50 \text{ and RebecoSAM ESG rank} < 50 = 1 \\ \text{otherwise} = 0 \end{cases}$$

$$D4 = \begin{cases} \text{if Sustainalytics ESG rank} < 50 \text{ and RebecoSAM ESG rank} < 50 = 1 \\ \text{otherwise} = 0 \end{cases}$$

Note that the D1 variable is the ESG dummy used in the last regression. Since a problem of multicollinearity²³ may arise, D4 will not be included in the regression because it appears to be predicted by D1 (which describes the opposite scenario). Therefore, we will try to explain the G-Spread through the following cross-sectional regression:

²³ Multicollinearity is a statistical phenomenon in which two or more variables are correlated. It occurs when one variable can be predicted by the others.

$$[3] \quad G - Spread = \alpha + \beta_1 D1 + \beta_2 D2 + \beta_3 D3 + \beta_4 D4 + \beta_5 CR + \varepsilon$$

The results, with relative statistics, are reported in the following table (Table 5.2).

Table 5.2

<i>Regression Statistics</i>	
Multiple R	0.36302
R Square	0.13179
Adjusted R Square	0.11755
Standard Error	254.81125
Observations	249

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	540.54	70.012	7.721	0.000000
Both > 50	-126.46	41.913	-3.017	0.002821
Sust<50 & Reb>50	-119.25	81.463	-1.464	0.144504
Sust>50 & Reb<50	-91.48	52.093	-1.756	0.080331
Credit Risk	-15.93	4.152	-3.837	0.000159

Note: the dependent variable is the nominal spread expressed in basis point

The coefficient of D2, equal to -119, means that when Sustainalytics provides a rank below the average (50) and RebecoSAM, in turn, assigns a rank above the average, the G spread will be significantly reduced. The D3, while expressing the opposite situation, that is when RebecoSAM provides a lower rank than the average and Sustainalytics, in turn, assigns a rank higher than the average, the G spread will decrease by 126 basis points. However, the coefficients of D2 and D3 are insignificant, meaning that only the dummies constructed by the synergy of the two providers are relevant.

Besides, the coefficients of D1 and CR confirm the negative effect of ESG rank and credit risk on the corporate bond yield.

5.1.1 The average yield effect of ESG rating on corporate bonds

The regressions [2] and [3] exhibit statistical evidence on the effect of ESG rating on the corporate bond's yield. However, in this section, it will be proposed a different approach to exploit the differences between the high ranked company and low ranked ones and quantify, on average, the differences in terms of spread. Again, information on the issuer's ESG rating is taken from the two providers used in the analysis proposed in section 5.1. Since, as we already showed, they often propose incompatible ratings, we have tried to avoid including in our analysis cases in which there was a too strong difference between them.

In doing so we split the sample of 249 US corporate bonds into two sub-samples. The first, identified as "high-ESG", contains all those companies for which the sum of the ratings proposed by the two providers is greater than 100. The second sub-sample, called "non-ESG", contains the remaining companies which have a rating below the average.

This enables us to identify the top and bottom-ranked ESG profiled issuers. Subsequently, we documented that high ESG companies are associated with lower credit risk. Specifically, we found that low ESG companies have, on average, a rank equal to BB, while high ESG companies have, on average, a rank equal to BBB+. In order to improve our results, an essential step was to *adjust the sample for credit rating*. In this way, we have reduced the differences in terms of creditworthiness so as to have stronger evidence of the effect of the ESG rating on the corporate bond yield.

We took the average of the G-spread of the two sample and summarized in Table 5.3.

Table 5.3	Average G-Spread
low-ESG	228.8
high-ESG	127.4

From this picture, it is straightforward that the low-ESG sample pays more than double in bond yield. According to this result, corporates which are evaluated excellent in terms

of ESG factors by two providers, have, on average, a G-spread noticeably lower in comparison with their peer which have an inferior ESG rank.

5.2 ESG and cost of capital

In the second hypothesis we supposed that, in general, companies that incorporate ESG factors in business management pay a lower cost of capital.

In order to test this hypothesis, we use the weighted average cost of capital (WACC). In a WACC calculation, there are not only bonds, but it instead includes all sources of capital such as common and preferred stock and other long-term debts. However, it may help to understand the overall costs of financing of a giving firm concerning its ESG rating. The WACC is computed as follows:

$$[4] WACC = \frac{E}{E+D} * Re + \frac{D}{E+D} Rd * (1 - T)$$

Where:

E= Market value of equity

D= Market value of debt

Re = cost of equity

Rd = cost of debt

T = corporate tax rate

The Table 5.4 reports the average WACC of the two samples considered in the previous test. It can be observed that, the sample containing firms with meagre ESG rating shows a WACC of 1.8, which is considerably higher in comparison with the average WACC paid by high ESG firms.

Table 5.4	WACC
low-ESG	1.8
high-ESG	0.6

This result is consistent with the assumption that does not integrating material ESG factors into the business management, hurt the cost of capital of companies.

