

Institutional Investors' Preferences in Green Bonds and ESG Criteria: A Focus on German-Speaking Europe

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The aim of this paper is to study the influence of the current regulatory environment on the investment decisions of sustainability-oriented institutional investors within the German-speaking region of Europe. Through the use of a structured questionnaire, aimed at institutional investors, this paper presents detailed insights into the preferences of investors when purchasing green bonds, bonds that contribute to reducing or preventing adverse effects stemming from climate change. After analysing our sample of 179 participants, it is demonstrated that the credibility of a green bond is a basic prerequisite for an investor to purchase such an instrument. Additionally, the attractiveness of green bonds is influenced by financial factors such as tax incentives as well as the interest rate environment. Furthermore, this paper studies the influence of environmental, social and governance (ESG) strategies on green bond investment decisions, where it is revealed that the environmental pillar is the most important for investors.

Key Words: green bonds, ESG, institutional investors, investor preferences, conjoint analysis, socially responsible investing

JEL Classification: G02, F65

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Introduction

According to the Climate Bond Initiative (2019), green bonds are any type of bond instrument (and other debt instruments) where the proceeds or an equivalent amount will be exclusively applied to finance or refinance, in part or full, new or existing eligible green projects that are aligned with the four core components of the Green Bond Principles (GBPs), which are voluntary process guidelines (International Capital Market Association 2021). According to Ehlers, Mojon, and Packer (2020, 31), 'Green

bonds are a plain vanilla fixed-income product that offers investors the opportunity to participate in the financing of “green” projects that help mitigate climate change and help countries adapt to the effects of climate change.’ Green bonds have similar features to regular bonds of the issuing entity, including credit risk and size. Because of the standard financial features and the dedication to climate change, they are of interest to a broad range of purchasers, ranging from retail and high-net-worth investors to institutional investors, thus covering both non-professional as well as professional investors. A key feature of these bonds valued by many investors is the due diligence process that the issuer of green bonds conducts to identify and monitor ‘green’ projects (Reichelt 2010, 7). Several possibilities exist for the labelling of a bond as ‘green.’ Firstly, it can be ‘self-labelled’ and be marketed accordingly. Secondly, bonds can be rated by rating providers, of which the two most prominent examples are the GBPS and the Climate Bonds Standard.

Although evidence that green bonds enable issuers to achieve better conditions compared to common bonds is not widely available through the current literature (Karpf and Mandel 2017; Fatica, Panzica, and Rancan 2021; Flammer 2021), the increasing demand from sustainability-oriented investors on the environmental, social and governance (ESG) and socially responsible investing (SRI) spectrum has the potential to lead to lower costs of capital for initiatives in the future (KPMG 2015; Baker et al. 2018; Zerbib 2019). To channel vast amounts of capital into sustainable initiatives, investment products must appeal to institutional investors with a sufficient amount of assets under management, such as pension funds, endowments, asset managers and sovereign wealth funds. Additional investment needed to meet the climate challenge – for clean energy infrastructure, sustainable transport, energy efficiency and forestry – amounts to approximately US \$700 billion per year globally, which vastly exceeds the capability of the public sector (Bhattacharya, Oppenheim, and Stern 2015, 12).

As the proceeds of a green bond are assumed to be used for initiatives that contribute to a more sustainable and liveable planet, green bonds are a fitting instrument to finance the costs associated with meeting the commitments of the 2015 Paris Climate Agreement and, therefore, are heavily sought after. This growth is necessary to achieve targets of the 2015 Agreement for 2030. Europe alone is estimated to need €180 billion in additional investment annually to achieve these targets (Fatica, Panzica, and Rancan 2021, 2688). Therefore, green bonds as an investment category

offer a vast untapped potential to access capital for sustainable initiatives. Over the last decade, green bonds have been gaining interest as an asset class, as large investors such as pension funds and sovereign wealth funds started to allocate more assets to sustainable investments and are either voluntarily or, to some extent, legally obliged to sustainably invest their assets (Della Croce, Kaminker, and Stewart 2011, 12).

