UNIVERSIDADE CATÓLICA PORTUGUESA

A Survey of the literature on CSR, ESG, Green Finance and Circular economy

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A Survey of the literature on CSR, ESG, Green Finance and Circular economy

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by

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Resumo

No presente artigo são abordados de forma cronológica os temas de Corporate Social Responsibility (CSR) e Environmental, Social and Governance (ESG) que são os pilares que sustentam o surgimento de toda uma abordagem em torno de Green finance, tanto no contexto europeu como no contexto global. Para o efeito, de modo a serem atingidas determinadas metas definidas pelas Nações Unidas e pela Comissão Europeia são consideradas medidas como a economia circular e a utilização de instrumentos financeiros que a permitam a sua implementação. Estes são observados e descritos em termos das respetivas funções e valor total investidos. Ainda, de forma a verificar os efeitos resultantes destas novas práticas sustentáveis, são também efetuadas análises de estudos empíricos da literatura financeira de forma a compreender melhor as dinâmicas no contexto real.

Palavras-chave: CSR, ESG, Green Finance, Circular economy,

Nº de palavras: 8907

Abstract

This article chronologically addresses the themes of Corporate Social Responsibility (CSR) and Environmental, Social and Governance (ESG), which are the pillars supporting the emergence of an entire approach to Green finance in both the european and global contexts. To this end, to achieve certain targets, set by the United Nations and the European Commission, measures such as Circular economy will be considered as well as use of financing instruments that enable its implementation. These are observed and described in terms of the respective functions and total amounts invested. Furthermore, to verify the effects resulting from the new sustainable practices, some analyses of empirical studies are also carried out to better understand the dynamics in the real context.

Keywords: CSR, ESG, Green Finance, Circular economy,

Word count: 8907

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Introduction

Social issues have been, since the second half of the 20th century, a key corporate concern that has merited special attention. It is clear the trend for the financial world to instill metrics that encompass sustainability, the so-called Green finance, and there are already several platforms dedicated to this. In particular, the European Commission presents many projects that incorporate considerable regulation with the support of financial instruments designed specifically to support the transition to a Circular economy. However, empirically, there are some gaps and contradictions as to the impact that more responsible and "greener" policies have on companies´ financial parameters, namely the cost of capital and default risk, which could be an object for more detailed study in the future.

In this sense, the present study, divided in four chapters, aims to review the literature on Corporate Social Responsibility, Environmental Social and Governance, Green financing, Circular economy, Financing instruments and Empirical evidence. The first chapter comprises the description of the chronological evolution of the Corporate Social Responsibility (CSR) and Environmental, Social and Governance (ESG) concepts, which have gained a lot of preponderance in terms of the amounts invested. Next, the Chapter 2 makes a brief description of the main goals proposed by the United Nations to fight climate change and how the European Commission foresees the adaptation of the economy and the different social sectors to the necessary changes, through

plans such as the European Green Deal and the Taxonomy regulation. One of the changes is the transition to a Circular economy where there is a whole different process and scheme in the product design, production, and use. To turn these ideals into concrete practices it is necessary a significant investment and in this sense the Chapter 3 presents some tools that are already in use and are of special importance, namely green bonds. Finally, to understand the relation between the ideals advocated and the respective impact, Chapter 4 provides a literature review from which some relevant conclusions can be drawn about the impact of adopting CSR and ESG practices on the company´s value, its risk and the importance of the value assigned to ESG rating in investment.

Chapter 1
Corporate Social Responsibility and ESG

1. Corporate Social Responsibility

The concept of Corporate Social Responsibility (CSR) has been widely explored since the middle of the 20th century. Both articles of Carroll (1999) and Loew et al. (2021) describe the evolution of the concept and summarize the most relevant contributions to this strand of the literature. It was in the 1950´s that the concept, despite vague, was first formalized. A remarkable and pioneer work in this topic was presented by Bowen, (1953). The author argues that companies have the responsibility of addressing the needs of society at large. Davis (1960), argues that CSR would go further than the mere firm economic benefit, making room for a broader comprehension of the concept. While Frederick (1960) focusses his contribution on the most efficient resource allocation that contributes to the social welfare beyond profit maximization, McGuire (1963) points to the need of a greater commitment of the firm to social, political, and community obligations.

Considering the work of the following decade, the 70s, both Carroll, (1999) and Loew et al. (2021) mention the work of the Committee for Economic Development as one of the most preponderant, taking the lead in defining CSR in 3 concentric circles: the inner, intermediate and the outer one. As Carroll (1979) summarizes, (i) the inner circle corresponds to the main economic responsibilities

that should be pursued by the corporations and taken into consideration as their priority; (ii) the intermediate circle incorporates some principles that should guide the core activity of business; and (iii) finally the outer circle is defined by criteria that concerns the whole social context of the company. Furthermore, they point out the famous debate of Manne & Wallich, (1972) and the contribution of Sethi (1975)[1] on the distinction of different concepts of "social obligation", "social responsibility" and "social responsiveness", adding a well-defined perspective of CSR.

Following this evolution of the CSR concept and taking into consideration extant literature, Carroll (1979) presented "A Three-Dimensional Model", in which the author first describes the real meaning of social responsibility, comprising economic, legal, ethical, and discretionary dimensions. Figure 1 summarizes the dimensions of the model.

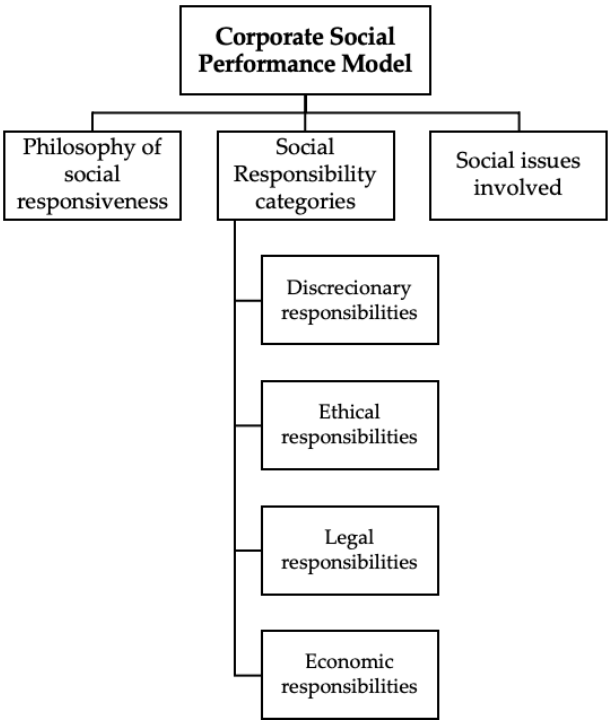

Figure 1 - Corporate Social Performance Model, adapted from Carroll (1979)

[1] Sethi, (1975) clarifies some aspects related with Corporate Social Responsibility and differentiates them in order to make this concept more understandable due to the multiple definitions that have arose in the previous decades.

This was followed in the coming decade by the appearance of similar concepts to CSR like "(…) corporate social *responsiveness*, corporate social *performance*, public policy, business ethics, and stakeholder theory/management (…)", (Carroll, 2009)[2].

Later, Carroll (1991) would revise his own works and proposed an approach in which the concept of discritionarity was replaced by the term "philanthropy" that incorporates the notion "corporate citizenship". Furthermore, defined the pyramid of CSR, ordering the dimensions that construct the concept, considering the economic aspects as the base, i.e., the main concern of the firm, followed by legal and ethical aspects and at the top philanthropic responsibilities. Additionally, Carroll (1991) offered the following definition: "(…) the CSR firm should strive to make a profit, obey law, be ethical, and be a good corporate citizen.". Figure 2 presents the scheme.

Figure 2 - The Pyramid of Corporate Social Responsibility, adapted from Carroll (1991)

Carroll (1999) clearly noticed the impact CSR has on business in every dimension of society, leading to the 21st century turning point in terms of the way global organizations saw it, such as United Nations which created the Millennium Development Goals and launched the United Nations Global Compact (Latapí Agudelo et al., 2019).

