A NEW TOOL TO GATHER DEBT CAPITAL: GREEN BOND. RISKS AND OPPORTUNITIES FOR FIRMS AND INVESTORS

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Abstract

In the last few years, there has been growing attention by enterprises and investors concerning the adoption and implementation of strategies and decisions characterised by a strong social and environmental impact. 2018 represented a fundamental year for renegotiations on the climate, in fact, following the COP 21, the aim was of both producing a "Rulebook" in order to carry out all the details received from the Paris agreement and a "Talanoa Dialogue" aiming at informing the parties of all the carried-out progresses. In this scenario, green bonds represent the financial tool that better meets the enterprises need to collect capital as well as the possibility of conveying the latter through strict obligations towards high environmental impact initiatives. Considering the high potential in using this tool, this work aims at investigating, in a double perspective, from both the issuing companies and the investors' point of view, risks and opportunities. In particular, the possibility not only to diversify the financial sources but also to carry out a strategic plan to guarantee value creation in the long term (LTVC) and to preserve the environment. The most important goal of this work is to supply a reference framework conveying the main aspects to consider and evaluate.

Keywords: Climate Change, Debt Capital Markets, Green Bonds, Green Projects, Long Term Orientation

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1. INTRODUCTION

In recent years we have witnessed the progressive attention of both companies and investors regarding the adoption and implementation of decisions with a high social and environmental impact (Eccles, Ioannou, & Serafeim, 2014). Sustainable development originates from the macroeconomic level (Hanley, 2000) and it is grounded in the three principles: environmental integrity, economic prosperity, and social equity which are commonly referred to as the three pillars of sustainability (Barbier, 1987; Elliott, 2005). The economic and financial sector has been increasingly faced with sustainable development (Gladwin, Kennelly, & Krause, 1995; Shrivastava, 1995; Westley & Vredenburg, 1996; Dyllick & Hockerts, 2002; Bansal, 2002, 2005; Springett, 2003; Figge & Hahn, 2005; Etzion, 2007; Goodall, 2008).

It is now generally accepted that without corporate support, society will not achieve sustainable development, as firms represent the productive resources of the economy (Bansal, 2002). Sustainability as a phenomenon is rapidly entering economic and financial literature. Initially, the concept was launched in the environmental interpretation during United Nations conferences in

the 1970s and 1980s. The key concept of sustainability is that an explicit connection should be made between present and future generations. The best-known general definition of sustainable growth, for example, is the one given by the World Commission on Environment and Development (WCED) in Our Common Future (1987): *"sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*.

Applying this sustainability concept to corporate finance, it's possible to show two different aspects, firstly there is the capital raising, which implies that finance is very well suited to realize (or not to realize) *"future generation's needs"*. Secondly, if financial processes are assumed to reflect underlying real economic processes, rather than a goal in itself, it is important to stress a financial policy aimed at integrity and trust in the longer run (Soppe, 2004).

The combination of sustainability and profitability is not an impossible concept, in fact, as shown in the existing literature, since the early 70s, scholars have investigated this aspect.

There are several analyses that demonstrate how the implementation of more sustainable practices can improve firm competitiveness and profitability. The first works are attributable to Moskowitz (1972) and Bragdon and Martin (1972) who have highlighted, through the implementation of empirical research, the existence of a link between the level of atmospheric pollution and corporate performance. In such a scenario, sustainable finance and triple bottom line (TBL) are two related constructs that are used interchangeably in the literature. Sustainability triple bottom line provides a framework in order to measure the performance of the business and the success of the organization using three lines: economic, social, and environmental (Dyllick & Hockerts, 2002; Schaltegger & Burritt, 2005; Goel, 2010). Triple bottom line expresses the expansion of the environmental agenda in a way that integrates the economic and social lines (Elkington, 1997).

In his definition of TBL, Elkington (1997) used the terms profit, people, and the planet as the three lines. In his study, the economic, social, and environmental lines are referred to profit, people, and planet respectively. Sustainable finance highlights the mechanism underlying the process from attention to environmental, social, and governance issues to generate financial returns, but it also highlights the use of financial returns to further advance ESG (Scholtens, 2006). Originally it was used the term "*environmentally responsible development"* (World Bank, 1992). Subsequently, *"environmentally sustainable development*" was employed (Serageldin & Steer, 1993). Finally, the concept of environmental sustainability was developed (Goodland, 1995). According to Goodland (1995), environmental sustainability *"seeks to improve human welfare by protecting the sources of raw materials used for human needs and ensuring that the sinks for human wastes are not exceeded, in order to prevent harm to humans"*. Goodland's conceptualization of environmental sustainability fits into the resource-limited ecological economic framework of *"limits to growth"*. An important contribution to the concept of environmental sustainability was made by the OECD (Economic Co-operation and Development) – Environmental Strategy for the First Decade of the 21st Century (OECD, 2001). Such a scenario led to the genesis and spread of new financial tools, combining typical aspects of economic-financial nature and social, environmental and corporate governance needs.