As the current market constellation is primarily governed by market-oriented institutions and by voluntary practices instead of 'hard'-law-based regulations, sustainability-based commitments are vulnerable to 'greenwashing,' in other words, the use of the green bonds' proceeds for profit- or brand-enhancing reasons (Greene 2015; Deschryver and Mariz 2020). Moreover, with increasing doubt about whether green bonds function as a credible instrument to mitigate the adverse effects of climate change and pollution, the entire regulatory fabric of the green bond market may suffer from systemic legitimacy deficits in the eyes of investors, stakeholders and regulators (Deschryver and Mariz 2020).

The aim of this paper is to research the influence of the current regulatory constellation on the investment decisions of sustainability-oriented investors. As large portions of the current laws are governed primarily by market-oriented institutions alongside voluntary practices, as stated previously, we present proposals for a further improvement and partial redesign of existing green bond frameworks. By employing a structured questionnaire that was disseminated in the German-speaking region of Europe, we provide a further edge by focusing particularly on the behaviour and preferences of investors from this area. Furthermore, we distinguish between professional and non-professional investors as well as existing knowledge regarding sustainable investments, thus enabling us to critically observe different types of investor groups.

This paper provides detailed insights into the preferences of sustainability-oriented investors. By focusing not only on a particular region of Europe but also considering participants' investment expertise and professional background, we critically assess differences and similarities between investor groups. Consequently, we provide insights that contribute to shaping the future regulatory environment of green bond markets and help these markets provide trustworthy, accessible, and attractive investment instruments to overcome current and future climate-related challenges.

With 179 participants contributing to this survey, among them both beginning and experienced institutional investors, this survey presents the

preferences of a diversified sample stemming from the German-speaking part of continental Europe. The outcomes of this research provide detailed insights that are not only useful for regulators to enhance the functioning of the green bond market but also enable investment advisors and fund managers to further improve their offerings, based on the criteria desired by investors.

Following the introduction, this paper proceeds with a brief overview of theoretical concepts related to green bond markets. Afterwards, the methodology is explained in detail, and the results are elaborated upon in the following chapter. Finally, our conclusion is presented alongside limitations to this research and proposals for future study.

Theoretical Positioning

SUSTAINABLE INVESTMENTS

The attention focused on sustainable investments has increased significantly over the past decade. Starting with more ethical and sustainability-oriented equities, this market development has also reached significance within the green bond market, drawing attention from largely institutional investors, with the retail market following at a safe distance. Besides non-monetary motives, the financial motive to invest in instruments offering both monetary and non-monetary returns is the most frequent and important motivation from an equity-market and ESG-focused perspective (Amel-Zadeh and Serafeim 2018). For the green bond market, however, the so-called ‘green bond premium’ – which enables issuers to issue a green bond at a price higher than its actual fundamental worth, thus resulting in a lower yield for investors – contradicts the aforementioned research, as it indicates that investors are willing to sacrifice returns for investments with strong green credentials.

Sangiorgi and Schopohl (2021), who researched the reasons why institutional investors buy green bonds, pioneered studies in this field. However, since their study is one of only a few on the topic of investor preferences regarding green bonds, our research contributes to the literature by including a regulatory lens. By doing so, we critically examine the current regulatory constellation as well as its influence on the investment decisions of institutional investors. Furthermore, we limit the geographical scope to include only the German-speaking area of Europe to reflect a rather homogeneous population and to minimize any cultural differences that might cause distortion in the answers provided.

THE CASE OF GREEN BONDS

Since at least 25% of pension funds' assets are allocated to fixed income, bonds as an investment category offer a huge untapped potential to access capital for sustainable initiatives. In recent years, green bonds have been gaining interest as an asset class, as large investors such as pension funds and sovereign wealth funds tend to be more inclined to purchase lower-risk investments that provide a steady, inflation-adjusted income stream. Additionally, these funds are either voluntarily or, to some extent, legally obliged to sustainably invest their assets (Della Croce, Kaminker, and Stewart 2011, 12). This trend is enabling the development of more liquid infrastructure asset classes including green bonds, of which an estimated \$257.7 billion were issued in 2019 worldwide (Dorfleitner, Utz, and Zhang 2022, 798).