5.3 The approach to debt of ESG firms

At this point, giving the previous results, we can expect that high ESG firms, taking advantage of the low G-spread and therefore the lower cost of debt, are financing its operations always more by debts. The advantage of debt financing is that, unlike equity, you do not giveaway a percent of the business ownership. However, debt is always riskier than equity but if the business is solid you can use it to leverage your investments.

In order to test whether companies with high ESG rating are using more debt as a consequence of the rating that has been assigned to them, we analysed the change of the total debt of companies in the last five years. We considered just the last five years because ESG has gained popularity especially during the last period. We therefore control the following measure:

$$[5] \text{ Debt Growth} = \left(\frac{\text{Total debt}_t}{\text{Total debt}_{t-5}} \right)^{0.2} - 1$$

The formula [4] is the compound five years growth rate in financial leverage. It is the ratio between the total debt of a company today, over the total debt the company had five years now. Using the “high ESG” and the “non-ESG” samples, used in the last section, we documented the following results:

<i>Table 5.5</i>	Debt Growth (%)
low-ESG	5.4
high-ESG	1.4

Oddly enough, the results suggest that high-ESG companies are using less debt in comparison with their low-ESG counterparty. However, both samples have experienced positive debt growth. This first result is ideally in line with today's debt market, characterized by meagre interest rates. While low ESG firms have increased their debt exposure in the last five years, on average, by 5.3 per cent, the high rated ones have increased their exposure only by 1.1 per cent.

This difference may be due to multiple reasons. One possible explanation could be the unstable situation the debt market is coping with, due to the aggressive politics adopted by central banks. Companies may expect interests to go lower and it may hold off on borrowing. A second explanation is suggested by Baker and Wurgler (2002) and it refers to market timing. It is possible that high ESG rated companies are issuing more equity in order to exploit the moment of high prices with the intention of repurchasing them when the prices will go down. The two researchers proved the effect of market timing on capital structure, finding that high leverage firms raise funds typically when their market valuation is low while low leverage usually raise funds when their market valuation is high.

5.3.1 Capital structure of high ESG companies

In order to investigate the capital structure of companies which adopt ESG standards into their management, we will deepen the debt and equity financing strategy of those firms. In particular, the Equity multiplier will be studied in this section. The Equity Multiplier is one of the financial leverage ratios that measure the per cent of assets which are financed by shareholders. It is the ratio between the total assets of a company over the total shareholder's equity:

$$[6] \text{ Equity Multiplier} = \frac{\text{Average Total Asset}}{\text{Average Total Equity}}$$

Clearly, the higher is the equity multiplier the lower is the per cent of assets financed by shareholders. Taking into our analysis the two samples examined in the previous sections,

we will go to compare the arithmetic average of both samples. The results are summarized in Table 5.5.

<i>Table 5.6</i>	Equity Multiplier
low-ESG	5.3
high-ESG	4.5

According to these results, low-ESG firms have, on average, a leverage ratio slightly higher than their high-ESG counterparty. The higher ratio showed by low-ESG firms means that, on average, those firms are funding their assets mainly by debt then by equity. In other world, creditors appear to own more assets than investors. On the contrary, the lower ratio of the high-ESG firms means that those companies do not have high debt costs and as a consequence, may result to be less risky.

5.3.2 ESG and external equity financing

From the previous section, it seems that low-ESG firms approach to debt more easily. This means that the media visibility, as well as the exclusion of such companies from ESG indices and investment funds, has made sure that their market value decreased. In this specific moment, low-ESG companies find debt more convenient than issuing new equity since their value is lower because of their non-sustainable footprint. On the contrary, high ESG firms may take advantage of this moment of high popularity and media attention by issuing new equity to finance their operations. For this reason, in this section, we will verify whether the high ESG companies are issuing more equity. To do that, we will consider the capital raised by issuing additional equity. It is calculated as follows:

$$[6] \text{ Ext. Equity Financing} = (\text{Preferred Equity} + \text{Total common Equity}) - \text{Prior Year Preferred Equity} - \text{Previous Year Total Common Equity} - \text{Reinvested Earnings.}$$

Reinvested earnings are simply the positive or negative difference between a company's earning in a given year, and the dividends distributed in the same year (IMF Committee on Balance of Payments Statistics, 1999)²⁴. It may be negative, summing up in the equation [6], in the case of low earnings and high dividends. When a company do not distribute any dividend, it means that it is going to reinvest the earning and, in this case, the result will weight negatively to the equation [6].