Green bonds are perfectly integrated into this context, offering an alternative in line with green principles and themes, for enterprises as a tool to gather a debt, as well as for investors in terms of capital allocation. In 2014 the International Capital Market Association (ICMA) added to the overall market sophistication when launching the first version of the Green Bond Principles (GBP). The Green Bond Principles are considered the guidelines for most issuers' green bond frameworks (Kaminker & Sachs, 2018). Moreover, the GBP recommend a clear process and disclosure for issuers, which investors, banks, underwriters, placement agents and others may use to understand the characteristics of any Green Bond. The GBP stress the required transparency, accuracy and integrity of the information that will be disclosed and reported by issuers to stakeholders.

In such scenario, 2018 represented a crucial year for International Climate negotiations since the 2015 Paris summit, as all the delegates in the 24th session of the Conference of the Parties (COP) to the UN Framework on Climate Change (UNFCCC) met in Katowice (in Poland) aiming at producing a "*Rulebook*" implementing all details received from the Paris agreement. It must be underlined that besides the Rulebook drawing up, delegates concluded the Talanoa Dialogue, a year-long assessment of progress towards the Paris Agreement long-term goals, which is meant to inform parties as they prepare for a new round of nationally determined contributions (NDCs) in 2020. In light of this premise, the green bond market represents a different way to facilitate and support green investments and also an alternative financial source compared to bank lending and equity financing.

This work aims at investigating, in a double perspective, from both the issuing companies and the investors' point of view, risks and opportunities, so to supply a reference framework conveying the main aspects to consider and evaluate.

The remainder of the paper is organised as follows. Section 2 describes the literature review; Section 3 will be dedicated to the observation and trend of the green bonds market; Section 4 reports and discusses the tool risks and opportunities in a double vision, both of the issuing company and investors. The last section concludes the paper.

2. LITERATURE REVIEW

The last few years saw the development of a series of new financial tools better answering the principles underlying sustainability themes, as Green Bonds, namely "*debt tools whose income can be used to finance or refinance new or existing projects and activities promoting the progress of economic sustainable activities"*. Green bonds could be broadly classified based on the assets to which they are tied (standard green use of proceeds bond, green revenue bond, green project bond, green securitized bond (ICMA, 2018)).

It is, therefore, possible to identify green bonds as alternative financial tools foreseeing their income destination for the financing or refinancing of green projects, namely activities dealing with initiatives for the promotion of climatic or environmental sustainability (Kidney & Oliver, 2014). It is possible to observe how definitions allow the reference to a wide range of investments and issuers, concerning who wants to promote its own "*green credentials*" deriving from implemented projects benefits as well as those who want to cynically use the focus on the environment as a marketing tool (Ramiah & Gregoriou, 2015). In 2014 the International Capital Market Association (ICMA) added to the overall market sophistication when launching the first version of the Green Bond Principles (GBP). The GBP are *"voluntary process guidelines that recommend transparency and disclosure, and promote integrity in the development of the Green bond market by clarifying the approach for issuance of a Green Bond"*. The Green Bond Principles are considered to be the guidelines for most issuers' green bond frameworks (Kaminker & Sachs, 2018). Moreover, the GBP recommend a clear process and disclosure for issuers, which investors, banks, underwriters, placement agents and others may use to understand the characteristics of any Green Bond.

The GBP highlight the required transparency, accuracy and integrity of the information that will be disclosed and reported by issuers to stakeholders. Finally, the GBP have four core components:

1) use of proceeds;
2) process for project evaluation and selection;
3) management of proceeds;
4) reporting.

Currently, in literature, there isn't a Green Bond univocally recognized definition, therefore here below it is possible to find the description proposed by the Green Bond Principles (GBP) drawn up by the International Capital Market Association (ICMA, 2018): "*green bonds are any type of bond instrument where the proceeds will be exclusively applied to finance or refinance, in part or in full, new and/or existing eligible Green projects and which are aligned with the four core components of the GBP*".

This definition is the reading key which really explains the difference between green bonds and traditional bonds. Labelled green bonds have financial characteristics that are like standard corporate bonds, full recourse goes to the issuer, may be not to revenues coming from a specific project, and there are no particular "*green*" covenants or legal consequences that link issuers to their sustainability promises.

In fact, the analogy of green bonds and conventional bonds is meant to stimulate market growth by using a well-tested product, and it enables issuers to show they are committed to sustainability (Barclays, 2015). It is possible to identify several reasons that could push to invest in green bonds, among which ethical, reputational and regulatory considerations as well as those in relation to the long-term risk-revenue relationship (Zerbib, 2016).

HSBC (2016) and Ehlers and Packer (2016) study the difference in yield at issuance between green and conventional bond by taking the difference between the two yields on samples of 30, 21 and 14 bonds respectively. Recently, the paper of Tang and Zhang (2018) investigated the announcement returns and real effects of green bond issuance by firms in 28 countries considering the years from 2007 to 2017. Their findings revealed that stock prices positively respond to green bond issuance.

Furthermore, they did not find a significant premium for green bonds; finally, they concluded that the firm issuance of green bonds is beneficial to its existing shareholders. The same year Gianfrate and Peri (2019) compared green bonds and traditional bonds with similar characteristics in order to investigate if green bonds are priced at a premium, finding a negative premium of around 18 basis points for Green bonds.