Existing green bond standards comprise various voluntary standardization measures including criteria regarding their definition, eligibility, disclosure, transparency and impact reporting. Although the market for green bonds is still relatively young, various definitions for green bonds have been developed at the national and international levels. Additionally, various tools to certify green bonds as 'green' have been implemented. While the GBPS provide a basis for the certification of green bonds, the question remains how 'green' the bond itself is, as the GBPS do not take a stand on which initiatives produce the greatest benefit. The Climate Bonds Standard by Climate Bond Initiative has taken on this task by providing a stricter assessment in this respect. However, subscribing to these standards is not necessary, therefore leaving the option to issuers to avoid this process entirely (Climate Bond Initiative 2019), which is not negative per se for the market perception of green bonds, as was the case with US municipalities issuing green bonds at a premium (Baker et al. 2018). In addition to these internationally adopted standards, national standards have been established – for example, in China – and soon, the EU plans to provide their own green bond standards as well. These actions are leading the market away from one universally accepted standard and creating a more heterogeneous environment from an investor's perspective.

Moreover, the largely voluntary character of green bond certification, verification and monitoring is not beneficial for the current market structure. Research results thus far indicate that voluntary reporting by bond-issuing companies or reporting based on a voluntary self-commitment does not have an emission-reducing effect. Furthermore, a major issue

for sustainability-oriented investors is the ability to recognize an honest commitment on the part of the issuer to use the proceeds in an environmentally friendly way, thus not greenwashing the proceeds (Fatica, Panzica, and Rancan 2021, 5).

ENVIRONMENTAL, SOCIAL AND GOVERNANCE IN FOCUS: LITERATURE REVIEW ON INVESTORS' ESG PREFERENCES

A study by Duuren, Plantinga, and Scholtens (2016) investigated conventional asset managers' preferences for ESG factors, and the findings revealed that most asset managers use ESG information as an analysis and investment opportunity rather than at the company level. The study revealed that governance factors are dominant among investors. The authors observed that asset managers were given clear instructions about how to address individual ESG dimensions, while 60% of the investors received clear instructions and paid close attention to governance factors only. Consequently, the social and environmental factors shared the same result. In addition, the study observed that the domicile of the investor has a significant impact on the results. For example, managers in the United Kingdom and the United States place low emphasis on the environmental and social factors, whereas these factors are more highly valued by European managers. Finally, the portfolio structure and strategy vary among investors. The UK managers rely more on red flagging, while European managers focus primarily on limiting the investment universe (Duuren, Plantinga, and Scholtens 2016, 525–33).

More recently, Amel-Zadeh and Serafeim (2018) also revealed that the application of ESG information is material from a financial perspective, which means it could have a significant impact – either positive or negative – on a company's business model and value drivers, significantly impacting investment value. Additionally, the vast majority of investors who apply the ESG information are institutional investors, not retail investors. Finally, the study observed that an investor's origin and background are reflected in the purchase decision. For example, if the investor is from a country with significant corruption, then they will consider and address this issue. In contrast, an investor from a country that suffers from environmental problems would consider this as a decision factor (Amel-Zadeh and Serafeim 2018, 87–103).

INSTITUTIONAL INVESTORS AND CLIMATE RISKS

In general, institutional investors believe that climate-related risks have important financial implications for their portfolio firms (Ilhan et al.

2019). This is in line with evidence from studies that examine the financial implications of climate risks (Ilhan et al. 2019; Baldauf, Garlappi, and Yanellis 2019; Addoum, Ng, and Ortiz-Bobea 2020). According to Ilhan et al. (2019, 34), institutional investors consider these risks because of financial and non-financial reasons.

According to Orsag (2015), institutional investors can be grouped into passive and active investors. The former adopt strategies aimed at outperforming the market. The latter are focused on achieving a profit based on long-term growth. Within the available literature, the role of institutional investors, measured as the extent to which these investors are able to influence management, is debated and no clear picture whether investors are typically active, or passive, exists (Maug 1998; Cornett et al. 2007). More recent research suggests institutional investors rather employ a long-term oriented, passive, focus (Mehrani, Moradi, and Eskandar 2017), which is also reflected in the passive portfolio management style adopted by institutional investors (Nix and Chen 2013). Due to the long-term investment horizon, institutional investors have a particularly strong interest in corporate governance (McCahery, Sautner, and Starks 2016). Based on Chung, Elder, and Kim (2010), good corporate governance reduces information asymmetry, thus reducing agency costs and, according to Djundjek Kokotec (2022), leading to better business performance and increased firm value.