To produce empirical evidence we will consider the two samples used during this chapter. Bloomberg provided for the data needed. After obtaining the data for any single company, the average of both samples was computed. The results are the following:

<i>Table 5.7</i>	External Equity Financing
low-ESG	-67.7
high-ESG	93.8

The difference between the two samples is impressive. From one side, low-ESG investment, as previous sections may confirm, tend to avoid the usage of equity as source of financing. This is deductible by the negative digit. The result, equal to -236,9, indicates that today, the total equity is less than they were the previous year. The cases could be twofold. It may be that companies with low ESG enforcement are either making intensive usage of earnings for investing in their activities or they are doing a campaign of stock buybacks. With stock buybacks, we refer to the practice of a company to repurchase share of stock previously issued. With this system, the company pays shareholders the market value per share, re-absorbing that part of the ownership distributed beforehand. Among the most prevalent reason that drives a company to do share buybacks, there is the feeling that its shares are undervalued. The undervaluation is undoubtedly due to the scarce enforcement of ESG factors and therefore the scarce rating received from agencies. It is possible that, on average, the companies in the "low ESG" sample are repurchasing some of their shares at an undervalued price with the

²⁴ Source: <https://www.imf.org/external/bopage/pdf/117.pdf>

intention of re-issuing them when their market value increases and with it, hopefully, also the ESG engagement.

The “high-ESG” sample exhibits an opposite approach. The average external equity financing, resulting from equation [6], is positive and equal to 180.5, meaning that the total equity increased in the last year. The reasoning behind it could be the inverse of the “low ESG” sample. The high market value these companies are experiencing may encourage them to issue new equity. In particular some key financial ratios have been computed and summarized in the Table 5.7.

First of all, the debt to EBITDA estimates a company's capacity to pay off its incurred debt. A higher ratio is associated with an excessive debt load. Despite in our case it is less informative since the difference between the two portfolios is insignificant, the SIN portfolio exhibits a slightly higher Debt/EBITDA. On average, firms in the ESG portfolio generate and have more income to pay down debt before covering interest, taxes, depreciation and amortization expenses. The second financial ratio analyzed is the Debt-to-market cap ratio. This ratio allows us to understand the company’s leverage. It is computed dividing the long and short term debts outstanding with the total market capitalization that is the sum of total debt and total shareholders' equity. The 35% of the capital structure of the “SIN portfolio” consists of debt while the percentage reduces to 29% in the case of the “ESG portfolio”.

Moreover, both the EBITDA to interest coverage ratio and the EBIT to interest are higher for the ESG portfolio, meaning that companies considered ESG by the provider, are more capable to pay interest on its outstanding debt and, hence, to meet its interest expenses.

Table 5.7

Name	Debt/EBITDA	Debt/Mkt Cap	EBITDA/Int	EBIT/Int
ESG portfolio	3.6	29	10.1	7.5
SIN portfolio	3.7	35	9.2	7

The findings described in this chapter, perfectly in line with the earlier research, exhibit two different trends. Firstly, it is established that the lines between ESG sustainability and equity financing are well-drawn. The results underline the relationship between ESG

engagement and cost of equity. On the other hand, however, results concerning the relationship between ESG score and debt financing are vague and no well-defined. Companies with low ESG engagement increased their debt in the last five years at a higher pace than high ESG companies. However, the total cost of capital is cheaper for those companies which integrate ESG factors in their business model as the WACC analysis confirms.

CHAPTER 6

6. THE ROLE OF ESG IN WEALTH MANAGEMENT

The market of funds which integrate ESG analysis with the financial one has grown rapidly globally in the last decade. According to the Global Sustainable Association (SGIA), sustainable investing assets in the five major markets stood at \$30.7 trillion at the start of 2018. It is a very impressive amount if you think that until two years before it was 34 per cent less²⁵. Much of this growth is driven by asset managers. In the United State, for instance, asset managers consider environmental, social or corporate governance (ESG) criteria across \$11.6 trillion in assets, up 44 per cent from \$8.1 trillion in 2016 (data taken from the US SIF Foundation's biennial Report on US Sustainable, Responsible and Impact Investing Trends). Furthermore, the Forum for Sustainable and Responsible Investment reports that "from 2016 through the first half of 2018, 165 institutional investors and 54 investment managers controlling \$1.8 trillion in assets under management (AUM) filed or co-filed shareholder resolutions on ESG issues". It also reports that half of the ESG assets are owned by European societies. At this rate, it would not be a surprise if the global amount of assets under management will be re-directed exclusively towards ESG issues.

6.1 ESG Mutual Funds

The first "ethic" Fund was the Pioneer Fund, set up in America in 1928. It was an investment of religious organizations which excluded all those companies active in sectors such as alcohol, tobacco, gambling and adult entertainment. Besides, it was necessary to wait until the 1990s to see the first real sustainable investment fund (launched in the Netherlands in 1999 by Rebeco). Since then, financial institutions have begun to understand the need for integrating environmental and sustainability issues in asset allocation. On June 24, the European Commission released the new EU reporting

²⁵ GSIR Review 2018

guidelines on climate-related information²⁶. It is strongly believed that the guidelines will make it necessary for asset managers to enforce climate-related research. In this scenario, the asset management companies are divided. For instance, Invesco and Allianz want regulators to make climate disclosures mandatory (so they do not need to invest in research), others such as Schroders, BlackRock, and Amundi prefer the flexible comply-and-explain approach. For instance, Amundi has developed its methodology to assess companies and risks related to ESG. Until the guidelines are not enforced, corporate climate-change reporting will remain inconsistent. Therefore, better reporting would help asset managers to integrate sustainability into the investment process more fully.