Moreover, they demonstrated the premium in the secondary market as well. Finally, they concluded that green bonds are relatively more convenient for issuers as there is a premium in the pricing of these new financial tools.

In 2017, Karpf and Mandel carried out an analysis aiming at evaluating the differences in the yield term structure between green and brown bonds, observing that there is a significant and positive spread on returns between brown and green bonds. Regarding the *"investor clienteles"* the existing literature indicates several categories of investors who, in relation to their preferences, invest in different companies. In particular, it is mentioned a dividend clientele (Graham & Kumar, 2006) or in general the existence of *"style"* investors searching specific company profiles (Barberis & Shleifer, 2003). Regarding the existence of an investor clientele, attracted to financial tools oriented towards the long period, as well as to environmental safeguard, literature shows that better ESG performances promote the access to capital (Cheng, Ioannou, & Serafeim, 2013; El Ghoul, Guedhami, Kwok, & Mishra, 2011), furthermore, there are several empirical studies (Margolis & Walsh; 2001; Griffin & Mahon; 1997; Roman, Hayibor, & Agle, 1999), highlighting how the implementation of green projects potentially creates superior performances, as the relative default risk is reduced. Finally, part of the most recent literature focuses the attention on investors preferences regarding Environmental, Social and Governance factors (Barber, 2007; Dimson, Karakas, & Li, 2015; Dyck, Lins, Roth, & Wagner, 2019; Starks, Venkat, & Zhu, 2017; Hachenberg & Schiereck, 2018; Paranque & Revelli, 2019).

3. OUTLOOK OF EUROPEAN GREEN BOND MARKET

Green bonds have become increasingly popular in recent years, Morgan Stanley refers to this evolution as the "*green bond boom*" (Flammer, 2018). The green bond market kicked off in 2007 with the AAA-rated issuance from multilateral institutions European Investment Bank (EIB) and World Bank and represented by June 2019 a total of approximately EUR 550bn outstanding (EUR 100bn YTD).

As a consequence, several other supranational agencies joined the playground with the aim of assisting governments in reaching their policies related to climate change mitigation. The most active supranational issuer has been the World Bank, with a total of 136 individual green bond issuances in 18

different currencies dated between 2008 and 2016, as reported by the Climate Bonds Initiative. After the period between 2007 and 2012, the market grew thanks to the issuances of Sovereign, Supranational and Agencies (SSA), municipalities, local government agencies and national developments banks.

The rising consensus obtained from the market has been further enhanced by progress made in terms of standards and criteria defining a green project or activity; these positive developments led to the second milestone in 2013: corporations surrendered to the lure of green bonds and joined the market, widening the typology of issuers (Trompeter, 2017).

In the following years, the number of green bond issues increased, the size of the green bond market at the end of 2017 was estimated to amount to USD 270 billion (Bos, Meinema, & Houkes, 2018), after another year with record issuances of USD 155.5 billion from 239 different issuers (Climate Bonds Initiative, 2018).

The rapid development of the market becomes especially evident when looking at year-on-year growth. According to S&P (2018), the green bond market has grown by at least 80% every year for the past five years reaching new record levels year after year. The overall growth of the market naturally leads to increased diversification. While in 2016 we saw green bonds being issued from 27 countries, this number increased to 39 countries within one year (Moody's, 2018). Similarly, the number of inaugural green bond issuances more than doubled in 2017 compared to the previous year (Leister & Gustermann, 2018).

This positive trend confirms the progressive attention towards "green" issues and relative awareness by all market players to engage in concrete actions to transition to a low-carbon society (Campiglio, 2016).

In 2014 the International Capital Market Association (ICMA) added to the overall market sophistication when launching the first version of the Green Bond Principles (GBP). The GBP are *"voluntary process guidelines that recommend transparency and disclosure, and promote integrity in the development of the Green bond market by clarifying the approach for issuance of a Green Bond*". The Green Bond Principles are considered to be the guidelines for most issuers' green bond frameworks (Kaminker & Sachs, 2018).

Moreover, the GBP recommend a clear process and disclosure for issuers, which investors, banks, underwriters, placement agents and others may use to understand the characteristics of any Green Bond. The GBP emphasize the required transparency, accuracy and integrity of the information that will be disclosed and reported by issuers to stakeholders. Finally, the GBP have four core components:

1. *Use of proceeds:* the eligible Green Projects categories, listed in no specific order, include, but are not limited to: renewable energy, energy efficiency, pollution prevention and control, environmentally sustainable management of living resources and land use, terrestrial and aquatic biodiversity conservation, clean transportation, sustainable water and wastewater management, climate change adaptation, eco-efficient and/or circular economy adapted products, production technologies and processes, green buildings (ICMA, 2018).

2. *Process for project evaluation and selection:* the issuers of a green Bond should clearly communicate to investors – the environmental sustainability objectives; the process by which the issuers determine how the projects fit within the eligible Green Projects categories identified above; the related eligibility criteria, including, if applicable, exclusion criteria or any other process applied to identify and manage potentially material environmental and social risks associated with the projects.