HYPOTHESIS DEVELOPMENT

Summarizing, equity and green bond investors differ with regard to their intentions when investing in sustainable instruments, despite the largely self-governed character of the green bond market. Further, institutional investors in particular tend to have strict guidelines when investing capital, with a clear preference for governance-related factors when selecting investments. Considering the above-mentioned statements, we can derive the hypothesis:

Institutional investors consider governance issues to be more important than environmental or social issues.

Methodology

This research paper is of a qualitative nature, with the research method applied being a structured questionnaire. Although surveys have several drawbacks, such as response bias, selection bias and attribution bias, it is the preferred method for my research, as the data and insights related to my research questions cannot be addressed by archival data. As Dichev

et al. (2013, 2) suggest, ‘Surveys . . . allow researchers to (i) discover institutional factors that impact practitioners’ decisions in unexpected ways and (ii) ask key decision makers directed questions about their behaviour.’ The questionnaire was disseminated exclusively to institutional investors in the German-speaking countries in Europe (Germany, Austria, Switzerland and Liechtenstein). The questionnaire was disseminated and administered online based on the arguments provided by Saleh and Bista (2017), which relate to ease of use, quick response and costs involved.

Due to the relative novelty of green bonds as a financial instrument and the limited knowledge regarding retail investors’ approaches to green bond investments, the nature of this research is rather exploratory.

To successfully capture investors’ preferences for financial products, the conjoint analysis measurement was implemented (Zinkhan and Zinkhan 1990, 31–2). This method gained popularity beginning in 1971 and was widely used to solve diverse issues in the consumer market. The conjoint approach offers various types of methods depending on the needs of the study (Orme 2009, 1–5).

A choice-based conjoint (CBC) analysis was selected for this study in light of its capabilities and the purpose of this paper. CBC demonstrates superiority compared to other methods when multi-attribute products are considered and highlights important differences in choices (Vriens, Oppewal, and Wedel 1998, 1–3). The respondents at first familiarize themselves with the product’s features and then make a preferred choice (Orme 2009, 1–6).

SURVEY DESIGN

The 25-question survey, which included a CBC analysis, focused on the characteristics of green bonds and their effect on the investment decision. As suggested by Sargent (1993), behavioural finance has emerged as a response to difficulties faced by the traditional paradigm. The traditional paradigm assumes that, in the case of our paper, investors make perfectly rational decisions (Bloomfield 2010). Additionally, the development of conjoint analysis and its role in behavioural finance has demonstrated advancement in financial psychology (Clark-Murphy and Soutar 2005, 6–12).

Table 1 illustrates the attributes selected for this survey and their underlying levels. The green bond attribute represents the four choices of investment opportunities: green bond, secured by assets as compared to standard bonds; green revenue bond, secured by income-producing

TABLE 1 Levels and Attributes Applied

Attributes	Level 1	Level 2	Level 3	Level 4
Green bond	Green bond (secured by assets, compared to standard bonds)	Green revenue bond (secured by income-producing projects)	Green project bond (secured by project assets and a balance sheet)	Green securitized bond (secured by a larger asset pool)
Rating (score)	A (0.75–1.00)	B (0.50–0.75)	C (0.25–0.50)	D (0.00–0.25)
5-year average return	9%	7%	5%	3%
Investment objectives	Environmental issues	Social issues	Governance issues	Other

projects; green project bond, secured by project assets and a balance sheet; and green securitized bond, secured by a larger asset pool. The options aimed to confront the respondent with four investment opportunities in green bonds. The rating (score) attribute provides a brief evaluation of a hypothetical investment opportunity consisting of four levels: (A) 0.75–1.00, (B) 0.50–0.75, (C) 0.25–0.50 and (D) 0.00–0.25, where A represents the most favourable rating, B the second most favourable, et cetera. The five-year average return attribute consists of four levels of annual returns: 3%, 5%, 7% and 9%. Investing in sustainability is considered an art of long-term performance (Kurtz and Dibartolomeo 2011, 95). Therefore, according to Gutsche and Ziegler (2016, 8), the five-year average return has proved to be a successful measure. The investment objectives attribute consists of four levels: environmental issues, social issues, governance issues and other issues. Table 1 presents the respondents' choices regarding green bond attributes and levels.

SURVEY PARTICIPANTS

As suggested by Lohr (2019), a representative sample should mirror features of the entire population. Based on the characteristics of this study, the intent of which is to identify and assess preferences of investors, the sample exclusively consists of institutional investors residing in German-speaking regions of Europe: Switzerland, Austria, Germany and Liechtenstein. To ensure a high response rate among institutional investors, the questionnaire was distributed through social media, such as LinkedIn and WhatsApp, as well as through email and other digital media. After data cleansing, a total of 179 respondents completed the survey.