[2] See Jones (1980), Freeman (18984), Wartick and Cochran (1985) and Epstein (1987)

2. ESG: Environmental, Social and Governance

ESG is the abbreviation for the three major issues that have been increasingly represented in the financial world: Environmental, Social and Governance. According to CFA Institute, (2022), Environmental concerns the aspects related with the natural resources and its conscient use; Social is about how people are treated considering aspects as gender equality, employee relations, and human rights; and Governance refers to the context in which the company is inserted, concerning its board, the executive issues.

These questions are not new and have been addressed for some time, however under the denomination of CSR. It was in 2004 that ESG abbreviation was first introduced in "Who Cares Wins", (United Nations & Swiss Department of Foreign Affairs, 2004), a report based on the initiative of the former UN Secretary-General, Kofi Annan, based on which a set of companies with relative global expression adopted and incorporated in their functioning practices aligned with social, governance and environment concerns not only for the positive impact it would have in society and environment, but also for the possible gains it could bring. In addition to these, the report also targets other economic agents such as investors, financial institutions, regulators, NGOs, among others.

In 2006, Principles for Responsible Investment (PRI) were defined, which consists of 6 objectives all related with ESG investment, as presented in Figure 3. After the pandemics, the PRI were updated given the challenges ahead and goals for the 2021-2024 period were set.

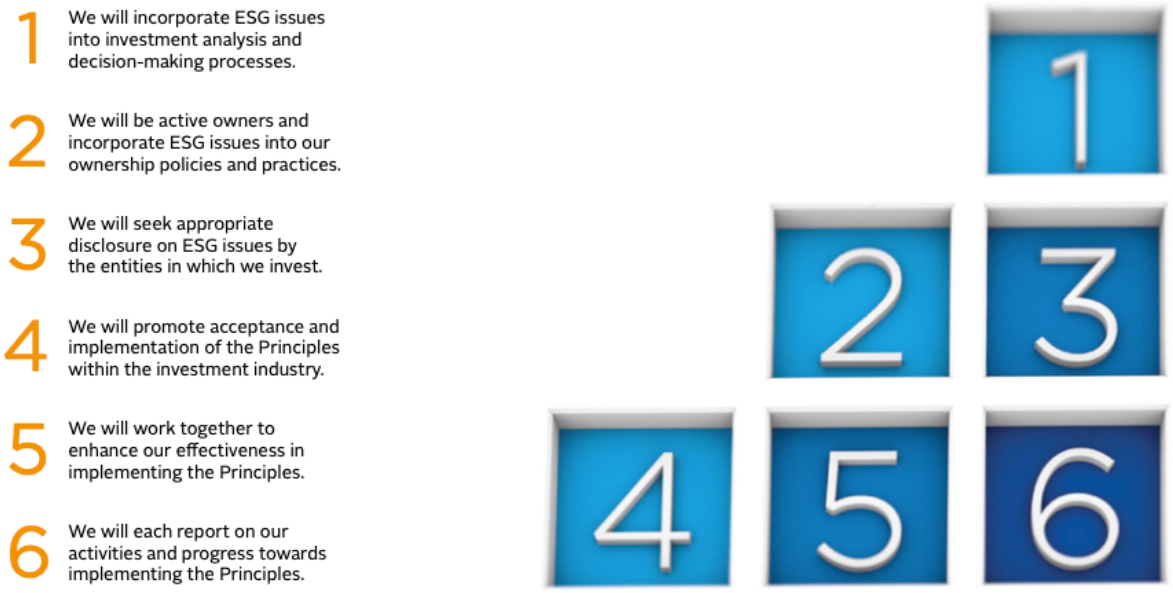

Figure 3 - Principles of Responsible Investment, PRI (2021)

In 2015, the United Nations, with the support of other governmental institutions, presented the 2030 Agenda. This report fully emphasizes sustainability which rests on three pillars: environmental, social and governance. Thus, the main objective is to develop appropriate measures for each of these, including measures aimed at eradicating hunger/poverty until 2030, fighting climate change while ensuring the preservation of natural resources, promotion of gender and racial equality among others that together add up to 17 major sustainable development goals (SDGs) and 169 targets.

Sustainable Development Goals

1. No poverty
2. Zero hunger
3. Good health and well-being
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Industry innovation and infrastructure
10. Reduced inequalities
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below water
15. Life on land
16. Peace, justice, and strong institutions
17. Partnership for the goals

In this year, it was also established in the Paris Agreement a general commitment of the signatory countries to limit the temperatures increase to 1.5 degrees having as a reference the pre-industrial levels.

There is a common agreement on the solutions to fight climate change between these two treaties as mentioned in the work of Brühl, (2021).

According to Schröder and Raes (2021), ESG investment has been increasing rapidly due to the contribution of large asset management and investment banking institutions such as BlackRock and BNP, along with the definition of circularity metrics developed by "(…) UNEP Finance Initiative, the World Business Council for Sustainable Development and Ellen MacArthur Foundation (…)".

Lioui and Tarelli (2021) point out that the annual variation of 5 billion USD in the period comprehending 2014 and 2018 in the amount invested in ESG funds, which proved to be greater in the following years, achieving the value of a plus 50 billion dollars in 2020. Data from Bloomberg (2022a) shows that the amounts projected for investment were surpassed by the real investment, Figure 4 and Figure 5. Accordingly, in 2020 the total amount invested in ESG assets was higher than $35 trillion and the projections for the next years indicate that this amount may surpass "(…)$41 trillion in 2022 and $50 trillion in 2025" (Bloomberg, 2022b). However, there are some risks that shall be addressed such as greenwashing and other regulations that make it possible to achieve these values. Flammer (2021), verifies that in fact greenwashing plays no significant role in the companies who decide to issue green bonds due to the real contribution of these to companies.