3. *Management of proceeds:* the Green Bond net proceeds, or an amount equal to these net proceeds, should be credited to a sub-account, moved to a sub-portfolio or otherwise tracked by the issuer in a formal internal process linked to the issuer's lending and investment operations for Green projects (ICMA, 2018).

4. *Reporting:* the issuer has to provide up-to-date information on the effective use and allocation of proceeds. If possible, the issuer must make available documents with the list of projects to which proceeds have been allocated, followed by a brief description of the projects themselves, the amount reserved for each of them and the predictable effect (ICMA, 2018). The issuer has to provide up-to-date information on the effective use and allocation of proceeds. If possible, the issuer must make available documents with the list of projects to which proceeds have been allocated, followed by a brief description of the projects themselves, the amount reserved for each of them and the predictable effect (ICMA, 2018).

In June 2018, the European Commission set up a *Technical Expert Group* on sustainable finance (TEG) aiming at supplying assistance in four key areas of the Action Plan through the development of the following:

- a unified classification system for sustainable economic activities;
- a European Union (EU) Green Bond Standard;
- benchmarks for low-carbon investment strategies, and
- guidance to improve corporate disclosure of climate-related information.

The TEG proposes that the Commission creates a voluntary, non-legislative EU Green Bond Standard to enhance the effectiveness, transparency, comparability and credibility of the green bond market and to encourage the market participants to issue and invest in EU green bonds. The TEG recommends that an EU Green Bond could be any type of listed or unlisted bond or capital market debt instrument issued by a European or international issuer that is aligned with the EU Green Bond Standard.

Building on best market practices, the EU Green Bond Standard would comprise four critical elements (see Table 1).

Table 1. Promoting market integrity: four critical elements

No.	Description
1	Alignment with EU taxonomy proceeds from EU Green Bonds should go to finance or refinance projects/activities that (a) substantially contribute to at least one of the six taxonomy Environmental objectives, (b) do not significantly harm any of the other objectives and (c) comply with the minimum social safeguards. Where (d) technical screening criteria have been developed, financed projects or activities shall meet these criteria, allowing however for specific cases where these may not be directly applicable.
2	Publication of a Green Bond Framework, which confirms the voluntary alignment of green bonds issued with the EU GBS, explains how the issuer's strategy with the environmental objectives, and provides details on all key aspects of the proposed use of proceeds, processes and reporting of the green bonds.
3	Mandatory reporting on the use of proceeds (allocation report) and on environmental impact (impact report).
4	Mandatory verification of the Green Bond framework and final allocation report by an external reviewer.

Source: Report on EU Green Bond Standard (June 2019)

4. RISKS AND OPPORTUNITIES

The ultimate goal of companies is to use resources efficiently and to maximize risk-adjusted return on capital (Jensen & Meckling, 1976) and to increase shareholders wealth (Friedman, 1970). Diversification of capital sources is a central topic since the work of Ansoff (1958), starting with the study of Jensen and Meckling (1976), financial choices have been evaluated because of the close interaction between capital structure and management choices (Barton & Gordon, 1987). In the last few years, because of the 2007-2008 financial crisis that involved all the main countries in the world, there was a progressive reduction of financing possibilities for enterprises (Cingano, Manaresi, & Sette, 2016; Wehinger, 2014). Within this framework, there was a natural and increasing shift from an enterprise financial structure with a third-party capital extremely oriented towards the bank channel, to another one in which there was a convergence towards other financing forms (Dallocchio & Salvi, 2011).

However, Brealey, Myers, Allen, and Sandri (2011) suggest that in examining the various financing sources at the company disposal, it is quite common that management asks some questions concerning the impact that current choices regarding capital structure composition will produce on future ones. Graham and Harvey (2001), Bancel and Mittoo (2004), and Brounen, De Jong, and Koedijk (2004) highlight how important it is for company management to take some good decisions regarding capital structure and relative financial flexibility. In such sense, the financial flexibility topic is seen as the company capacity to address the use of financial resources in a manner consistent with company objectives, emerging from the new information on the company as well as from the environment in which it operates and that holds and carries out a central role (Gamba & Triantis, 2008). Graham and Harvey (2001) define financial flexibility as "*preserving debt capacity to make future expansions and acquisitions*" or "*minimizing interest obligations*" so that they don't need to shrink their business in case of an economic downturn. Donaldson (1969) uses the term "*financial mobility*" to indicate the capacity to consistently channel financial resources with the evolution of management objectives as it is necessary to consider the transformation of both the company and surrounding environment. Donaldson himself specifies that financial flexibility mainly regards the decisions relative to capital structure, whose main objective is to detect the best mix of financing sources. Therefore, a balanced and integrated understanding of financial flexibility effect requires simultaneous attention concerning various investment opportunities, expected cash flows and financial constraints (Byoun, 2011). The different definitions of flexibility as addressed in literature recognizes the "reactive" or "preventive" nature of flexibility while failing to include the "exploitive" nature of flexibility for uncertain competitiveness or opportunities. This combination between the preventive and exploitive nature of flexibility is evident in Volberda (1999) because he studied flexibility in two perspectives: internal flexibility as the firm capacity to adapt to the request of the environment, and external flexibility as the firm capacity to incline their environment and thereby reduce their vulnerability. In this perspective, we do not only take into account economic-financial variables towards financing sources diversification, but also intangible values able to identify the asset nature and define its purpose.