Results

RESPONDENT STATISTICS SUMMARIZED

According to the applied software, 386 potential respondents viewed the survey, and among this number, a total of 229 participants started the survey but 50 did not provide complete answers, leaving 179 completed surveys. Therefore, the dropout ratio constituted 22%.

Overall, nearly 75% of the respondents are male, and 34% are between the ages of 31 and 40. Furthermore, the participants, on average, possess at least a bachelor's degree and tend to have either very few or no sustainable or green bond investments. However, 62% of the respondents said they are typically in favour of green bonds and ESG investments. With very few self-employed and even fewer unemployed, the respondents typically are employed (168 of the 179) and earn between CHF 50,000 and CHF 100,000 annually. The majority of our sample (57%) consider themselves beginners in the institutional investment realm, possessing some knowledge. Another 27% are experienced institutional investors, with the remainder rating themselves as advanced or professional institutional investors.

From a geographical perspective, most respondents are from Germany, thereby reflecting the large population this country has within the European German-speaking area. Compared to the other countries, German investors do not significantly support green bonds and ESG investments, with the respondent pool split 50–50 regarding these assets. By contrast, Liechtenstein investors – who comprise 18 of the 179 responses, thereby making up 10% of the sample – display the highest support for sustainable and green bond investments, being unanimously in favour of green bonds and ESG. Furthermore, more than half of Liechtenstein participants consider themselves advanced investors and earn, on average, the highest annual income. They invest the greatest amount in sustainable and green bond investments as well. Both Liechtensteiners and Swiss participants are well educated, with 61.11% and 65.38%, respectively, having earned master's degrees. This educational level is also reflected in the annual incomes earned.

IMPORTANCE OF GREEN BOND ATTRIBUTES

Table 2 presents the responses regarding the importance of green bond attributes provided by the institutional investors from German-speaking regions in Europe who answered the survey. The importance of rating

TABLE 2 Attribute Importance

Attribute importance	Percentage
Green bond type	5.09
Rating (score)	39.94
5-year average return	32.04
Investment objectives (E, S, G)	22.93

TABLE 3 Best and Worst Profiles Selected by Institutional Investors in Germany, Austria, Liechtenstein and Switzerland

Attributes	Best Profile	Worst Profile
Green bond type	Green securitized bond secured by a larger asset pool	Green project bond secured by project assets and a balance sheet
Rating (score)	A (0.75–1.00)	D (0.00–0.25)
5-year average return	9%	3%
Inv. objectives (E, S, G)	Environmental issues	Other

(score) was deemed the greatest by 39.94% of respondents. This confirms that the rating (score) has a predominant influence when an investment opportunity is being considered. However, not far behind is the five-year average return, rated as most important by 32.04% of respondents. This indicates that the financial performance is one of the key factors considered when investing. The attribute investment objectives E, S and G was rated most important by 22.93%, indicating that investors are also aiming for sustainability. The least important attribute for respondents proved to be the green bond type, with only 5.09%, which means that the given attribute is highly insignificant when an investment opportunity is being considered.

Table 3 displays the best and worst profiles generated by the conjoint analysis. The best profile indicates that the given combination of levels has been chosen most frequently by the respondents. In contrast, the worst profile has been selected by the fewest respondents. In reference to table 3, we can observe that the most frequently selected best profile consists of the following levels: green securitized bond, secured by a larger asset pool; A (0.75–1.00); 9%; and environmental issues. It is interesting to note that the most appreciated rating (score) is also the highest rating from the choices provided, and the five-year average return is the highest offered return on investment from the choices. This indicates that investors are

TABLE 4 MaxDiff Scaling versus Investors' Choice (%)

Attributes	Investors	MaxDiff backtesting
Green bond type	5.09	13.64
Rating (score)	39.94	22.73
5-year average return	32.04	46.59
Investment objectives (E, S, G)	22.93	17.05

seeking the highest return on their investment. Finally, environmental issues are considered to be the most important attribute level in contrast to other objectives such as social or governance.

