Lisbon School of Economics & Management
Universidade de Lisboa

# MASTER

MANAGEMENT AND INDUSTRIAL STRATEGY

# MASTER'S FINAL WORK

DISSERTATION

## WHAT LAYS BEHIND A GREEN BOND INVESTMENT?

## A BEHAVIORAL REASONING THEORY APPROACH

MARIANA MAGALHÃES MEIRELES

JUNE - 2025

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**SUPERVISION:**

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To all the survey participants, for their time and contribution.

To me, for not giving up.

# RESUMO

À medida que o panorama financeiro global integra cada vez mais preocupações de âmbito sustentável, as Obrigações Verdes ganham relevância como ferramentas para alavancar o financiamento de projetos ambientalmente sustentáveis e, portanto, torna-se imperativo compreender os fatores comportamentais que influenciam a participação dos investidores comuns singulares. Assim, através da investigação de construtos cruciais no processo de decisão - facilitadores (Razões a favor) e inibidores (Razões contra) contextuais - e da sua relação com a Preocupação Ambiental, a Atitude e a Intenção, esta investigação desvenda o processo de decisão subjacente ao investimento em Obrigações Verdes. Apoiando-se num desenho de investigação quantitativo, o estudo recolhe e analisa dados de 322 participantes para testar um modelo concetual baseado na Behavioral Reasoning Theory (BRT).

Os resultados deste estudo mostraram (1) que o padrão de comportamento do investidor individual é predominantemente moldado pelas suas atitudes, que por sua vez são influenciadas por razões específicas a favor e contra o comportamento que são altamente moldadas consoante o nível de preocupação ambiental do investidor e (2) que o processo de decisão é altamente influenciado pelas particularidades específicas do contexto.

Além disso, os resultados contribuem tanto para a literatura de Finanças Comportamentais como para a literatura de Sustentabilidade, oferecendo informações relevantes sobre como processo de decisão comportamental afeta as escolhas sobre Investimentos Sustentáveis. Adicionalmente, também para a literatura sobre a Behavioral Reasoning Theory (BRT) através da sua aplicação num novo âmbito: Finanças Sustentáveis.



**Palavras-Chave:** Obrigações Verdes, Teoria do Raciocínio Comportamental; Processo-decisão; Comportamento do Consumidor; Razões a favor; Razões Contra; Preocupação Ambiental

# ABSTRACT

As the global financial landscape increasingly integrates more sustainable concerns, Green Bonds are gaining relevance as tools for leveraging the financing of environmentally sustainable projects, hence understanding the behavioral factors that influence retail investors' participation becomes imperative. Hence, through the investigation of crucial constructs in the decision process – contextual enablers (Reasons For) and inhibitors (Reasons Against) – and their relationship with Environmental Concern, Attitude and Intention, this research uncovers the decision-making process behind investment in Green Bonds. Leaning on a quantitative research design, the study gathers and analyzes data from 322 participants to test a conceptual model grounded in Behavioral Reasoning Theory (BRT).

The results of this study have shown (1) that the behavioral pattern of the individual investor is predominantly shaped by their attitudes, which in turn are influenced by specific Reasons for and against the behavior that are highly shaped depending on the level of Environmental Concern of the investor and (2) that the decision process is highly influenced by context specific particularities.

Moreover, the findings contribute to both the Behavioral Finance and Sustainability Literature by offering insights on how Behavioral Reasoning affects Sustainable Investments Choices and to Behavioral Reasoning Theory Literature through its application in a new scope: Sustainable Finance.



**Keywords:** Green Bonds; Behavioral Reasoning Theory; Decision-Making Process; Consumer Behavior; Reasons For; Reasons Against; Environmental Concern.

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# 1. INTRODUCTION

## 1.1. Theoretical Context and Research Objectives

Over the years, orientation towards social and environmental problems has emerged as a pressing global concern, pushing individuals, corporations, and governments all over the world to develop innovative solutions to mitigate climate change, promote eco-friendly practices and integrate socially responsible behaviors in their aspirations (Puppim de Oliveira & Qian, 2023). Nevertheless, given the current complex economic context, investment in these environmental and social technologies and products might be jeopardized given challenges in securing the necessary financial resources (Andersen, 2017).