Traditionally the United Kingdom has always had a strong presence of ESG funds. One of the leaders of this trend is *Hermes Investment Management*, which has long been a pioneer of ESG investing. In an interview²⁷, Andrew Parry (head of Hermes sustainable investing) declared that ESG strategies automatically create an improvement in returns, but it is important to track the performance of these investments actively and to compare it with the general market indices.

In Italy, according to Blackrock research, there are more than 350 mutual funds with ESG characteristics counting for €30,8 billion. The choice of an ESG fund requires the analysis of a wide range of funds with different strategies, ESG definitions, and ESG benchmarks.

In the next section, there will present some key step in the selection process of an ESG fund from an investor point of view, with a specific emphasis on the selection of open funds.

6.1.1 The choice of mutual fund

For some investors, the integration of ESG factors in their investment process is a principal goal which may derive from either her risk-return objectives or her wish to sustain environmental, social and governance issues. For instance, a foundation may want

²⁶ Available at: https://ec.europa.eu/finance/docs/policy/190618-climate-related-information-reporting-guidelines_en.pdf

²⁷ Antonella Puca, Andreas Dal Santo and Gregory Siegel, “Effective ESG Investing: An Interview with Andrew Parry” enterprising investor, CFA Institute, 15 June 2018.

to exclude from its portfolio investments toward corporates whose activities are related to countries which violate human rights. For other investors, the reason for this choice of investment stands in its comparative advantage and capability to generate higher returns. In this regard, it should be remembered the gap in performance between ESG investments in comparison with “non-ESG” ones. The promise that corporates with high ESG rating may contribute to boosting the portfolio-performance is always becoming more diffuse. In the choice of an ESG fund, the investors can count on a wide range of products with different strategies[3]. Once the strategy has been defined, the investor can begin the process of *due diligence* on every single fund, which eventually brings to the choice of one or more funds in which to invest. Regarding the active management, to better evaluate the products, it is important to have an exhaustive ESG disclosure which illustrates the fund’s strategies and the experience of the manager in the implementation of that given strategy. The investor has to verify the compatibility between the fund’s investment strategy with its ESG objective. For instance, if one is more interested in environmental issues, she will avoid all those funds, which also include corporates with a low environment rating but high social and governance rating.

6.1.2 *How to rate fund’ sustainability*

Some rating agencies have developed classification process of funds based on the ESG characteristic of the constituents. This analysis may be applied *ex-post* to those funds which do not want to pursue an ESG strategy. The Morningstar Sustainability Rating was one of the first to publish the sustainability rating of about 20 thousands of global mutual funds. Throughout this indicator, the investors can assess autonomously if a fund is operating with a strict sustainability policy for real. Based on data provided by Sustainalytics, Morningstar assigns its Sustainability Rating to all those funds for which at least half of the holdings in the portfolio are covered by ESG judgments. The final score is a weighted average of the ESG rating assigned by the provider to any single stock. It is possible to use also the Portfolio Sustainability Score to evaluate the quality of stocks, in terms of ESG, into a given portfolio and compare it with the score of competitors. Sustainability rating can be used to confront a fund with other funds belonging to the same category.

6.2 Benchmarking ESG Funds

As discussed in Chapter 3, the choice of a benchmark is crucial both for active and passive management. Benchmarks have the function of sum some specific characteristics and peculiar aspects of a product. It represents an important reference point. The more similar is the tracking error of the portfolio with those of the index, the more will be the information given by the benchmark.

Generally, ESG indices are generated by filtering traditional indices on the bases of sustainability rating. There exist a lot of different methods for ESG indices construction and optimization. In the early days of ESG indices, there were only equity indices with considerable limits in terms of geographical allocation. In recent years, we assisted in the rapid growth of the ESG indices market. Now there are indices with exposure in different geographic areas, with a bond component and with the inclusion of emerging markets. These improvements widen the universe of ESG passive instruments.

ESG indices can be grouped in:

- Market indices: composed by a large basis of securities,
- Thematic indices: include securities which share the same ESG investment objectives such as the gender gap, renewables and water management. Those indices may be subject to security concentration. For example, the S&P Global Water Index is composed of only fifty companies.

For the ESG funds, a coherent benchmark is a very important element to identify the geographical and sectorial universe but also to evaluate the consistency of the fund with the ESG investment objectives. Most of the ESG funds refer to general market indices. For all of those funds which refer to index with an ESG component (such as MSCI World ESG Leaders), it is important to pay attention to the nature of the index. Especially, one should investigate in:

1. How are the corporates included into the index selected?
2. How is the ESG rating determined?
3. Which are the key performance indicators (KPI) which affect the index composition?