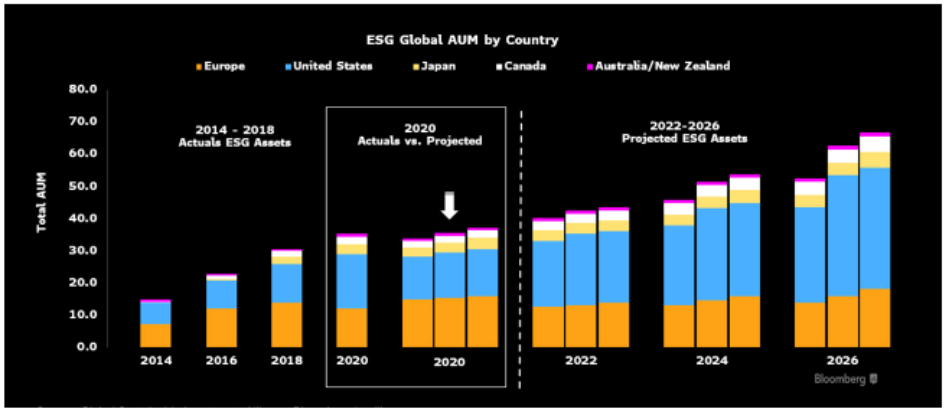

Figure 5 - ESG assets under management, Bloomberg

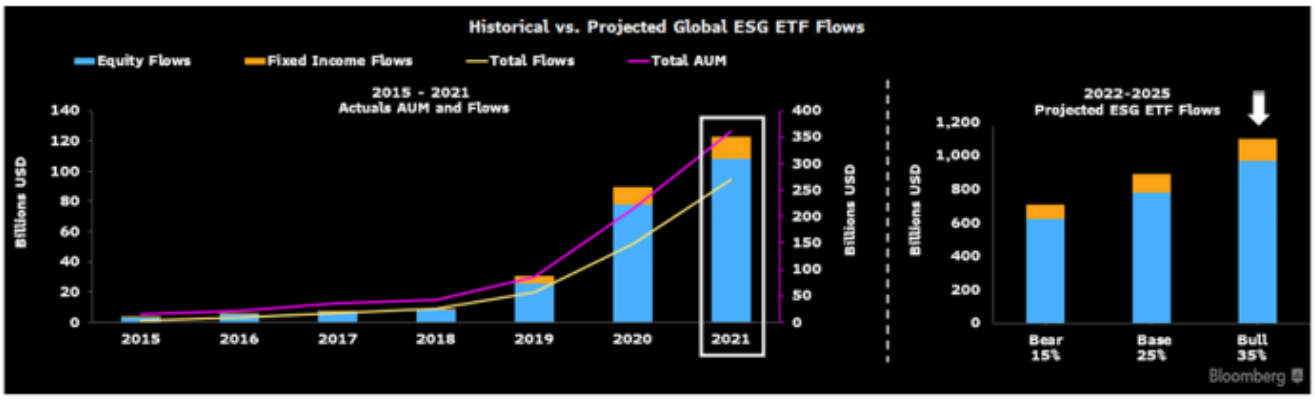

Figure 4 - ESG investment values, Bloomberg

The greater investment demand that is portrayed in the recent statistics is the reason why multiple ESG rating agencies exist in the market due to the necessity of a guarantee that the companies´ commitment to ESG causes is real and is being properly monitored and is important to study due to the use of the ratings by the investors as criteria for their investment decisions. The consequences of this may be reflected in the amount allocated to ESG funds because there might be an improper influence on stock prices due to divergences in the rating values and so the companies can lose interest in pursuing their investment decisions. Also, the conclusion of the studies may differ and sometimes be opposite due to the disparity of methodologies used. Among them the most popular rating agencies are the six described by Berg et al., (2019) in their study: "(…) KLD (MSCI Stats), Sustainlytics, Vigeo Eiris (Moody´s), RobecoSAM (S&P Global), Asset 4 (Refinitiv) and MSCI".

The addressment of ESG issues go further and ultimately leads to the topic of climate justice, (Puaschunder,2021), which comprises the intergenerational and interregional cooperation in order to guarantee the equity between the ones who created the problems lived nowadays and the ones who will have to face the consequences in the near future, and the same applies to the countries that contributed more to the greenhouse effect and carbon emissions and spread its harmful consequences to other regions that played no part in this pollutant process. In order to find the most suitable solutions will be necessary a good understanding of the damages and the application of proper taxation within and between countries.

Recently, UN Change Conference UK 2021, (2021) reinforced the need to fight temperatures rise and relied on 4 pillars: (1) Mitigation of net-carbon emission, (2) Adaptation of new projects , (3) Finance that consists in an amount of about $100 billion until 2030 and (4) Collaboration of the global community.

Chapter 2
Green Financing

1. What is Green Financing?

The recent work of Brühl (2021) presents a useful and complete description of the current green finance framework in Europe and names the most influential reports to address the current needs. Climate change is at the center of the coming transformations and, as a response, the European Commission will implement an investment of about €1 trillion to be made in the next decade.

After the Paris Agreement, the European Commission intended to apply some measures and charged a group of specialists, a High-level Expert Group, to the application of the Action Plan which would extend to various dimensions, like: (i) the definition of the European Taxonomy; (ii) the definition of regulation for the financial and non-financial sector, by Sustainable Finance Disclosure Regulation and Corporate Sustainability Reporting Directive; and (iii) other initiatives that could be adopted by a larger fraction of economic agents in which is included the European Green Bond Standard, (Maragopoulos, 2021).

In 2017, urged the need to find a concrete meaning of the term "green", and the European Commission (EC, 2017) compelled institutions to define the taxonomy and other relevant instrumental criteria to be applied in the context of

green finance. In this sense, and to allow the global convergence around the improvement of climate conditions in the future, the EU has defined the European Green Deal, (EC, 2019). In this report, it is clearly expressed the will to change the paradigm and converge to a society in which there is an instituted climate awareness. To this end, it is necessary to rethink the resource allocation and distribution and reduce the carbon footprint while maintaining the functioning of society. The main concern is, therefore, sustainability and the measures proposed to promote it range from "transformative policies", based on the offering of solutions for the changes the different sectors will undergo in the coming decades, the Climate Law and a plan which intends to "(…) increase the EU´s greenhouse gas emissions reductions target for 2030 to at least 50% and towards 55% compared with 1990 levels (…)". On the financial side, it was created the Sustainable Europe Investment Plan, which oversees the investment needs for the future and the application of the Just Transition Mechanism, and the measures proposed are best achieved with the collaboration of the member states.

Considering the operational part, the Taxonomy Report, (EU Technical Expert Group on Sustainable Finance, 2021), provides the technical framework for the distinction of economic activities based on the three main principles: (1) Make a substantive contribution to one of six environmental objectives; (2) Do no significant harm (DNSH), (3) Meet the minimum safeguards. Considering (1) the six objectives are: 1. Climate change mitigation, 2. Climate change adaptation, 3. Sustainable use and protection of water and marine resources, 4. Transition to a circular economy, 5. Pollution prevention and control, 6. The protection and restoration of biodiversity and ecosystems. The First Delegated Act targets the first two principles mentioned and entered in force in the beginning of 2022 thus facilitating the investment that directly benefits these goals. The development of Taxonomy Report allowed the construction of the (Platform on Sustainable

Finance, 2021) about Transition Finance, which was specifically prepared to allow activities not directly related to Taxonomy criteria to be financially supported to adapt to the major changes ahead. Brühl, (2021) summarizes the involved phases in the Taxonomy plan as presented in Figure 6.

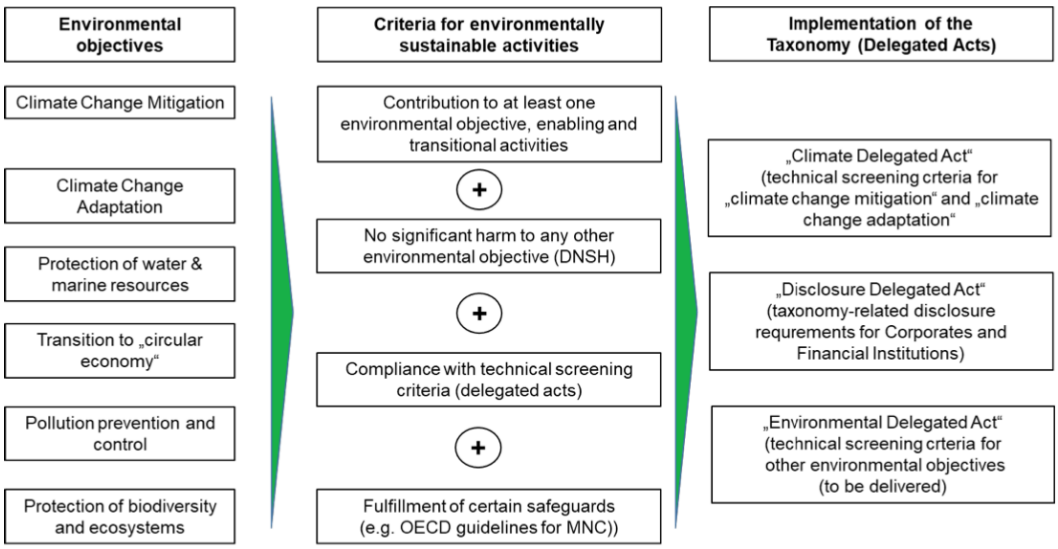

Figure 6 - Taxonomy Design, Brühl (2021)

Finally, Figure 7, provides a useful scheme of the interactions between the different directives and plans mentioned.