To maintain the focus on boosting a greener and climate-resilient economy even on economic recession, institutions around the world have started to shift their traditional finance methods to more sustainable ones – incorporating "sustainable finance" methods and instruments (OPEC Fund, 2020; World Bank Group, 2023) to find funding to make these social and sustainable goals achievable. Green Bonds consequently emerge as an important part of global fixed income markets as they allow corporations, governments, and institutions to gather funding to invest in sustainable projects (Bhutta et al., 2022) and therefore contribute to sustainable development, as well as to help fulfill the Greenhouse Gas emission reduction established by the 2015 Paris Agreement (Maltais & Nykvist, 2021). As for the results of these practices, Green Bond issuers and conventional issuers with similar financial characteristics and environmental ratings were compared regarding total and direct (Scope 1) carbon emissions and it was observed that green bond issuers display a decrease in the emission intensity after borrowing on the green segment (Fatica and Panzica, 2021). Moreover, the potential for Green Bonds to significantly decrease cities' carbon emissions was shown to be effective at a country level (Xu and Li, 2023), as well as their positive effect in improving cities' green innovation, and their inhibitory potential on carbon emissions in the economically developed regions (Xu and Li, 2023).

Currently, Green Bonds, alongside Social, Sustainable and Sustainably-Linked Bonds (collectively called GSS+ Bonds) hold great value in the market. In the end of

2023, GSS+ Bonds presented an aligned USD 4.4 trillion market worth from more than 43000 instruments (Climate Bonds Initiative, 2023b). As for its main issuer, Europe appears to dominate the aligned GSS+ Bond market with a volume of USD 405 billion. Nevertheless, China appears as the main issuer at country level, followed by Germany and the USA – whereas the last differentiates itself for having the amount issued dispersed over a much bigger number of issuers (Climate Bonds Initiative, 2023b). In what concerns the type of issuer, private sector issuers in the non-financial and financial corporate sectors priced 57% of the Green Volume in 2023 (Climate Bonds Initiative, 2023b).

Although literature on Green Bonds is rapidly expanding (Bhutta et al., 2022), it focusses mainly on the issuers' perspective and their pricing differential towards vanilla bonds (Siemroth and Hornuf, 2023). Thus, the perspective on the individual investor is still lacking. Given its growing popularity and potential, comprehending the motivations and barriers encountered by the common investor in engaging with sustainable forms of investment, as well as delineating the underlying characteristics of a sustainable investor profile becomes imperative. This understanding holds significant relevance for governmental bodies, corporations, enterprises, and financial institutions, as it enables them to enhance their strategies and capabilities in harnessing the complete potential of Green Investments. Therefore, two main research questions emerge for this investigation:

*Research Question 1:* What are the behavioral patterns of the individual investor towards Green Bond investment?

*Research Question 2:* Is the decision process influenced by context-specific particularities?

To understand the decision-making processes underlying Green Bonds investments, this dissertation adopts as a theoretical framework the Behavioral Reasoning Theory (Westaby, 2005). The objective is to explore how a natural pre-disposition to environmental concern can reflect a positive attitude and intention towards investment in Green Bonds and how context-specific reasons influence this overall decision process.

Methodologically, a quantitative approach was chosen for this study, employing Structural Equation Modeling (SEM) to test the proposed model and hypotheses, which were grounded in existing literature.

### 1.2. Academic and Practical Relevance

From an academic perspective, this thesis confers two main contributions to two distinct domains. Firstly, it addresses a notable gap in the academic literature – the little attention that has been devoted to examining possible motivations and barriers that investors may possess towards engaging in Green Bond investment. Secondly, and contrary to the prevalent focus that is given to the issuers' perspective, this research aims to approach the complexities of investor behavior in the context of sustainable finance, thereby contributing to this field as well. Moreover, this master's final work advances in expanding the scope of Behavioral Reasoning Theory beyond conventional domains. While this theory has been approached across various contexts that outlook sustainable practices and innovation-related topics (Claudy et al., 2015; Dhir et al., 2021; Sahu et al., 2020) its application to the specific case of Green Bonds (or related forms) remains unexplored. Motivations, barriers and behaviors of investors in the field of green finance can be further understood by taking advantage of this theoretical framework, offering crucial insights into the dynamics of sustainable investment decision-making.

From a practical perspective, consumers' ecological values and attitudes often fail to materialize in actual purchases of Green Products (either financial or non-financial) (ElHaffar et al., 2020) – often described as the attitude-behavior gap or, in the case of sustainability-related topics, the green gap. Hence, this research offers an interesting opportunity to decipher information about consumers' perceptions and the psychological processes that influence both proneness and reluctance towards green investments, bridging the green gap more effectively. Additionally, it supplies issuers with consumer behavior understanding, which can optimize the design of more effective engagement strategies. Ultimately, the main outputs of this master's final work have the potential to benefit both stakeholders, fostering a mutual understanding between issuers and investors.