Some managers may prefer to build their benchmark, which reflects either the specific investment strategy or simply the allocation target. In this regard, it should be mentioned

that the Italian fund “*Pramerica Azionario Etico28*” by UBI Pramerica, has a mixed benchmark made by ECPI-Ethical Index Euro (which count for the 95%) for the equity component, and by the index BofA Merrill Lynch Euro Treasury Bill for the liquidity (counting the 5% of the total) .

In other cases, the benchmark establishes a comparison basis for the performance of the fund. However, some managers do not agree because the strategies may be different. In this regard, Andrew Parry stated that: “If you benchmark yourself against an ESG index, you have already accepted that the published reference index has the right assessment of what a “good” company is in terms of ESG, which we don’t necessarily share”. In this light, it is even more clear that there is a lack of globally accepted definition of methodology and taxonomy of ESG investment.

6.3 Crédit Agricole Italy, always more ESG oriented

In Italy, the attention toward ESG investments raised only in recent years. This growth is underlined by the many investment funds that are emerging in recent years. Amundi, one of the world market leader in asset management and pioneer in sustainable investments, has announced that by the end of 2021 will turn all its activity with a ESG footprint, strengthening environmental initiatives with a strong social impact. This change will require considerable effort in terms of research. Therefore, it is not a low-cost transformation. To do that, Amundi has developed its own methodology to asses and perform ESG rating. Credit Agricole Italy has placed more than 20 mutual funds with ESG focus from the beginning of 2019, as a prove of its high engagement in the field. It is adopting a business strategy that allowed it to be placed at the top of all the ESG rankings. However, inside the workplace, there is the awareness that ESG value enhance do not only the image but also the business productivity.

In the last six months, I had the honor to collaborate with Federico Reggianini, head of the Investment Center at Credit Agricole Italia. The highly prestigious position it holds

²⁸ Source: https://www.pramericasgr.it/Scheda_Prodotto_Fondi?ISIN=IT0003851034

enables him to have a broad view of the financial market. We asked some questions to conclude the picture of the ESG investing landscape.

As first question, we asked how he would explain the success of ESG investment. In this regard he claims that:

“The success of ESG investments was initially a marketing operation, substantially not driven by the market. However, in the recent years, public opinion has shifted to issues that involve the environment, good governance, and society as a whole. The environmental issue was driven mainly by concerns about climate change. The melting of ice, earthquakes, floods and other natural disasters have led the investor to awareness.

What influenced the financial side, on the other hand, are the economic scandals which, without going back far back to Enron, would suffice to think of Volkswagen and Theranos, but also the Carlos Ghosn scandal. These are issues that have very important economic impacts so it is essential to try to prevent them”.

We then asked if the ESG investments are just a trend or they may be considered as a "new normal" in the finance world.

“In my opinion, it is absolutely a new normal. The explanation is twofold. On the one hand, large operators, bankers, and asset managers are moving in this direction, motivated by marketing operations but also by the greater sensitivity shown by customers. However, this is what concerns the part related to the offer and the demand. On the other hand, there is also a regulatory part to consider. Even the regulators are starting to take an interest in the subject. For instance, the fact that ESMA has made a consultation on how to include ESG principles in the assessment of suitability has much more strategic and less marketing character. The approach will be to investigate the client's investment preferences and then apply them in the investment portfolio proposal. This suggests that this phenomenon is not just a passing thing but a distinctive element of the future

consultancy. On the other hand, all asset managers, even those that do not label products with the ESG mark, have their own assessment metrics according to these criteria. Indeed, all the asset management companies I have met, admit that they have always performed ESG analyzes. I, therefore, think that the word ESG will be part of our financial vocabulary for a few years until it will become the new normal”.

With regards to performance, we showed that an ESG portfolio would have had abnormal returns compared to a portfolio of non-ESG securities in the last eight years. In this light, do you think that this type of investments will be a systematical source of outperformance?

“At the end, it will not be decisive because everyone will assess ESG. In this way, certainly there will be those who apply the factors more effectively, but if they all level themselves in that management model, the competitive advantage will lose value. Basically, ESG is rather a measure for risk managers. It is necessary to assess the characteristics of the company, to see where the most significant risks are and to evaluate them. However, some risks cannot be predicted. You may have assessed a company and verified that it has not ecological impact, then it happens that due to some unpredictable misfortune, its ecological impact becomes higher compared to a company that, by its nature, had a very high degree of ecological impact. To be clear, all the companies that are in the oil sector have offshore platforms. You can evaluate a number of issues (maintenance, research, etc.). Then, it may happen that bad luck manifests itself in that company that you considered the less risky.