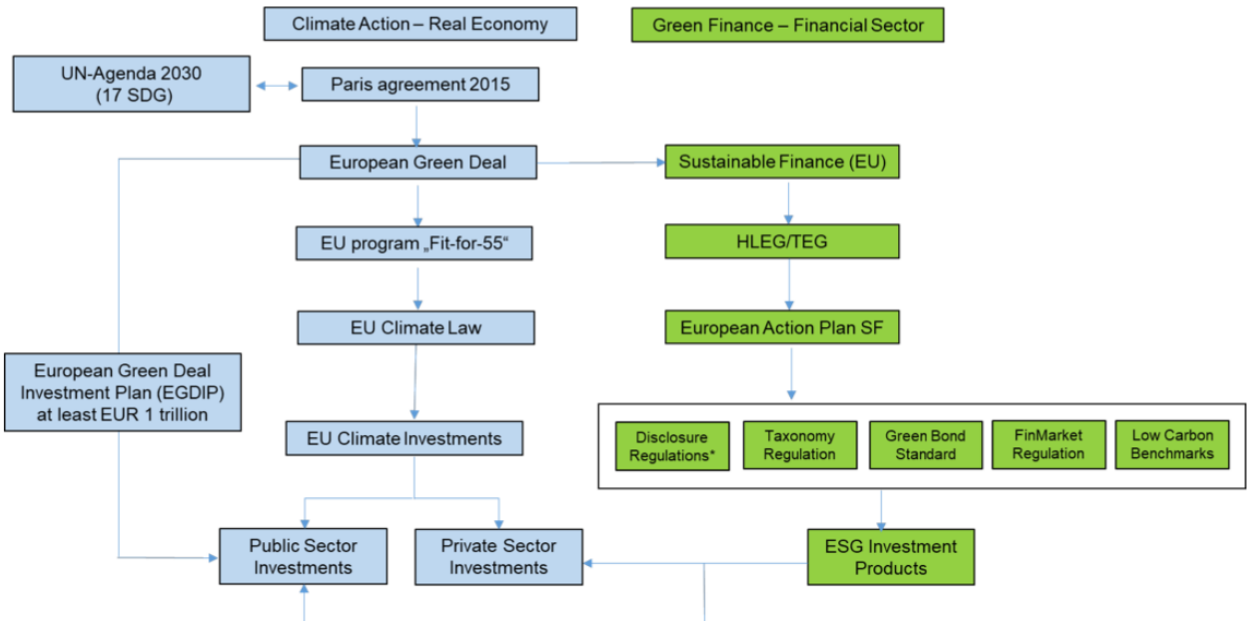

Figure 7- Connection between climate change and green initiatives in Europe, Brühl (2021)

2. Circular economy

Climate change is happening, and several areas are addressing this issue to find solutions for the coming changes. In this sense, the concept of circular economy is extremely important as it refers to the conscious use of product, moving from a linear life cycle approach to a circular one. In other words, it is not necessary that a product becomes useless once it has been used, as it can be recycled and reused for other purposes, (Ellen MacArthur Foundation, 2013).

Ellen MacArthur Foundation (2013; 2015) reports enhance the limits of linear consumption and, at the same time, recognize the opportunities of the circular economy for the future, adding that most of the agents, i.e., companies, customers, and governments, can all take advantage of this new concept. For companies, there are benefits regarding pricing and risk if they invest in new business models that have a different design and can accommodate a lower dependence of resources. Ellen MacArthur Foundation (2015) then goes on to present the concept of *growth within*, which comprehends a framework in which is possible to foster economic development while endowing sustainable practices that imply less resource dependence. The process brings advantages to the company in terms of gains and cost reduction. In this sense, the circular economy allows value creation and (1) Preserves and enhances the natural capital; (2) Optimizes resource yields; (3) Fosters system effectiveness. Figure 8 illustrates the dynamics of the whole process.

Although this concept is proliferating, Kirchherr et al. (2017) consider that there is a certain imprecision when it comes to define it. Therefore, the authors present the following framework for circular economy: "(…) an economic system that replaces the "end-of-life" concept with reducing, alternatively reusing, recycling, and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso-

level (eco-industrial parks) and macro-level (city, regions, nation and beyond), with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity, and social equity, to the benefit of current and future generations."

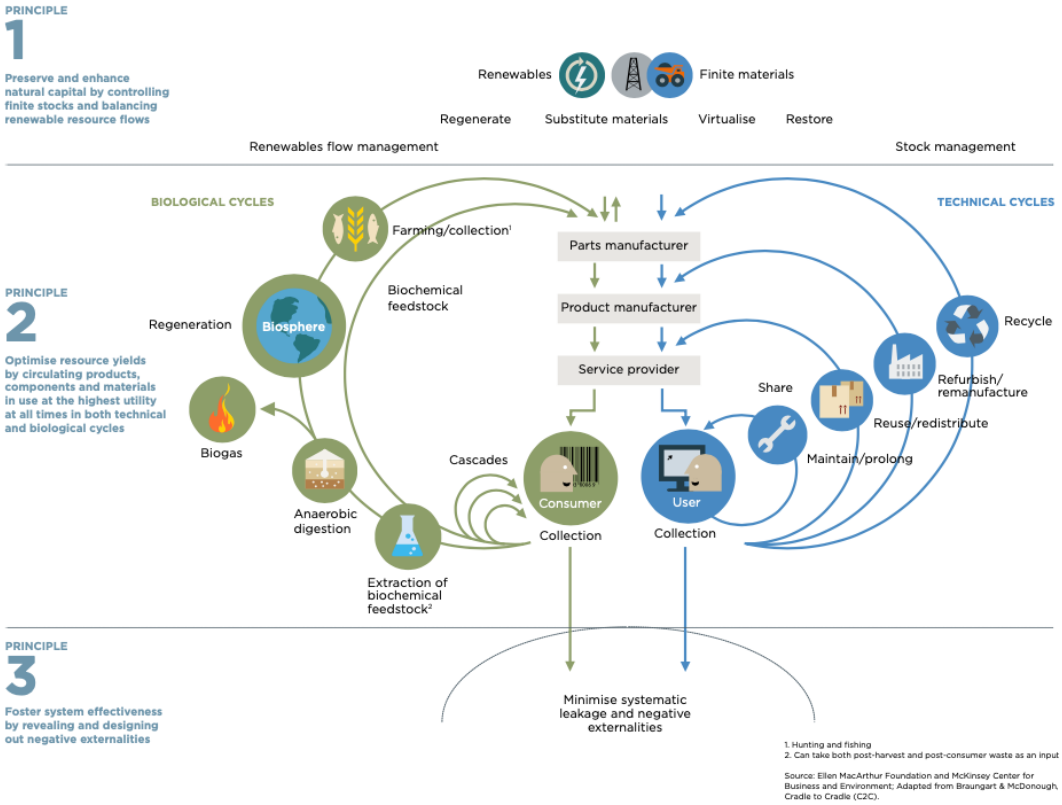

Figure 8 - Circular economy butterfly diagram, Ellen MacArthur Foundation (2015)

Potting et al. (2017) highlight the importance of considering product chains in the context of circular economy since the larger the chain, the higher tends to be the level of circularity. Considering the need for the transition there are at least three types of innovation necessary for the product chains: (1) Emergence of new technologies, (2) The socio-cultural transition where innovation is not the focus and (3) The socio-cultural transition that is supported by the available economy and sharing economy. One way to allow greater circularity within the product

chains is by applying the 9Rs definition: Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Recycle and Recover as presented in the Figure 9.