### 1.3. Dissertation's Structure

The present dissertation is divided into 6 sections: 1) Introduction, 2) Literature Review, 3) Methodology, 4) Data Analysis, 5) Discussion, 6) Conclusion.

The first section presents the grounds for the study, the objectives and research questions of the investigation, as well as the academic and practical relevance of the study.

Section 2, gives historical and contextual background to the main topics of the study, namely Green Bonds and the Behavioral Reasoning Theory. Moreover, it presents the developed conceptual model for this investigation. Chapter 3 describes the adopted methodology, which includes the type of study, the procedures undertaken to collect data, the description of the sample, the measuring instruments and the explanation of the data processing. On the other hand, section 4 initially presents the data resulting from the research without interpretation and bias, and afterwards, in section 5, the same data is interpreted in the light of what was already known about the topic, and what new understandings emerged from the results. Lastly, Chapter 6 summarizes the research findings, reflects on practical and theoretical implications of the results achieved, identifies limitations and highlights possible pathways for future research on the topic.

# 2. LITERATURE REVIEW

## 2.1 Sustainable Development and Green Bonds

Sustainable development has been at the forefront of international debate over the last years(Smith et al., 2018; Yumnam et al., 2024). Triggered by the Report of the World Commission on Environment and Development (WCED), multiple initiatives concerning sustainability have been under discussion at local, national and global levels in an attempt to respond to environmental challenges created mostly by the world's industrialization process. Over the years, multiple industries have become closely related and dependent on activities that engage in the burning of fossil fuels, unsustainable land and energy use, untenable consumption and production patterns – highlighted as the main reasons for the world surface's temperature increase (IPCC, 2023) and all the complications associated to it, such as climate change, ocean acidification, threats to food security, water scarcity, loss of biodiversity, among others (IPCC, 2023; The World Bank Group, 2023; United Nations, 2023). At the same time, since the onset of the industrial and globalization phenomena there has been a swift surge in the expansion of the global economy and major improvements in human living standards, mostly in developed nations (Fouquet & Broadberry, 2015). This coexistence of both negative and positive outcomes makes the development of a common sustainable path - that is defined as development that meets the needs of the present without compromising the ability of future generations to meet

their own needs" (World Commission on Environment and Development, 1987) - particularly challenging. Therefore, the main struggle that institutions face is to align resource consumption, investment objectives, technological advancements, and institutional frameworks with both current and future needs.

Considering the WCED's definition of sustainable development, environmental sustainability, social equity and economic prosperity present themselves as the main three pillars of the concept. Even though they are interconnected and mutually reinforcing, given the recent alarm over extreme environmental phenomena, sustainable development with focus on environmental metrics has been a trendy topic for political institutions, academicians and practitioners that look forward to find strategies that allow compliance with international concerns regarding the transition to a low-carbon and climate-resilient world (Iacobuţă et al., 2022). In fact, initiatives like the Paris Agreement and the 2030 Sustainable Development Goals (SDGs) agenda portrait some of the general approaches designed to address such concerns and whose guidelines can be adapted to multiple sectors. The first has the overarching goal to "hold the increase in the global average temperature to below 2ºC, above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5ºC above pre-industrial levels" (United Nations Framework Convention on Climate Change, 2024); the latter defines 17 Sustainable Development Goals with the objective of ending poverty and other deprivations while, at the same time, improving health and education, reducing inequality, facilitating economic growth, tackling climate change and preserving oceans and forests (United Nations, n.d.). The synergies between both international agendas have been mentioned in the available literature as well as the suggestion of their simultaneous implementation (Iacobuţă et al., 2022; Janetschek et al., 2020).

To fulfill both agendas' common objectives, businesses are required to change their practices and to shift themselves to more sustainability-friendly projects. Naturally, for these practices to have a successful implementation, an essential structure is necessary: the capital for sustainable projects' financing (Bhutta et al., 2022). With the aim of filling this gap, several new methods for financing sustainability-related projects have been developed, namely green, social, sustainable bonds (ICMA, 2021; OECD, 2023) and although there are no official global GSS bonds guidelines, some international frameworks serve as general guidelines for global issuers and investors – such as the ones introduced by the International Capital Market Association (ICMA).