If everyone goes ESG, I think they will return to normal. Asset managers have their business valuation models. There is not a perfect model, sometimes there are someone loss while someone else earn. But eventually, they compensate each other. I think the same thing will happen if we consider the management only from the ESG point of view”.

Talking about the future, we asked if the attention of investors is moving from an ethical issue to the capability to generate higher returns and which implication this may have.

“I think ethics and profits are two sides of the same coin. Meanwhile, it is important to establish what ethics is. From a Latin point of view, it refers to the concept of giving up something to be comfortable with the conscience and therefore it refers to non-profit organizations. While the Anglo-Saxon principle refers to values of correctness, and transparency and is not an element that sees its realization in the deprivation of profits.

Here, ethics should be interpreted in the Anglo-Saxon sense of the term. I think the goal is to minimize the risks of ecological impact and increase the social impact that, after all, it should have an advantage. In fact, that diversity leads to greater sharing and proliferation of ideas and solutions while the governance part reduces the costs of concentration of power and corruption. In reality, it could be a disadvantage for the company in the short term but it will certainly be an advantage in the long run. The performance part and the ethics one goes together. I think that what is really distinctive about the ESG approach is that the finance has a great opportunity to lead the world. So far, the finance has had the task of intermediating the offer and the demand. Those in surplus and those in need of funds saw finance as a way to satisfy their needs. With ESG, however, it is established what is right and what is not and, consequently, we can invest in what is right and disinvest in what is not. A fundamental prerequisite on this point is that what is considered right is something shared by everyone”.

Finally, we asked some considerations about the credit framework. He admitted that banks are considering ESG factors in assessing the creditworthiness of companies and they will be considered with more attention in the next year. However, he sees the ESG rating as the only obstacle in integrating ESG assessments. While data for publicly-listed companies are available and public, for small businesses, assigning (and maintaining) an ESG rating is very expensive.

We had the pleasure to interview Andrea Maraldi. He has been working in the asset management for more than 19 years. He is one of the most expert in the investment field

in Credit Agricole Italy. Commenting on the results of the last analysis of this work (chapter 5), he says:

“...The bottom line, however, is convincing. The capital market is made up of supply and demand. The growth of ESG and attention toward environmental issues in the world of finance may have increased significantly the demand for ESG investments, both in the form of debt and equity. This could cause a price distortion. Therefore I would not be surprised if companies with high ESG engagement are raising capital at a lower price than from what is justified by their balance sheet”.

In the light of his experience, we asked for opinions and perspectives for the next years:

“Surely the theme is twofold, on one side there is the pure environmentalism, therefore a niche of people really interested in environmental issues from an moral and ethical point of view (which I believe is a minority). On the other side there are investors that are more attracted by marketing campaigns and investment opportunities. From a financial point of view, if this premise is correct, the distortions that are being generated should be absorbed over time. To be clear, I believe that the flow towards ESG issues will be dominant for a few more years, in that way all the asset management products will be ESG oriented, there will not be an ESG issue and companies will return to be priced based on their fair value so the distortions just described should be remedied”.

CONCLUSIONS

The financial industry plays a critical role not only for delivering an inclusive growth but also for building a brighter future. Including ESG factors into investment decisions means to finance more sustainable businesses and strengthen financial stability. However, the application of ESG factors sees the first hurdles in the rating sector.

In fact, the ESG rating industry, despite being saturated, seems to show weaknesses and misleading results. We firstly showed that ESG vendors are integrating new criteria into their assessment models to respond to new global challenges. In particular, attention is shifting towards anti-competitive practices and antitrust policies, suggesting that ESG factors will be included in the financial analysis more frequently as a risk factor rather than as an ethical issue.

On chapter 2 and 3, we explored the differences in methodology of seven ESG rating vendors (Table A). We then performed an overlap analysis to find similarities between different ESG Indices developed by four providers. The inconsistency of the results provided by agencies has been proved by the small overlap coefficients. A company could be judged positively by one agency in terms of ESG engagement, while another agency could give an opposite judgment. We explain this discrepancy by the lack of a globally accepted standard methodology and minimal technical requirements such as a clear taxonomy that prompted agencies to develop their own methodology to assess ESG exposure.

Giving an indisputable definition of what is considered sustainable and what is not may help investors to select ESG target for their investments and companies to find the information they need to be included into ESG indices.

This first result is very meaningful and cannot be overlooked. If ESG rating providers fail in delivering objective and accurate evaluations, then all the research, based on such ratings, will be incorrect and the hope of achieving a better and greener growth faded.

However, some important efforts have been made to mitigate this risk. Today, many jurisdictions require ESG reporting and disclosure from companies. The European

Commission (EC) has shown itself to be very sensitive to this issue. An important step forward was taken with the Directive 2014/95/EU. It requires companies to disclose “on the way they operate and manage social and environmental challenges²⁹”. From that moment, Brazil, South Africa and other countries have taken similar steps. Moreover, the Securities Regulatory Commission in China will begin mandating all listed companies and bond issuers to disclose ESG risk associated with their operations by 2020. Other important actions were taken in September 2015 with the adoption of the UN 2030 Agenda for Sustainable Development and the signature of the Paris Agreement on Climate Change in December 2015.