Additional food for thought, in order to investigate why companies, issue green bonds are three; first, green bonds may serve as a credible signal that the proceeds will be invested in green projects, thus affirming the company commitment to corporate sustainability. Second, and conversely, green bonds could be a form of greenwashing, which is of particular concern given the absence of legal enforceability. Third, companies may issue green bonds to attract an investor clientele that values both the long term and the natural environment (Flammer, 2018).

The issuance of green bonds can be interpreted through the lens of the signalling theory, investors often lack sufficient information to evaluate the company commitment to the environment (Busch & Hoffmann, 2009; Lyon & Maxwell, 2011; Lyon & Montgomery, 2015); by issuing green bonds, companies can signal their commitment and this signal might be plausible, firstly because by issuing green bonds, companies commit substantial amounts of money to green projects, secondly green bonds are often certified by independent third parties to guarantee that the proceeds are used to finance or refinance the green projects that in the bond prospectus. Finally, the issuance of green bonds may serve as a credible signal of the company commitment to the environment and attracting new investors and tapping a wider investor base. From the investors' point of view, green bonds represent a particularly interesting financial tool under many aspects. For example, for some people green bonds, are the implicit answer to the desire of sharing intangible values; the latter can be seen through the

proceeds destined to projects having a strong environmental impact (tangible value). As shown in the Emerging Market Green Bonds Report 2018, further benefits can be found in:

- offer long-term maturities with stable and predictable returns with given risk exposure;
- supply environmental benefits;
- meet environmental, social, and governance (ESG) requirements for sustainable investment mandates (i.e. when ESG standards, such as IFC Performance Standards are applied to green projects);
- allow direct investment in the "greening" of brown sectors and social impact activities;
- offer increased transparency and accountability on the use and management of proceeds.

5. DISCUSSION

A series of managerial implications can be deduced not only for issuers and investors but also for countries and governments.

Reference was made to some recent papers stressing the importance assumed by Green Bonds, for example in the conclusion of the paper of Gianfrate and Peri (2019) they underline that: "*Green bonds can represent an effective instrument for achieving a lower cost of capital for organizations that need to finance or refinance Green projects*"; another research of Tang and Zhang (2018) suggests that issuing green bonds could gain more media exposure and therefore several opportunities for companies to advertise their environmental perspectives.

Finally, they suggest that shareholders can benefit from issuing green bonds due to improved stock liquidity, thus, briefly, green bonds seem sound investment instruments to invest in. As shown in the Emerging Market Green Bonds Report 2018, green bonds popularity, whose demand actually exceeds the offer, highlights the fact that investors are particularly attracted to financial tools having a strong environmental impact issued by companies having undertaken a strategic path aimed at sustainability. The same are greatly helped in accessing the debt capital market.

The principles, processes, and definitions that have appeared to simplify green bond issuance make it much easier for responsible investors and green issuers to connect and transact. This also opens dialogue on other types of green investments, including projects or sectors that would have been less accessible. Successful approaches in green finance now also help the growth of social finance.

Green bonds create a market-driven demand for improved environmental, social, and governance (ESG) disclosure by companies and financial institutions.

This will have a tangible knock-on benefit in facilitating sustainable finance across a range of asset classes and financial products. It also enhances the ability of regulators to assess ESG risks and green finance flows at the market level, enabling them to structure regulation and incentives to drive more capital to sectors with high environmental and social benefits.

These benefits reveal the importance of quality information disclosure from issuers to investors in order to enjoy the benefits of issuing green bonds. This disclosure, especially concerning the use of proceeds, is one of the main differences between conventional bonds and green bonds.

6. CONCLUSION

In the last few years, the agenda for global sustainability has greatly advanced together with the supranational bodies and in this perspective, the COP 21 that took place in Paris in 2015, has played a fundamental role.

The actors involved in the financial markets have conveyed resources and efforts aiming at supporting sustainable economic development in the long term.

Most stakeholders recognized the need to "redirect" the financial markets in order to satisfy the global needs of sustainable development and guarantee value creation in the long term (LTVC). Through some estimates supplied by the United Nations it is foreseen that by 2050, 2.5 billion people will migrate from the rural areas to the urban ones, with around 90% of this increase concentrated in the emerging markets, while cities and urban areas will offer important economic development opportunities and will become also increasingly vulnerable to climate changes.

Therefore, in such a scenario, the role assumed by sustainable finance becomes particularly interesting as it highlights in which way economics and finance can interact with the economic, social and environmental world. Dirk Schoenmaker in a 2017 essay stresses that sustainable finance has the potential to move from finance as a goal (profit maximisation) to finance as a means. Therefore, the presence of a clear and shared set of regulations plays a necessary role and in this way, the commitment and efforts promoted by the European Commission aim at the promotion of greater markets transparency and effectiveness, especially in a framework of development and capital allocation through "green" financial tools.