Green Bonds are “any type of bond 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” (ICMA, 2021). In regards to the eligible Green Projects, they include projects that support renewable energy efficiency, pollution prevention and control, environmentally sustainable management of living natural resources and land use; terrestrial and aquatic biodiversity, clean transportation, sustainable water and wastewater management, climate change adaptation, circular economy practices and green buildings (ICMA, 2021). Social bonds, in turn, are used to “finance projects that directly aim to address or mitigate a specific social issue and/or seek to achieve positive social outcomes, especially but not exclusively for a target population(s)”. Social Project categories include providing and/or promoting affordable basic infrastructure, access to essential services, affordable housing, employment generation, food security, or socioeconomic advancement and empowerment” (ICMA, 2021). Lastly, sustainable bonds are any type of bond where the proceeds will be used to finance or re-finance a combination of Green and Social Projects. Through the issuance of these bonds, the issuer gets the capital to finance green/social projects, and the investors receive fixed income in the form of interest. Then, when maturity is reached, the principal is repaid the face value of the bond. In all cases, the proceeds are demanded to be used exclusively towards Green and Social Projects that align with Green Bond Principles and/or Social Bonds Principles outlined by ICMA. For the purpose of this research, only Green Bonds will be considered.

The first issuance of a bond of such type was done by the European Investment Bank in 2007 and, since then, it has gained significant popularity amongst international financial organizations, large corporations, banks, and even national governments. In respect to 2023, green bond issuance from corporates and governments rose 18.6% compared to the same period in 2022 (Gardiner & Freke, 2023). Indeed, this market has exhibited year-on-year growth and shown resilience, even amidst the current period of inflationary pressures (Climate Bonds Initiative, 2023).

Green Bonds are a rather new type of financial instrument and so the available literature surrounding it remains very limited. Although, some interesting topics concurrently appear. Firstly, the dissonance between the price of Green Bonds relative to vanilla bonds. On one hand, a considerable number of studies mention that these environmentally responsible instruments tend to offer a slightly lower yield when

compared to traditional corporate bonds (Baker et al., 2025; Kanamura, 2020; Yumnam et al., 2024; Zerbib, 2019). This means that investors might receive slightly less interest or return on their investments with Green Bonds. However, despite this lower yield, Green Bonds are priced slightly higher in the market, indicating that there is some premium associated with these bonds due to their sustainability features – commonly referred to as *Greenium* (Baker et al., 2018; Zerbib, 2019).On the other hand, there is also evidence portraying that investors appear entirely unwilling to give up wealth to invest in environmentally sustainable projects and also studies showing inconsistency among different markets (Larcker & Watts, 2020a; Sergei & Alesya, 2022). Thus, these discussions have yet to provide conclusive evidence for or against the presence of a substantial *greenium*. *Greenwashing* is also consistently mentioned in Green Bond-related literature(Fatica & Panzica, 2021; Jones et al., 2020; Shi et al., 2023). It is defined as "a practice whereby sustainability-related statements, declarations, actions, or communications do not clearly and fairly reflect the underlying sustainability profile of an entity, a financial product, or financial services. This practice may be misleading to consumers, investors, or other market participants" (European Banking Authority, 2023). Adapting this to the Green Bonds reality, it might translate into firms issuing Green Bonds but not actually increasing their green investments or instead in prioritizing quantity over quality of green innovations when utilizing funds raised through this method (Shi et al., 2023).

### 2.2 Behavioral Reasoning Theory

Behavioral Reasoning Theory (BRT) was first introduced in 2005 (Westaby, 2005). The original model elucidates relationships between reasons, beliefs, global motives (attitude, subjective norm, perceived control), and behavioral intentions. Eventually, a modified BRT model was developed (Claudy et al., 2013), where the main components of the modified model presented are: values, reasons (for and against), attitude, and intention (Claudy et al., 2013, 2015; Sahu et al., 2020) (*see Figure 1*). This modification presents as popular among scholars pursuing empirical research (Sahu et al., 2020) and has been tested in several contexts (Claudy et al., 2013, 2015; Ryan & Casidy, 2018; Tandon et al., 2020). Given the purpose of this research, the modified BRT model will be used as basis framework.