Furthermore, considering the recommendations of the High Level Expert Group (HLEG), on 7 March 2018, the European Commission launched the Action Plan on Financing Sustainable Growth. The latter provides a roadmap on how to promote more sustainable investments and a taxonomy for mitigating climate risk³⁰.

In chapter 4 we refute the Merton (1987) arguments, which may suggest that the stocks excluded by indices will have higher returns with respect to high ESG shares. In doing so, we performed a portfolio analysis. Using the MSCI World ESG Screened we created a "SIN" portfolio containing all those securities excluded from a negative ESG screening. Then, we built an "ESG" portfolio in order to reflect the first to avoid allocation biases. The research question of the chapter is whether ESG investment are able to outperform the “sin” ones. The results display that an ESG investment would have had abnormal returns in the last 8 years in comparison with a “sinful” investment. The results are supported by a significantly higher Sharpe Ratio. Furthermore, by performing a sectoral analysis, we found that the outperformance of ESG investments is closely linked to the relevance of ESG issues in business activities. Specifically, we documented that the outperformance of ESG investments is enhanced in those sectors with a high probability of facing problems related to ESG factors and with a high degree of impact.

²⁹ Source: https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting_en

³⁰ A draft copy is available at: https://www.eib.org/attachments/fi/eib_hleg.pdf

However the reliability of the results of this first analysis, is strictly correlated with the goodness of the negative screening made by MSCI.

We take into account the incompatibility of the ratings offered by different agencies to develop three hypothesis in Chapter 5. Cornerstone of the chapter is the rating provided by Sustainalytics and RebecoSAM. Firstly, through cross sectional regressions, we verified the negative effect of ESG rating on corporate bond yield. Moreover, we found that high ESG rating is associated with low credit risk. Secondly, using information about US corporates, we created two sub-samples representing high and low-ESG stocks. The samples have been adjusted for credit risk in order to enhance further considerations regarding the effect of ESG ratings. As a second hypothesis, we verified that high ESG stocks pay a lower cost of capital. As a matter of fact, high ESG stocks seem to have a WACC three times lower than low ESG stocks. Finally we explore the approach to the debt of high ESG companies. We documented that low ESG companies are experiencing an increase in debt, while ESG companies are reducing their exposure to debt, showing, on average, an higher *external equity financing*. It might be possible that high ESG rated companies are issuing more equity in order to exploit the moment of high prices with the intention of repurchasing them when the prices will go down. However, the results are questionable due to the size of the sample. We leave suggestions and a good empirical basis for further research.

If the low ranked ESG firms will continue to have a WACC higher, they will be forced to change their behaviour and becoming more ESG oriented. In this way, we can hope for a radical change in production activities towards a more sustainable approach. A change that has the environment, society and governance at heart. A change driven by finance.

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APPENDICIES

APPENDIX A - Portfolio constituents

ESG PORTOFOLIO

CENTERPOINT ENERGY INC	NORFOLK SOUTHERN CORP
UGI CORP	RAYTHEON COMPANY
EVERSOURCE ENERGY	ILLINOIS TOOL WORKS
APA GROUP	SIEMENS AG-REG
ATMOS ENERGY CORP	GENERAL ELECTRIC CO
SEMPRA ENERGY	COSTCO WHOLESALE CORP
AMERICAN WATER WORKS CO INC	COCA-COLA CO/THE
VEOLIA ENVIRONNEMENT	UNILEVER NV
CENTRICA PLC	UNILEVER PLC
NATURGY ENERGY GROUP SA	DIAGEO PLC
NATIONAL GRID PLC	PEPSICO INC
HONG KONG & CHINA GAS	PROCTER & GAMBLE CO/THE
TERNA SPA	INGREDION INC
VERBUND AG	CARREFOUR SA
UNITED UTILITIES GROUP PLC	MONDELEZ INTERNATIONAL INC-A
EDF	ENBRIDGE INC
AUSNET SERVICES	CHEVRON CORP
SUEZ	EXXON MOBIL CORP
ENGIE	TOTAL SA
SSE PLC	BP PLC
SEVERN TRENT PLC	TC ENERGY CORP
RED ELECTRICA CORPORACION SA	SCHLUMBERGER LTD
FORTUM OYJ	EOG RESOURCES INC
PUBLIC SERVICE ENTERPRISE GP	CONOCOPHILLIPS
NEXTERA ENERGY INC	HOME DEPOT INC
EDISON INTERNATIONAL	NIKE INC -CL B
CONSOLIDATED EDISON INC	FAST RETAILING CO LTD
CANADIAN UTILITIES LTD-A	TOYOTA MOTOR CORP
EXELON CORP	BOOKING HOLDINGS INC
E.ON SE	MCDONALD'S CORP
SNAM SPA	BURBERRY GROUP PLC
TOHO GAS CO LTD	LVMH MOET HENNESSY LOUIS VUI
UNION PACIFIC CORP	STEEL DYNAMICS INC
UNITED PARCEL SERVICE-CL B	LINDE PLC
L3HARRIS TECHNOLOGIES INC	BASF SE
DEERE & CO	RIO TINTO PLC
CANADIAN NATL RAILWAY CO	SHERWIN-WILLIAMS CO/THE
3M CO	ECOLAB INC
G4S PLC	AIR PRODUCTS & CHEMICALS INC
CSX CORP	DUPONT DE NEMOURS INC
BUNZL PLC	AMERICAN TOWER CORP
CATERPILLAR INC	WALT DISNEY CO/THE
WASTE MANAGEMENT INC	JOHNSON & JOHNSON
CISCO SYSTEMS INC	