In conclusion, if some contributions already indicate a lower cost of debt for green bonds issuers if compared with traditional ones, on the other side the European framework will create an increasing demand of "green" financial tools to which a growing amount of capitals will be shifted.

The main limitation of this study is the lack of existing literature focused on green bonds because the topic is very recent and very few studies analysed green bonds. However, we have referred to the most important researches on green bonds in order to provide a complete framework.

In this perspective, future research includes the implementation of a more extended reference framework, for example considering also the financial literature on traditional bonds in order to compare the risks and opportunities related to these tools. Another frontier of future research is the investigation of different perspectives in order to catch other relevant aspects.

REFERENCES

1. Ansoff, H. I. (1958). A model for diversification. *Management Science, 4*(4), 351-481. https://doi.org/10.1287/mnsc.4.4.392
2. Bancel, F., & Mittoo, U. R. (2004). Cross-country determinants of capital structure choice: A survey of European firms. *Financial Management, 33*(4), 103-132. Retrieved from www.jstor.org/stable/3666330
3. Bansal, P. (2002). The corporate challenges of sustainable development. *Academy of Management Executive, 16*(2), 122-131. https://doi.org/10.5465/ame.2002.7173572
4. Bansal, P. (2005). Evolving sustainably: A longitudinal study of corporate sustainable development. *Strategic Management Journal, 26*(3), 197-218. https://doi.org/10.1002/smj.441
5. Barber, B. M. (2007). Monitoring the monitor: Evaluating CalPERS' activism. *The Journal of Investing*, *16*(4), 66-80. https://doi.org/10.3905/joi.2007.698965
6. Barberis, N., & Shleifer, A. (2003). Style investing. *Journal of Financial Economics, 68*(2), 161-199. https://doi.org/10.1016/S0304-405X(03)00064-3
7. Barbier, E. (1987). The concept of sustainable economic development. *Environmental Conservation, 14*(2), 101-110. https://doi.org/10.1017/S0376892900011449
8. Barclays. (2015). *The cost of being green.* Retrieved from https://www.environmental-finance.com/assets/files/US_Credit_Focus_The_Cost_of_Being_Green.pdf
9. Barton, S. L., & Gordon, P. J. (1987). Corporate strategy: Useful perspective for the study of capital structure? *Academy of Management Review*, *12*(1), 67-75. https://doi.org/10.5465/amr.1987.4306479
10. Bos, B., Meinema, A., & Houkes, E. (2018). *Unravelling the green bond premium* (Technical Report January, NN Investment Partners, London). Retrieved from https://www.nnip.com/market-matters/view/Unravelling-the-Green-Bond-Premium.html
11. Bragdon, J., & Marlin, J. (1972). Is pollution profitable? *Risk Management, 19,* 9-18.
12. Brealey, R., Myers, S., Allen, F., & Sandri, S. (2011). *Principi di finanza aziendale.* Milano: McGraw-Hill.
13. Brounen, D., De Jong, A., & Koedijk, K. (2004). Corporate finance in Europe: Confronting theory with practice. *Financial Management, 33*(4), 71-101. Retrieved from www.jstor.org/stable/3666329
14. Busch, T., & Hoffmann, V. H. (2009). Ecology-driven real options: An investment framework for incorporating uncertainties in the context of the natural environment. *Journal of Business Ethics*, *90*(2), 295-310. https://doi.org/10.1007/s10551-009-0043-y
15. Byoun, S. (2011). *Financial flexibility and capital structure decision.* Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1108850
16. Campiglio, E. (2016). Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy. *Ecological Economics, 121,* 220-230. https://doi.org/10.1016/j.ecolecon.2015.03.020
17. Cheng, B., Ioannou, I., & Serafeim, G. (2013). Corporate social responsibility and access to finance. *Strategic Management Journal, 35*(1), 1-23. https://doi.org/10.1002/smj.2131
18. Cingano, F., Manaresi, F., & Sette, E. (2016). Does credit crunch investment down? New evidence on the real effects of the bank-lending channel. *Review of Financial Studies, 29*(10), 2737-2773. https://doi.org/10.1093/rfs/hhw040
19. Climate Bonds Initiative. (2018). *Green bonds: The state of the market 2018.* Retrieved from https://www.climatebonds.net/files/reports/cbi_gbm_final_032019_web.pdf
20. Dallocchio, M., & Salvi, A. (2011). *Finanza aziendale 1.* Milano: Egea.
21. Dimson, E., Karakas, O., & Li, X. (2015). Active ownership. *The Review of Financial Studies, 28*(12), 3225-3268. https://doi.org/10.1093/rfs/hhv044
22. Donaldson, G. (1969). *Strategy for financial mobility.* Boston, MA: Harvard Business School Press.
23. Dyck, A., Lins, K. V., Roth, L., & Wagner, H. F. (2019). Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics*, *131*(3), 693-714. https://doi.org/10.1016/j.jfineco.2018.08.013
24. Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment, 11*(2), 130-141. https://doi.org/10.1002/bse.323
25. Eccles, R., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science, 60*(11), 2835-2857. https://doi.org/10.1287/mnsc.2014.1984
26. Ehlers, T., & Packer, F. (2016). *Green bonds – Certification, shades of green and environmental risks (Contribution to the G20 Green Finance Study Group).* Retrieved from http://unepinquiry.org/wp-content/uploads/2016/09/12_Green_Bonds_Certification_Shades_of_Green_and_Environmental_Risks.pdf
27. El Ghoul, S., Guedhami, O., Kwok, C., & Mishra, D. (2011). Does corporate social responsibility affect the cost of capital? *Journal of Banking & Finance, 35*(9), 2388-2406. https://doi.org/10.1016/j.jbankfin.2011.02.007
28. Elkington, J. (1997). *Cannibals with forks: The triple bottom line of twenty-first century business.* Oxford, England: Capstone. https://doi.org/10.1002/tqem.3310080106ù
29. Elliott, S. (2005). Sustainability: An economic perspective. *Resources, Conservation and Recycling, 44*(3), 263-277. https://doi.org/10.1016/j.resconrec.2005.01.004
30. Etzion, D. (2007). Research on organizations and the natural environment, 1992-present: A review. *Journal of Management, 33*(4), 637-664. https://doi.org/10.1177/0149206307302553
31. Figge, F., & Hahn, T. (2005). The cost of sustainability capital and the creation of sustainable value by companies. *Journal of Industrial Ecology, 9*(4), 47-58. https://doi.org/10.1162/108819805775247936
32. Flammer, C. (2018). *Corporate green bonds* (Working paper). Retrieved from https://ssrn.com/abstract=3125518
33. Friedman, M. (1970). A Friedman doctrine: The social responsibility of business is to increase its profits. *The New York Times Magazine, 13,* 32-33, 123-125.
34. Gamba, A., & Triantis, A. (2008). The value of financial flexibility. *The Journal of Finance, 63*(5), 2263-2296. https://doi.org/10.1111/j.1540-6261.2008.01397.x