In contrast, the worst profile includes the following attribute levels: green project bond, secured by project assets and a balance sheet; D (0.00–0.25); 3%; and the other investment objective. These choices indicate that an investment targeting objectives other than ESG is the least interesting to the respondent, as are the lowest return rate and the lowest rating (score). Finally, a green project bond, secured by project assets and a balance sheet, is a least interesting green bond type among other choices provided.

Table 4 displays the results obtained by means of conjoint analysis and presents the most important attribute levels by investor choice as well the results of the MaxDiff. With reference to the methodology section, MaxDiff encompasses the procedure that works through multiple sets of choices, where survey respondents are asked to select two attributes that they rate as the most and least important (Auger, Devinney, and Louviere 2007, 304). This procedure has a straightforward benefit, where respondents can immediately select from the choices provided, which, in this case, are the attributes of a conjoint analysis. As a result, with this procedure we are able to backtest the choices made in the conjoint analysis.

The results indicate that the most important attributes remained rating (score) and five-year average return. However, the five-year average return gained even higher significance, from 32.04% to 46.59%, making it the most important attribute in MaxDiff, whereas the most important attribute by the investor's choice in the conjoint analysis was rating (score). Investment objectives remained third, however, declining slightly from 22.93% to 17.05%. Finally, green bond type remained the least important in both the conjoint analysis and the MaxDiff scaling (5.09% against 13.64%).

The results show that the highest score (score range from 1.00–5.00) goes to air and water pollution from the environmental pillar, with 4.16.

TABLE 5 Factors Influencing the Investment Decision

Influencing factor	(1)	(2)	(3)
Penalizing capital requirements for high-carbon assets	3.63	0.93	0.86
Tax incentives	3.74	1.03	1.06
Subsidies	3.41	0.98	0.97
Mandatory climate-related financial disclosures (e.g. adoption of Task Force on Climate-Related Financial Disclosures)	3.41	0.95	0.89
Regulatory and legislative trends	3.38	0.89	0.79
Broadly accepted and enforced official minimum standards for green definitions and criteria set	3.49	0.95	0.91

NOTES Column headings are as follows: (1) mean, (2) standard deviation, (3) variance.

In contrast, the lowest score of 2.66 is for executive compensation from the governance pillar. The environmental pillar received the highest overall score with 19.45, followed by the social pillar with 17.91 and the governance pillar with 15.08. It can clearly be seen that the most important pillar is the environmental, meaning that the results coincide with the outcome of the conjoint analysis, where investors indicated that environmental issues are the most relevant when they make their investment choices.

Overall, the survey respondents placed importance on the positive and credible fundamentals of a green bond as well as the transparency of a green bond issuer. They also indicated that external review, inclusion in major indices and certification under the Climate Bonds Standard enhance a green bond’s attractiveness. In contrast, survey respondents care less about the availability of impact reporting, post-issuance transparency and detailed use-of-proceeds disclosure.

The main policy mechanism that is perceived to enhance the investments undertaken in green bonds are tax incentives, with preferential capital treatment for low-carbon assets ranked second. In general, however, respondents indicated positivity towards the enhancing effects of the listed policy mechanisms. Additionally, rising interest rates could further support an increased appetite for green bonds.

In summary, survey respondents said they consider each listed factor that could enhance green bond investments to have some importance, with no factor scoring a mean value lower than 3.38. However, tax incentives and penalties for high-carbon assets appear to be of the greatest importance for a future increase in green bond investments.

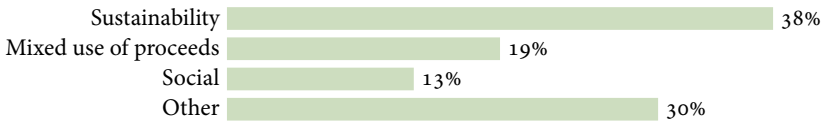


FIGURE 1 Green Bond Experience of Respondents

Figure 1 illustrates the survey respondents' purchasing behaviour regarding green bonds. On a portfolio level, 38.42% of survey respondents said they have bought sustainability bonds, and another 30% said they have purchased a bond whose type is not listed in the survey.

PRE- AND POST-ISSUANCE PREFERENCES

On an investor level, 40.56% of participants said they are more inclined to buy a green bond if the issuer has issued a green bond in the past. Nevertheless, 51.11% indicated that they do not have a preference regarding past issuances. In contrast, a large majority of participants emphasized the importance of a trustworthy investment of proceeds after issuance of a green bond, with 88.44% of respondents indicating they are unwilling to buy a green bond if it is not guaranteed that proceeds will be allocated to green projects (47.78% of respondents), or that they would be completely opposed to buying such a bond (40.56% of respondents).