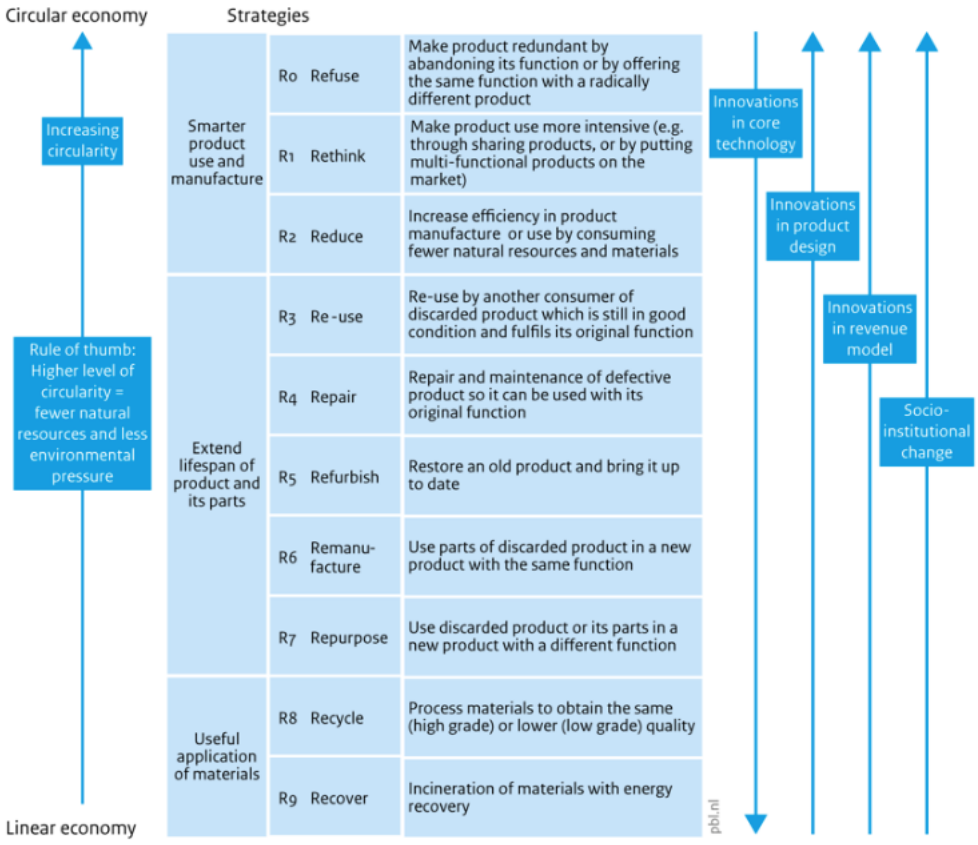

Figure 9 - 9Rs, Potting et al. (2017)

Considering that circular economy is a relatively new topic, there is little research on its impact in finance. Nonetheless, Zara and Ramkumar (2021) conclude that there is a positive influence of the application of the concept in industries since those with higher occurrence of circularity, proxied by the circularity score, are less likely to be in risk of default. Thus, circularity had an influence on the ability of companies to cope with negative events, such as the pandemics, as well as lower degree of volatility.

Chapter 3
Financing Instruments

1. Financing Circular Economy

Both United Nations and European Union are two of the leading institutions doing further research in circular economy. In Europe, before COVID-19, the need for a faster transition to circularity was recognized. However, only in March 2020, the European Commission (2020) gained prominence by defining 4 categories of circular economy and 14 subcategories. The main group focuses on: (1) The schematization and design of the productive processes in order to incorporate innovative and sustainable technology, (2) Better resource management during the and after the use phase, (3) Waste treatment and how the recycling and reuse steps are prepared so that some value can be retained, (4) Support of other activities that can contribute to the rational use of resources, the emphasis is on the dissemination of the concept of circularity through new technologies.

Considering the work of UNEP Finance Initiative (2020), the pandemic crisis has opened the possibility to put more focus on the necessary transition efforts to a wider circular economy, considering the following main targets: pollution reduction, better resource management, and waste reduction. Thus, the COVID-19 recovery period is favourable for banks and other financial institutions aiming to finance circularity, which could form an integral part of its strategy, and can

best be achieved with appropriate government support. Furthermore, this study highlights the importance of properly presenting the risks and opportunities associated with proper application of the 9Rs.

2. Instruments

This section presents the financing instruments typically used to finance circular economy based on United Nations and other renowned institutions in the sustainability field.

As suggested by Bloomberg (2022a), the total value of issuance of these instruments reached nearly $1643.7 billion dollars in 2021.

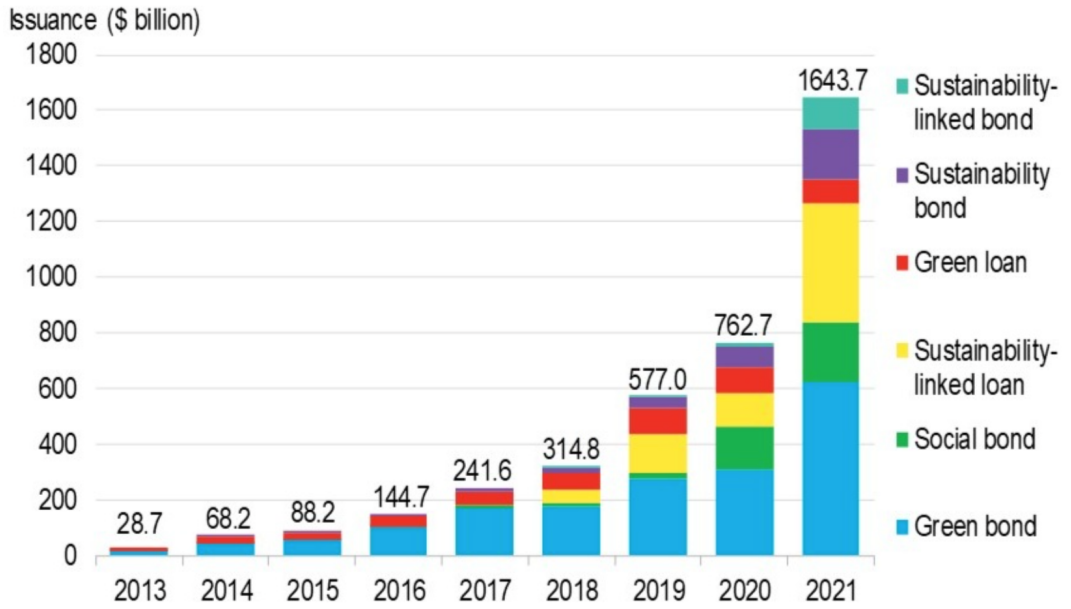

Figure 10 - Sustainable finance instruments value, Bloomberg (2022)

2.1 Green Bonds

There has been a recent spurt of investment in green bonds. Tang & Zhang, (2020) mention its environmental purposes such as financing green projects or aiming at reducing carbon emissions. In addition, they present an introduction to the development of green bonds in recent years with the first issue occurring in 2007 by the European Investment Bank (EIB). Poland was pioneer in issuing government bonds in 2016 and was followed by France and the USA in 2017. Schröder & Raes, (2021) enhance the first bank, Intesa Sanpaolo, to embrace the issuance of " (…) a sustainability bond in line with the green bond mechanism(…)" and add that even during COVID-19 the total amount issued in the first quarter of 2021 was of more than €81 billion. The current information provided by Statista, (2022) shows that USA is the leading country of green bond issuance with an amount of $81.9 billion issued in 2021, followed by China with $68.1 billion and Germany with $63.2 billion.

Considering this investment volume, it is crucial the existence of some regulation and certification. Coleton et al., (2020) highlight the important role of two institutions, International Capital Markets Association (ICMA) and Climate Bonds Initiative (CBI), in defining some principles that can support this investment both in terms of criteria definition and certification.

According to the latest version of Green Bonds Principles in ICMA, (2021), green bonds can be defined as "(…) any type of instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible green projects and which are aligned with the four core components of the GBP." The first of these components corresponds to the Use of Proceeds that in general terms refers to the allocation of the invested funds that must be congruent with objectives, such as "climate change mitigation, climate change adaptation, natural resource conservation,

biodiversity conservation, and pollution prevention and control.". Secondly, there is the Process Evaluation and Selection part in which it is supposed to be a good communication on how the projects will be executed considering the appropriate risks and the environmental objectives that will be tackled. The third characteristic corresponds to the Management of proceeds. The amounts invested and the net proceeds will be channeled to accounts and that process is supposed to be transparent. Finally, the fourth characteristic concerns how the results of the investments are reported within the defined limits of the information that can be made available.

The report goes on to describe sub-categories of green bonds as: 1. Standard Green use of proceeds bond,2. Green revenue bond, 3. Green project bond, 4. Green securitized bond.

2.2 Transition Bonds

According to Schröder & Raes, (2021) there is an important distinction between transition bonds and green bonds since the former are more directed towards issues involving greenhouse gas emissions and to "(…) enable a low carbon transition". Transition bonds are aimed at the sectors that will have to change most to become greener, (UNEP Finance Initiative, 2020) and thus help the transition to a circular economy.

2.3 Green Loans

Coleton et al., (2020) mention that as well as green bonds, there are green loans, based on a set of characteristics defined through the Green Loan Principles, (Loan Market Association et al., 2022). These are basically the same as the GBP but

applied to loans and they comprise the use of the funds, the process evaluation and selection of projects, the management of funds, and the respective reporting. According to the World Bank (2021), there were around $33 billion dollars invested in green loans.