35. Gianfrate, G., & Peri, M. (2019). The green advantage: Exploring the convenience of issuing green bonds. *Journal of Cleaner Production, 219,* 127-135. https://doi.org/10.1016/j.jclepro.2019.02.022
36. Gladwin, T., Kennelly, J., & Krause, T. (1995). Shifting paradigms for sustainable development: Implications for management theory and research. *Academy of Management Review, 20*(4), 874-907. https://doi.org/10.5465/amr.1995.9512280024
37. Goel, P. (2010). Triple bottom line reporting: An analytical approach for corporate sustainability. *Journal of Finance and Management, 1*(1), 27-42.
38. Goodall, A. H. (2008). Why have the leading journals in management (and other social sciences) failed to respond to climate change? *Journal of Management Inquiry, 17*(4), 408-420. https://doi.org/10.1177/1056492607311930
39. Goodland, R. (1995). The concept of environmental sustainability. *Annual Review of Ecology and Systematics, 26*(1), 1-24. https://doi.org/10.1146/annurev.es.26.110195.000245
40. Graham, J., & Harvey, C. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics, 60*(2-3), 187-243. https://doi.org/10.1016/S0304-405X(01)00044-7
41. Graham, J., & Kumar, A. (2006). Do dividend clienteles exist? Evidence on dividend preferences of retail investors. *The Journal of Finance, 61*(3), 1305-1336. https://doi.org/10.1111/j.1540-6261.2006.00873.x
42. Griffin, J. J., & Mahon, J. F. (1997). The corporate social performance and corporate financial performance debate: Twenty-five years of incomparable research. *Business & Society*, *36*(1), 5-31. https://doi.org/10.1177/000765039703600102
43. Hachenberg, B., & Schiereck, D. (2018). Are green bonds priced differently from conventional bonds? *Journal of Asset Management*, *19*(6), 371-383. https://doi.org/10.1057/s41260-018-0088-5
44. Hanley, N. (2000). Macroeconomic measures of sustainability. *Journal of Economic Surveys*, *14*(1), 1-30. https://doi.org/10.1111/1467-6419.00102
45. HSBC. (2016). *HSBC Green Bond Report.* Retrieved from https://www.hsbc.com/-/files/hsbc/investors/fixedincomesecurities/green-bond-reports/pdfs/161006-green-bonds-report.pdf
46. International Capital Market Association (ICMA). (2018). *The Green Bond Principles: Voluntary process guidelines for issuing green bonds.* Retrieved from https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2018/Green-Bond-Principles---June-2018-140618-WEB.pdf
47. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X
48. Kaminker, C. R., & Sachs, S. (2018). *The green bond.* Retrieved from http://www.oecd.org/water/Presentations-3rd-Roundtable-Financing-Water-Christopher-Kaminker-SEB.pdf
49. Karpf, A., & Mandel, A. (2017). *Does it pay to be green?* (Working paper, Paris School of Economics). Retrieved from https://ssrn.com/abstract=2923484
50. Kidney, S., & Oliver, P. (2014). *Greening China's financial markets. Growing a green bonds market in China: Reducing costs and increasing capacity for green investment while promoting greater transparency and stability in financial markets.* Retrieved from https://www.climatebonds.net/files/files/growing_green_bonds_en.pdf
51. Lyon, T. P., & Maxwell, J. W. (2011). Greenwash: Corporate environmental disclosure under threat of audit. *Journal of Economics & Management Strategy*, *20*(1), 3-41. https://doi.org/10.1111/j.1530-9134.2010.00282.x
52. Lyon, T. P., & Montgomery, A. W. (2015). The means and end of greenwash. *Organization & Environment*, *28*(2), 223-249. https://doi.org/10.1177/1086026615575332
53. Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly, 48*(2), 268-305. https://doi.org/10.2307/3556659
54. Moody's. (2018). *Green bonds.* Retrieved from https://www.moodys.com/newsandevents/topics/Green-Bonds-007034/reports
55. Moskowitz, M. R. (1972). Choosing socially responsible stocks. *Business & Society Review, 1,* 71-75.
56. OECD. (2001). *Environmental strategy for the first decade of the 21st century.* Retrieved from https://www.oecd.org/env/indicators-modelling-outlooks/1863539.pdf
57. Paranque, B., & Revelli, C. (2019). Ethico-economic analysis of impact finance: The case of Green Bonds. *Research in International Business and Finance, 47,* 57-66. https://doi.org/10.1016/j.ribaf.2017.12.003
58. Ramiah, V., & Gregoriou, G. N. (Eds.) (2015). *Handbook of environmental and sustainable finance.* https://doi.org/10.1016/C2014-0-05175-1
59. Roman, R. M., Hayibor, S., & Agle, B. R. (1999). The relationship between social and financial performance: Repainting a portrait. *Business and Society, 38*(1), 109-125. https://doi.org/10.1177/000765039903800105
60. S&P. (2018). *Green bonds.* Retrieved from https://www.spglobal.com/en/search?q=green+bonds
61. Schaltegger, S., & Burritt, R. (2005). Corporate sustainability. In H. Folmer and T. Tietenberg (Eds.), *The international yearbook of environmental and resource economics 2005/2006* (pp. 185-222). Cheltenham, England: Edward Elgar.
62. Schoenmaker, D., & Schramade, W. (2019). *Principles of sustainable finance.* Oxford, England: Oxford University Press.
63. Scholtens, B. (2006). Finance as a driver of corporate social responsibility. *Journal of Business Ethics, 68*(1), 19-33. https://doi.org/10.1007/s10551-006-9037-1
64. Serageldin, I., & Steer, A. (Eds.). (1993). V*aluing the environment: Proceedings of the first annual conference on environmental sustainable development.* Retrieved from http://documents.worldbank.org/curated/en/759491468765030766/pdf/multi-page.pdf
65. Shrivastava, P. (1995). Ecocentric management for a risk society. *Academy of Management Review, 20*(1), 118-137. https://doi.org/10.5465/amr.1995.9503271996
66. Soppe, A. (2004). Sustainable corporate finance. *Journal of Business Ethics, 53*(1/2), 213-224. https://doi.org/10.1023/B:BUSI.0000039410.18373.12
67. Springett, D. (2003). Business conceptions of sustainable development: A perspective from critical theory. *Business Strategy and the Environment, 12*(2), 71-86. https://doi.org/10.1002/bse.353
68. Starks, L. T., Venkat, P., & Zhu, Q. (2017). *Corporate ESG profiles and investor horizons* (Working paper, University of Texas at Austin). Retrieved from https://ssrn.com/abstract=3049943