SIN PORTOFOLIO

FORTIS INC	LEONARDO SPA
CLP HOLDINGS LTD	LOCKHEED MARTIN CORP
ATCO LTD -CLASS I	ELBIT SYSTEMS LTD
NRG ENERGY INC	FLUOR CORP
POWER ASSETS HOLDINGS LTD	BRITISH AMERICAN TOBACCO PLC
AGL ENERGY LTD	SWEDISH MATCH AB
RWE AG	IMPERIAL BRANDS PLC
EVERGY INC	SEVEN & I HOLDINGS CO LTD
AMERICAN ELECTRIC POWER	PHILIP MORRIS INTERNATIONAL
CMS ENERGY CORP	ALTRIA GROUP INC
DOMINION ENERGY INC	WALMART INC
DUKE ENERGY CORP	ALIMENTATION COUCHE-TARD -B
ENDESA SA	TESCO PLC
ENTERGY CORP	JAPAN TOBACCO INC
NISOURCE INC	ROYAL DUTCH SHELL PLC-A SHS
OGE ENERGY CORP	ROYAL DUTCH SHELL PLC-B SHS
PPL CORP	IMPERIAL OIL LTD
PINNACLE WEST CAPITAL	CANADIAN NATURAL RESOURCES
SOUTHERN CO/THE	SUNCOR ENERGY INC
WEC ENERGY GROUP INC	ORIGIN ENERGY LTD
ALLIANT ENERGY CORP	WASHINGTON H. SOUL PATTINSON
AES CORP	DEVON ENERGY CORP
KANSAI ELECTRIC POWER CO INC	HUSKY ENERGY INC
TOKYO ELECTRIC POWER COMPANY	JARDINE CYCLE & CARRIAGE LTD
CK INFRASTRUCTURE HOLDINGS L	RINNAI CORP
EDP-ENERGIAS DE PORTUGAL SA	SANKYO CO LTD
FIRSTENERGY CORP	SWATCH GROUP AG/THE-REG
AMEREN CORPORATION	CIE FINANCIERE RICHEMONT-REG
EMERA INC	PORSCHE AUTOMOBIL HLDG-PRF
ENEL SPA	SHANGRI-LA ASIA LTD
DTE ENERGY COMPANY	ABC-MART INC
XCEL ENERGY INC	ANGLO AMERICAN PLC
JARDINE MATHESON HLDGS LTD	KANEKA CORP
HONEYWELL INTERNATIONAL INC	CELANESE CORP
BOEING CO/THE	BARRICK GOLD CORP
GENERAL DYNAMICS CORP	BHP GROUP LTD
JACOBS ENGINEERING GROUP INC	FREEPORT-MCMORAN INC
NORTHROP GRUMMAN CORP	EASTMAN CHEMICAL CO
TEXTRON INC	BHP GROUP PLC
UNITED TECHNOLOGIES CORP	RIOCAN REAL ESTATE INVST TR
BAE SYSTEMS PLC	QUEBECOR INC -CL B
CIMIC GROUP LTD	BAYER AG-REG
THALES SA	LEIDOS HOLDINGS INC
JARDINE STRATEGIC HLDGS LTD	

APPENDIX A.2

<i>Regression Statistics</i>	
Multiple R	0.997235
R Square	0.994477
Adjusted R Square	0.994475
Standard Error	4.931326
Observations	2246

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	9826465.63	9826466	404082.4294	0
Residual	2244	54569.5315	24.31797		
Total	2245	9881035.16			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	1.072623	0.17670281	6.070209	1.49561E-09	0.726105	1.419141	0.726105	1.419141
SIN Portfolio	1.22088	0.0019206	635.6748	0	1.2171132	1.224646	1.217113	1.224646

Note: Regression between the ESG Portfolio returns and the SIN Portfolio returns. The results show a positive alpha, which confirm the outperformance of the first portfolio in comparison with the second over the last eight years

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Thank you very much

Carmelo Latino