2.4 Sustainability linked bonds (SLBs) and Sustainability linked loans (SLLs)

As stated in Schröder & Raes, (2021), these two types of instruments are more practical for organizations wishing to use them in comparison with others. UNEP Finance Initiative, (2020) defines SLLs as a way to improve the level of ESG investment and an alternative to other instruments. Basically, SLLs allow companies to invest in sustainability-related projects or directly support a KPI, (ING Wholesale Banking, 2022), that to some extent could benefit the circular economy. ICMA association defines a set of characteristics for SLBs, (ICMA 2020), namely the selection of the Key Performance Indicators (KPIs), Calibration of Sustainability Performance Targets, Bond Characteristics, Reporting and Verification. As for SLLs the respective principles are defined in Loan Market Association et al., (2022) and contemplate the same aspects as SLBs but applied to loans: Selection of KPIs, Calibration of SPTs, Loans Characteristics, Reporting and Verification. It is important that using these instruments the KPIs to be financed are adapted to the company´s own strategy and to the objectives set out in the annual reports.

Chapter 4
Recent theoretical and empirical conclusions

1.Differences in firm value and firm risk

1.1 CSR relation with firm value and firm risk

There has been an intense debate on whether CSR is value enhancing for firms or not. This occurs due to the different assumptions and methodologies followed across different studies. Attention will be focused on the most recent conclusions on the topic. One of the most relevant works corresponds to the one of Margolis et al., (2009) in which the authors evaluate the main articles on the relation between CSR and firm value. In general, despite different conclusions as to the nature of this relationship, there is a tendency to consider that CSR has a positive impact on the company´s value. El Ghoul et al., (2011) developed a study on the cost of equity of firms adopting CSR practices and found it lower, controlling for some firm relevant variables. Furthermore, some CSR dimensions defined by KLD are used in the explanation of the lower value of the cost of capital such as "(…) employee relations, environmental policies and product strategies (…)". Servaes & Tamayo, (2013) present some reasons for the ambiguity in the literature regarding the relation between firm value and CSR and find the consumer channel one particularly relevant. However, the authors consider

important the study of other channels in future research. In his turn. Krüger, (2015) conducts a study in which he intends to verify the impact of news regarding CSR practices in companies. When these are negative there is an adverse reaction from the market, which implies that shareholders are affected. When, on the contrary, the news are favorable the reaction of the stakeholders is not positive either, however it does not have the same magnitude as the previous scenario. In addition, it can still allow gains to the companies. And it is mentioned the possibility of shareholders benefiting from CSR, due to a better perspective of this by the market.

The study of Flammer, (2015) focuses on the analysis of the impact of the approval of "close call" proposals related with CSR in the firms´ financial performance. It is noted that following the adoption of these proposals there are positive abnormal returns of about 1.7% for the company, which suggests a positive impact of CSR manifested through gains in "(…) labor productivity and sales growth.". Furthermore, the value gains observed are more expressive in companies with low levels of CSR, which indicates that "(…) CSR is a resource with decreasing marginal returns (…)".

Albuquerque et al., (2019) find evidence of a lower risk and higher value, controlled by the Tobin´s Q variable, associated to companies that incorporate CSR estimating instrumental variables regressions and using CAPM to estimate the risk.

Recent empirical studies on CSR relation with firm value		
Study	**Sample description, sample period and methodology**	**Findings and conclusions**
Margolis et al., 2009	Analysis of 167 studies about CSR between 1927 and 2007	Evidence of a positive, albeit low, contribution of CSR to firm value.
El Ghoul et al., 2011	Use of four databases to estimate the impact of CSR in the cost of equity on 2809 US firms/ 12915 firm year observation in the period 1992-2007.	Responsible behaviour allows companies to have a lower cost of equity and thus gains in terms of valuation.
Servaes & Tamayo, 2013	Data from KLD and Compustat for american firms between 1991-2005 about CSR and firm financial information to establish a comparison between CSR and firm value.	Importance of CSR as a tool to increase firm value in the case of companies with strong advertising.
Krüger, 2015	Data from KLD and stock prices about 2116 relevant events affecting the companies in 2001-2007 period. Application of event study analysis and methodologies like short timeframe that address the usual problems of measurement errors and reverse causality.	Negative impact on investors of good and bad news regarding CSR, but the magnitude of negative news effect is greater. Evidence of possible gains for company due to CSR considering some firm characteristics.
Flammer, 2015	Study of close-call proposals with data of american firms retrieved from Risk Metrics and SharkRepellent for the years between 1997 and 2012.	Evidence of positive abnormal returns of 1.7%, i.e., increase in shareholder value due to the adoption of the proposals.
Albuquerque et al., 2019	Consideration of an equilibrium model whose main predictions consist in a lower risk and higher value for firms with CSR. Analysis of these hypothesis based on a dataset between 2003 and 2015 of 28578 firm-year observations from MSCI´s ESG Research database.	The systematic risk is lower for firms that are engaged in CSR. Positive relation between CSR and Tobin´s Q, a variable to control the firm value.

Table 1 - CSR and firm value

1.2 ESG investing impact on firm value and risk

Cornell & Damodaran, (2020) revise the literature on the analysis of ESG implications and present a cautelous view on the possible positive impacts of ESG and tend to agree with the argument presented by Milton Friedman in 1962, due to the small scale of benefits to stakeholders, society and the proper company on pursuing these actions. Nonetheless, they find that is more common the predominance of "(…) lower discount rates, and thereby investors have lower expected returns (…)" than "(…) evidence that socially responsible firms deliver higher profits or growth (…)"

Considering a study of the effects sustainable funds can have in terms of risk reduction, Maxfield & Wang, (2021) use measures such as standard deviation, systematic risk, and idiosyncratic risk, GLM models and gather data about firm and fund levels from several platforms and find evidence of the importance of the funds ESG classification and the firms that are included in the funds. Overall, there are benefits in risk management from sustainable funds.

Cornell, (2021) focuses on the ESG and risk and return relation considering the own view on the subject. Contemplates the market transition phases during which interest rates may change and pass them on to relative prices of particular assets and stocks which for some time may be subject to price increase and in turn the expected return, but after this phase the values return to the level they were before the so-called transition phase. Besides making his point, reviewing the literature, there is evidence of lower returns associated with ESG which penalize investors, but can be positive considering that the value of the firm will be higher and therefore other companies will be interested in adopting the same pattern. However, there is no consensus on whether ESG can be considered a risk

factor. Barber et al., (2021) study whether investors are willing to give up on potential gains to invest in responsible funds, considering the UNPRI and the investment in impact venture capital funds when compared with traditional ones. The results show that the internal rate of return associated with impact venture capital funds is lower than the rate of traditional ones, which implies that these funds provide lower expected returns. Furthermore, there is evidence in the aggregate that investors tend to abdicate on "(…) 2.5 to 3.7 ppts in expected excess IRR.". Recently, Lioui & Tarelli, (2021), propose their own method to the construction of the ESG factor, and make a comparison of the traditionally used methods to do so and the underlying differences between them. They find that there is a tendence of better firm performance when its ESG score is higher and that some divergences among data vendors may lead to a pejorative effect of the factors.

Recent empirical and theoretical studies on ESG investing and risk		
Study	**Sample description, sample period and methodology**	**Findings and conclusions**
Cornell & Damodaran, 2020	Literature review on ESG impact for different economic agents.	Weak evidence of an expressive impact on firm, investors and society of the adoption of ESG investment.
Maxfield & Wang, 2021	Fund level analysis based on data about 5928 american mutual-funds sustainability score from of Morningstar between January 2016 and June 2020 , and firm-level analysis of 1955 american firms with data from Thomson Reuters ASSET4 ESG, Bloomberg and Compustat.	Important firm score of ESG and evidence of risk reduction benefits of sustainable funds.
Cornell, 2021	Literature review on the return of ESG investment and analysis of expected return variation.	Evidence of a lower discount rate for ESG assets, which implies that their value will be higher compared to the other non-ESG assets. Imprecision regarding the classification of ESG as a risk factor.
Barber et al., 2021	Comparison between impact venture capital funds and traditional venture capital funds. Data from Preqin of 4659 venture capital impact and venture capital traditional funds between 1995 and 2004. Application of reduced-from estimations, discrete choice methodology	Evidence that the IRR of impact funds is lower and that impact investors are willing to abdicate on an excess of IRR of about 2.5 to 3.7 percentage points.
Lioui & Tarelli, 2021	Revision of the literature on ESG as a factor and its methodology and application of a multivariate methodology. Data from Asset4, MSCI KLD about the ESG dimension and about stocks from CRSP.	Tendence to higher returns for firms incorporating ESG and evidence of alpha volatility across time.