When already invested in a green bond, 45.56% of participants said they would sell the bond if post-issuance reporting was poor, and 38.33% said they would consider selling. Only 16.11% said they would keep the bond.

Discussion

The hypothesis that is studied within the scope of this paper is whether institutional investors consider governance issues to be more important than environmental or social issues. The aim of the research paper is to incorporate ESG into green bonds, by studying the preference of institutional investors regarding each separate pillar of ESG. This was made possible with the application of the CBC analysis. The results indicate that institutional investors from the German-speaking regions of Switzerland, Liechtenstein, Austria and Germany consider environmental issues to be predominant in their investment universe, contradicting literature on institutional investors (Chung, Elder, and Kim 2010; McCahery, Sautner, and Starks 2016). Consequently, the hypothesis statement, which posits that governance issues are more important than environmental and social considerations, is rejected. The key performance indicator (KPI) choices

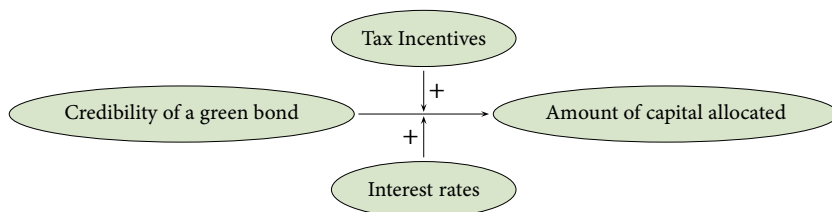


FIGURE 2 Moderating Model Depicting the Relationship Between Credibility and Amount of Capital Allocated

supported the results, which illustrated the dominance of the environmental pillar. Air and water pollution scored the highest compared to other KPIs. In fact, the governance pillar and its underlying KPIs scored the lowest, which again proves that the hypothesis did not hold. The KPI from the social pillar that scored the highest was human rights, and in the governance pillar, it was ethics and corruption.

Although investors consider each policy mechanism in the questionnaire to be at least somewhat important, the monetary part appears to be of special importance to investors, as the effect of tax incentives reveals. Furthermore, the general interest rate environment influences the decision of investors to invest in green bonds, as depicted by the model in figure 2.

As can be derived from the model, the independent variable, which is the credibility of a green bond, drives the decision to allocate capital to such a bond. The level of interest rates as well as tax incentives granted moderate this relationship in a positive manner, thus, the higher the interest rates and the more attractive the tax incentives, the larger the amount of capital allocated. Interestingly, the sustainability aspect plays an insignificant role in the amount of capital allocated towards a green bond, when this bond is already deemed as ‘credible,’ therefore fulfilling the sustainability requirement. This is in line with governance on a firm-level, as researched (Chung, Elder, and Kim 2010; McCahery, Sautner, and Starks 2016).

Conclusion

Overall, this research has demonstrated that investors are open to green bond investments. This openness is not just a ‘given’ factor, as investors do expect some sort of guarantee regarding the allocation of green bond proceeds towards green investment after issuance – with a significant

part of our sample even being explicitly opposed to ‘deceiving’ bonds – which is also reflected in the willingness to sell green bonds in the case of poor post-issuance reporting. Regardless of substandard allocation or deficient post-issuance reporting, market participants are strict regarding the trustworthiness of green bonds, leading to a green bond issuer’s reputation being at stake when it fails to fulfil its promises, thereby risking negative financial implications for investments of institutional investors. Whether an issuer has released a green bond previously does not play a significant role in this behaviour, although past issuances do depict a signal of trust, contributing to governance-related aspects. Within the regulatory environment of green bonds, certification as set out under the Climate Bonds Standard enhances attractiveness for investors, who, despite it being a requirement under this standard, tend to care less about the availability of detailed impact reporting and use-of-proceeds disclosures. The latter contradicts expectations based on available literature on a firm-level.

Looking at the specific nature of green bonds, with governance-related aspects being built into the financial instrument itself, the governance criterion is assumed to be fulfilled, with green bonds in turn providing assurance regarding the financial implications of climate-related risks. Therefore, we conclude that, under the condition of governance requirements being fulfilled, environmental aspects prevail in the investment decision.