69. Tang, D. Y., & Zhang, Y. (2018). Do shareholders benefit from green bonds? *Journal of Corporate Finance*. https://doi.org/10.1016/j.jcorpfin.2018.12.001
70. Trompeter, L. (2017). Green is good: How green bonds cultivated into Wall Street's environmental paradox. *Sustainable Development Law and Policy Brief*, *XVII*(2), 4-15.
71. Volberda, H. W. (1999). *Building the flexible firm*. Oxford, England: Oxford University Press.
72. Wehinger, G. (2014). SMEs and the credit crunch. *OECD Journal: Financial Market Trends, 2013*(2), 115-148. https://doi.org/10.1787/fmt-2013-5jz734p6b8jg
73. Westley, F., & Vredenburg, H. (1996). Sustainability and the corporation: Criteria for aligning economic practice with environmental protection. *Journal of Management Inquiry, 5*(2), 104-119. https://doi.org/10.1177/105649269652003
74. World Bank. (1992). *World Development Report 1992: Development and the environment*. Retrieved from http://documents.worldbank.org/curated/en/995041468323374213/pdf/105170REPLACEMENT0WDR01992.pdf
75. World Commission on Environment and Development (WCED). (1987). *Our Common Future*. Retrieved from https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf
76. Zerbib, O. D. (2016). Is there a green bond premium? The yield differential between green and conventional bonds. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2889690