Table 2 - ESG value and firm risk

2.Green Bonds

2.1 Yields of Green Bonds vs Conventional Bonds

Concerning the thematic of green bonds many studies have been developed so far to verify possible differences between green fixed income instruments and the conventional ones. This topic is attracting the attention of most academics and investors as they perceive that climate change will imply the transformation in all sectors of which finance is no exception. So green instruments are perceived as a valuable financial investing option that have been increasing in importance in the global markets.

The studies developed have ambiguous conclusions regarding the kind of relation between green bond yield vs the yield of conventional ones. There are three main conclusions concerning the study of the nature of the yield differential: lower yield for green bonds i.e., green bond premium, inexistence of a yield differential and the existence of a green bond discount.

Starting with the works that find a lower yield and thus the *greenium* effect for green bonds there is the paper of Baker et al., (2018) which collects data from both municipal and corporate green bonds, despite the clear difference between the number of municipal bonds, 2083 bonds between 2010 and 2016, and the number of green bonds, 19 in the period 2014-2016. The objective here is to understand the pricing and ownership of these assets. The main findings show that there is a premium for green bonds, especially for those who have certification from external institutions.

Moreover, Zerbib, (2019) based on a matching methodology and a fixed-effects regression concludes for yield differences of green bonds and conventional ones, the green bond premium of -2 basis points, indicating a small but meaningful preference for assets related with environmental issues. This indicates that the

greener the company, the lower the risk it faces due to the lower cost of debt traduced by the lower yield. Fatica et al., (2021), conclude that the existence of a premium is dependent on the type of issuer entity. In case of non-financial issuers, it is evident the existence of a premium, however for financial ones that is not the case. Furthermore, the premium is more substantial when the issuers repeatedly issue green bonds, as for bonds that are revised by external institutions. In the same year, Agliardi & Agliardi, (2021) study presented evidence of a not always clear presence of a negative premium and its existence is dependent on the interest rates, price volatility and other corporate taxes and may vary among different activity sectors. Other aspect to mention is the two-factor model that distinguishes uncertainty factors: firm´s valuation and environmental enrollment which affect the creditworthiness of the issuer. The existence of the *greenium* is a good aspect for companies once that it would allow a cheaper way of financing and could motivate the incorporation of green practices in more firms.

Nevertheless, not all studies come to the same conclusions and that is the case of Tang & Zhang, (2020) who examine the green bonds market and present explanations for some evidence. Following an event study methodology, the authors find positive cumulative abnormal returns in a 21-day window comprehending the issuance of green bonds. Considering this, they hypothesize 3 reasons to support this finding: the (1) "financing cost channel", (2) "investor attention channel" and (3) "fundamental channel". Among these, the first one is not confirmed once analyzing the yields of similar companies, the green ones do not have a significant lower yield and within the same company the yield differential between green and conventional bonds is not significant either, which suggest that "(…) the positive stock market reaction is beyond the direct benefits of the lower cost of debt (...)", as stated by the authors. Flammer, (2021) develops a study in which she investigates the market of green bonds. Beyond

mentioning hypothesis about the reasons why the green bonds as instruments are increasingly important in the global financial market, the author analyzes the market reaction to the announcement of their issuance. Following an event methodology, she finds significant cumulative abnormal returns for the timeframe that comprehends the announcement day, and the gains are greater for first time issuers. Moreover, it is made a second analysis of the possible predominance of a yield differential between green and conventional bonds through a matching methodology which selects bonds with all conditions equal except for the greenness and finds no expressive difference in yields. Having this done and among the hypothesis made for the larger adherence to green bonds only one is confirmed, the signaling argument. The other two, greenwashing effect and lower cost of capital are not confirmed once for the first, there is no evidence that the companies involved allocate the funds for other purposes because after the issuance of green bonds it is observable a raise of ESG ratings and impact in environmental measures. Concerning the cost of capital there is no evidence of a lower yield for green firms which suggests that there is no benefit in terms of financing.

Finally, and unlike these mentioned studies, Karpf & Mandel, (2017) focus their study on U.S municipal bonds and find that green bonds are traded at a higher yield, which has the negative side of being traded at a lower price.

Recent Empirical studies on green bond yield vs conventional bond yield		
Study	**Sample description, sample period and methodology**	**Findings and conclusions**
Karpf and Mandel, 2017	Data of 1880 green bonds and 36000 bonds in the american municipal bond market retrieved from EMMA and Bloomberg platforms. Consideration of Oxaca Blinder decomposition.	The findings conclude that there is a higher yield associated with green bonds when compared to otherwise conventional ones**.**
Baker et al., 2018	Considering a subset of corporate and municipal green bonds the study uses CAPM, a variable to account for the investors' preferences and regression of after-tax yields on green bonds with control variables.	Yield premium for green bonds and ownership concentration.
Zerbib, 2019	Selection of 110 green bonds issued in the period 2013-2017. Use of a matching methodology and a fixed effects regression to verify the yield difference of a conventional bond a green one.	Positive cumulative abnormal returns around the announcement of the green bonds and no evidence of a lower green bond yield, suggesting the inexistence of a *greenium.*
Tang and Zhang, 2020	Based on data from firms on 28 countries the authors follow an event study methodology of the cumulative abnormal returns in a 21-day window relative to stock prices due to green bond issuance.	Evidence of a positive response of the market due to the issuance of green bonds. These are issued at a premium compared to other similar firms but there is no evidence of a lower yield spread for green bonds within the same industry in the same year.
Flammer, 2021	Event study methodology of corporate green bonds with data retrieved from Bloomberg plus a matching methodology to study the possible existence of a yield differential between green and conventional bonds	Positive cumulative abnormal returns around the announcement of the green bonds and no evidence of a lower green bond yield, suggesting the inexistence of a *greenium.*
Agliardi & Agliardi, 2021	Two-factor structural model considering the cash flows of the companies and the success of the implementation of projects, in order to understand the *greenium* if existent.	Although in most cases there is the *greenium* effect associated with lower yields for green bonds, this does not always occur depending on the factors considered. Moreover, there is a different signal and magnitude of the *greenium* depending on the sectors and the core business of the firms.

Table 3 - Green bond yield vs Conventional bond yield

2.2 Green Bond risk transmission

One of the issues addressed is the use of green bonds among other financial instruments. Reboredo, (2018) studies the fluctuation of green bond prices and investigates the possible benefits of building portfolios of these assets in conjunction with others. Finds that due to the weak price correlation between stocks and energy assets, investors may benefit from adding these two assets to a green bond portfolio. However, the same does not happen when it comes to corporate and treasury bonds, because their prices influence those of green bonds, thus existing the so-called spillovers that make diversification gains unfeasible. In addition, Reboredo & Ugolini, (2020) deepened the study of this same thematic by analyzing the relation between the prices of the various existing assets and verified a similarity between the price evolution of green bonds and global treasury and currencies, especially USD. There are therefore price spillovers to green bonds from the previous mentioned assets. The paper of Naeem et al., (2022), similarly to the one of Reboredo, (2018) studies the transmissibility of risk between the various assets available in the market and green bonds considering periods with different volatilities. Accordingly, the transmissibility is higher when the volatility is high too and in periods of low volatility there are strong risk spillovers between bonds and green bonds. It is observed that there is a weak risk transmissibility between green bonds and the energy market, which ultimately leads to the existence of beneficial diversification opportunities for investors. Besides, the COVID-19 period accentuates the possible gains from this procedure. These studies thus highlight the enormous potential of the use of green bonds. This instrument is increasingly standardized and therefore will allow gains both financial and environmentally.