LIMITATIONS AND SHORTCOMINGS

A useful definition of limitations can be explained as systemic bias that falls outside a researcher’s control and may have a negative influence on the outcome (Price and Murnan 2004, 66). Nevertheless, according to Chasan-Taber (2014, 219), many authors do agree that limitations are inevitable and will arise at some point during research. Variables of chance, confounding possibilities and multiple biases are the three major issues that a researcher must address (Chasan-Taber 2014, 220). The validity concept, which was originally proposed by Campbell and Stanley (1963), influenced the way in which researchers perceive their papers. The concept refers to how accurately a method measures what it is intended to measure. Many practitioners accept the fact that multiple factors may threaten a study’s validity and that many issues may remain unresolved. External validity is the main concern, especially if it relates to the theoretical part of the research (Calder, Phillips, and Tybout 1982, 240). Given

the available literature on the topic of green bonds and ESG, recent studies have focused more on the performance-based rating or scores as well as the performance of sustainable indexes. The focus of this research is to investigate preferences of German-speaking institutional investors from Germany, Switzerland, Liechtenstein and Austria. That said, the research settings are crucial, as they are supported by external validity (Chasan-Taber 2014, 234–5). However, this study's sample, consisting of Swiss, Liechtensteiner, Austrian and German institutional investors after cleansing, may be considered low. Due to additional factors or a set of factors, internal validity may also be compromised, and this may lead to an inaccurate estimate of the true association between exposure and outcome (Skelly, Dettori, and Brodt 2012, 9). This may affect the relationship that was found among German, Austrian, Swiss and Liechtensteiner institutional investors, and could be due to uncontrolled factors that may or may not have occurred during this research. A difference in the sample could also have a negative effect on the overall plausibility of an outcome.

Although each question was clearly worded, some survey respondents may have encountered a language barrier that impeded their ability to fully understand the questions. This could be caused by some defects in the process design, also referred to as design bias (Price and Murnan 2004, 66). The overall approach of this research deviates from the theory and focuses more on the factors that influence investment decisions. Consequently, there is a possibility that this led to unforeseen answers, especially with the least experienced investors. Finally, regarding the questionnaire, investors had an idea of what the researcher required as well as the overall goal of the study. Therefore, this could have led to a biased outcome, as the reaction of respondents may have been provoked.

In this paper we explicitly shed light on the behaviour of institutional investors. By doing so we limited the scope of this paper to reflect only people who are assumed to display the highest affiliation with investments. Although the survey was designed in a highly structured and self-explanatory manner, some respondents may not have been as knowledgeable about sustainable investment and detailed green bond specifics as others were. This situation could lead to self-selection bias, which is seen as the complementary type of selection bias (Schlegelmilch 1997, 50). Bias may have been encountered within sociodemographic features, as respondents may be unwilling to disclose annual income, for example. Finally, the questionnaire was prepared in a way to help respondents deviate from the theory and focus more on practical implications.

RECOMMENDATIONS FOR FUTURE RESEARCH

Several recommendations for future research can be provided based on the outcome of this research paper. With reference to the study made by Amel-Zadeh and Serafeim (2018), which revealed that origin and background are significantly important in the decision-making process, this could be an interesting area to research in future. This study paves the way for future research to be conducted on investor preferences of green bonds in combination with mainstream sustainability concepts such as ESG and Sustainable Development Goals. As the sample used in this paper is rather small compared to the size of the population of the region covered, it is recommended to increase the scale of the sample by also including non-business participants and financial resources available for conducting future studies.

Furthermore, since we explicitly covered only the German-speaking regions of continental Europe, it is recommended to include additional regions to study any regional differences regarding investor preferences. Moreover, Sustainable Development Goals could be substituted for ESG to determine the preferences within the investment universe. Finally, the main method applied was the CBC analysis, which is not widely used in the financial industry. However, given its potential in confronting respondents, this analysis may adopt new attributes and levels such as investment strategies and other KPIs.

The results of this research should be of interest to many scholars and practitioners in the field of sustainability, which may include institutional investors, retail investors and financial institutions in general. This study highlights the importance of sustainability as well as issues surrounding the concept. Consequently, financial institutions may apply this knowledge to promote sustainable funds and other green investment instruments.

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