Recent Empirical studies on Green Bond Risk Transmission		
Study	**Sample description, sample period and methodology**	**Findings and conclusions**
Reboredo, 2018	Study of the price relation of green bonds and other assets between 2014 and 2017 with data retrieved from Bloomberg, Barclays Global Aggregate Corporate Index, Bloomberg Global Treasury Total Return Index Value, MCSI World Index and S&P GSCI Energy Spot CME Index	Price spillovers for green bonds from "corporate and treasury fixed-income markets", but not for green bonds and stocks and energy assets , which may allow diversification gains.
Reboredo and Ugolini, 2020	Study of the price relation of assets and green bonds through a VAR model. The data was gathered from MSCI World Index, MSCI Green Bond Index, Bloomberg Barclays Global Aggregate Corporate Index , Bloomberg Global Treasury Total Return Index Value, Barclays Global Aggregate Corporate Index, Bloomberg Barclays Global High-Yield Index, Trade Weighted US Dollar Index for the period October 2014 - June 2019	The green bonds prices are almost immune to price oscillations in the energy and stocks market but are affected by the currency evolution and treasury bonds.
Naeem et al., 2020	Use of a quantile-based methodology with data about green bonds, commodities like energy, agriculture commodities, treasury bonds and currencies respectively, retrieved from S&P Dow Jones Green Bond Index, S&P GSCI Energy Index, S&P Precious Metals Index, S&P GSCI Agriculture Index, Bloomberg Barclays Global Treasury Index and MSCI World Index. The data corresponds to the period between December 2008 and December 2020. Furthermore there is data collected from DataStream	Find that the spillovers from general assets to green bonds tend to be higher during high volatility periods and that investors may benefit from diversification using green bonds.

Table 4 - Green bond risk transmission

2.3 Ratings of companies and ESG

The growing tendence to allocate investment in funds that consider ESG imply the existence of rating agencies that provide a clear and accurate information on the ESG and sustainability ratings of the different companies and funds so that investors can have access to credible information about the institutions where they invest their money. Hartzmark & Sussman, (2017) provide a study that is consistent with this because they find evidence of a great increase in the amount allocated to the best classified funds according to the rating agencies contrasting with the decrease in the worst classified ones. This is in line with the theory that sustainability is perceived as a desirable attribute by investors and thus the rankings representation of it is extremely important, however, there are different ESG rankings that make their own evaluation. In the literature there is a growing tendency to study the ESG ratings and it is verified the existence of disagreement between the results presented by the main rating entities. Berg et al., (2019) study selects data from the greatest ESG rating companies and conclude for relevant differences between them mainly associated with the measurement used followed by the scope and lastly weights. In addition, they prove that the application of a specific taxonomy for the rating agencies gives a better insight of the differences. Finally, identifying the rater effect it is explained the similarity of scores among categories within a firm. Gibson et al., (2019) study the existent disagreement by another perspective, suggesting that "stock returns are positively related to ESG rating disagreement (…)" mainly driven by the environmental component. The recent study of Serafeim & Yoon, (2021) investigates the capacity of ESG ratings to predict the future news and finds it positive but with a tendence to weaken when there is disagreement between the raters. Furthermore, the authors find that the impact ESG news have on stocks price is positive despite the lower impact of it in firms with high ESG rating, and

firms in which the ESG rating is low tend to be more impacted. Christensen et al., (2022) find that the more ESG disclosure the more the disagreement between raters, mainly in the environmental and social categories. Eratalay & Cortés Ángel,(2022) conduct their study to test the hypothesis of a connection between ESG ratings and the systemic risk of firms' stocks. The conclusions prove that there is in fact a significant systematic risk reduction of about 5% considering the european countries analyzed and that is in part due to the governance negative contributions contrasting with the social component positive impact and the inconclusive contribution of ESG.

Recent empirical studies on ESG Ratings		
Study	**Sample description, sample period and methodology**	**Findings and conclusions**
Hartzmark and Sussman, 2017	Study of the Morningstar rating composition and the investors reactions and decisions to the different classifications of funds.	Evidence of an increased investment in better classified funds due to the perception by investors of them which contrasts with a decrease in the investment in worst classified funds.
Berg et al., 2019	Use of data from KLD, Sustainalytics, Vigeo Eiris, Asset4 , MSCI, RobecoSAM, and analysis of the reasons for the differences in ratings given by rating agencies.	Greater divergence with regard to the measurement used and considerable influence of scope and weights .
Gibson et al., 2019	Analysis of the relation between the different rating agencies classifications and stock returns considering data from S&P 500 for the period 2010-2017.	Evidence of risk premium considering the rating disagreements given by the positive relation between stock returns and rating disagreements.
Serafeim & Yoon, 2021	Data on ratings by MSCI, Sustainalytics and Thomson Reuters which may be able to explain the news concerning ESG which are gathered from TruValue Labs Pulse. Study of the impact of news about ESG in stocks' prices.	Confirmation of a positive relation between good ESG news and stock prices followed by evidence on the capability of the ratings to anticipate ESG events
Christensen et al., 2022	Study of the impact of ESG news on the ratings disagreement supported by multivariate regressions, regressions considering fixed-effects and differences in differences. Data from MSCI, Thomson Reuters, Sustainalytics and Bloomberg about 5637 firms between 2004 and 2016 and 30700 firm-year observations	Positive sign relationship in relation to the amount of ESG information and the different scores given by rating agencies.
Eratalay & Cortés Ángel, 2022)	Data of stocks from S&P Europe 350 index plus ESG information from S&P Global. The timeframe concerns the Covid-19 period and the methodology applied considers OLS and fixed-effects regressions.	Systematic risk reduction of 5% in the firms with higher ESG ratings in european countries and important contribution of the governance component.

Table 5 - ESG ratings

Conclusion

The study developed has as its focus a better understanding of social aspects related to finance. It includes the approach to topics such as Corporate Social Responsibility (CSR) and Environmental, Social and Governance (ESG), currently a major investment trend, supported by international institutions such as the European Commission, which has planned the economic transformation of the Eurozone by applying the concept of Circular economy with the support of financing instruments such as green bonds, green loans, transition bonds, sustainability linked loans, sustainability linked bonds and others.

Under this framework it is possible to draw some conclusions on Corporate Social Responsibility (CSR) and Environmental, Social and Governance (ESG). They, in fact, present a tendency of continuous growth that shall be emphasized in the coming decades, specially ESG. Accordingly, Green Finance will enable the investment needs that meet some ESG criteria, and it is expected that this investment made by the European Commission reaches one trillion euros in the upcoming years to support the transition to a sustainable society and meet the goals proposed in the last United Nations Conference about climate change. In line with this, is appropriate to mention the importance of Circular economy, a relatively recent topic, that needs to be more studied to be better applied in the real context. Recently, some studies began to investigate the relation it has with finance, mainly risk, and thus this trend should continue. The third chapter

includes the main financing instruments, which are being issued at record amounts every year and are expected to keep growing in the future.

Regarding the empirical studies, the conclusions related to the importance of Corporate Social Responsibility measures in corporate value differ in the works reviewed, which leads one to believe that the methodologies used by the different authors may have a considerable impact on the results. Furthermore, when revising the studies on Environmental Social and Governance and the respective impact in firms' risk and value, the revised studies point to the benefit it brings to companies when they adopt practices congruent with these ideals, namely through the cost of financing. Regarding green bonds, there are ambiguous findings about the existence of a premium in comparison to conventional bonds. However, two of the most important studies performed in the latest years discard the hypothesis of the existence of the premium. Still on green bonds, when examining the risk transmissibility between them and other assets some studies appear to be relevant and feasible for future research. Finally, in relation to ratings, we argue that it is of the utmost importance the adaptation of criteria standardization for the different and most recognized rating agencies.

In the future it will be interesting to deepen the literature on green financing and the opportunities it may bring to the different activities. In addition, there is much to be disclosed about the relation between the adoption of circular economy practices and certain financial variables that are crucial for the good corporate performance.

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