Contrary to traditional models of behavior such as the Theory of Reasoned Action (Fishbein and Ajzen, 1975) and Theory of Planned Behavior (Ajzen, 1991), BRT addresses how context-specific factors influence motivational mechanisms source (Sahu et al., 2020). It postulates that reasons concepts serve "as important linkages between beliefs, global motives, intentions and behavior" because they allow individuals to justify and defend their actions (Westaby, 2005). For instance, instead of focusing mainly on the acceptance related factors, BRT also integrates consumer resistance and impediments to the decision-making process through the integration of both *reasons for* and *reasons against* as antecedents to behavioral attitudes and adoption intentions (Claudy et al., 2015; Virmani et al., 2023; Westaby, 2005). One important function of these context-specific reasons is to reject the idea that pro- and anti-adoption factors are opposites. In fact, even though studies show that consumers who believe that a particular innovation is compatible with their existing values, habits and past experiences are more prone to adopt it, the operationalization of this construct is still inconsistent in the literature (Claudy et al., 2015). Thus, validating the construct that *reasons for* and *reasons against* adopting a certain product/service differ qualitatively, and influence the consumers' decisions in dissimilar ways is important. Consequently, BRT provides a comprehensive explanation of behavior when compared to other theories by including these context specific factors that help individuals justify their actions (Westaby, 2005). In fact, specifically in the case of green bond investment, research highlights the importance to complement traditional models like the Theory of Planned Behavior (Ajzen, 1991)with context-specific factors to provide enriched contextual information in order to better understand their influence on investors' attitude and intention (Azad et al., 2024).

The use of BRT as a theoretical framework has been increasing over the last few years and has been employed in different fields of study, namely consumer resistance to innovation (Claudy et al., 2015), organic food purchase (Tandon et al., 2020), e-waste management (Dhir et al., 2021), barriers of lean manufacturing (Sahu et al., 2022), industry 4.0 adoption in emerging economies (Virmani et al., 2023), among others. Despite its usage in many different fields, the current research found a gap in literature that studies in the domain of Green Bond Investment are non-existent.

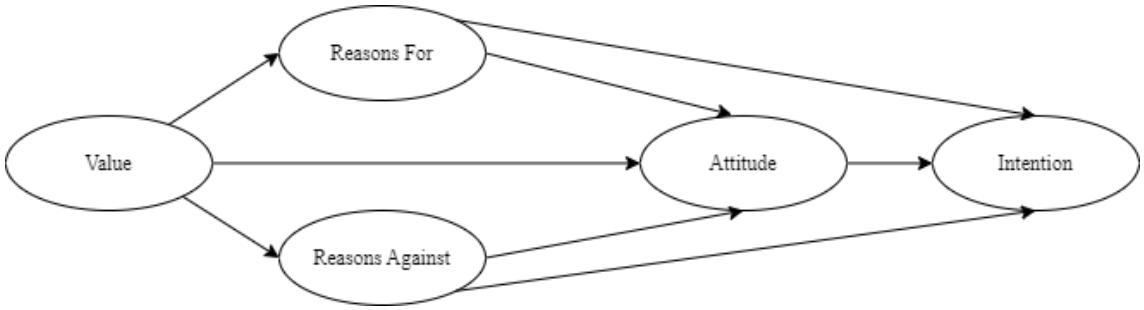


**Figure I.** Modified BRT Model (Source: (Claudy et al., 2013))

### 2.2.1 Attitude and Behavioral Intention

The relationship between attitude and intention has been extensively studied in consumer behavior literature. Attitude can be defined as an individual's positive or negative evaluation of a particular behavior (Ajzen, 1991), whereas intention can be defined as "a person's location on a subjective probability dimension involving a relation between himself and some action"(Fishbein & Ajzen, 1975).

In line with previous theories such as Theory of Reasoned Action (Fishbein & Ajzen, 1975)and Theory of Planned Behavior(Ajzen, 1991), BRT posits that intentions show a strong predictive validity when regarding behavior, meaning that the stronger the intention to engage in a behavior, the more likely it should be its performance (Ajzen, 1991). Consequently, a crucial goal of behavioral models is to predict intentions. Regarding this matter, the psychology and marketing literature suggest attitude as a strong predictor of intention with BRT stating that the higher the attitude towards a behavior, the higher the intention of engaging in that behavior (Westaby, 2005). In this particular context, the higher the consumers' attitudes towards Green bonds investment, the higher the likelihood consumers will develop an intention and, somewhere in time, engage in the purchasing action. Research indicates that if an individual has a positive attitude towards environmental affairs or issues, the same will act consistently in line with the behavior (e.g.: purchase of conventional green products (Yadav and Pathak, 2017); incorporation of green computing technology (Ojo et al., 2019); engaging in e-waste recycling (Dhir et al., 2021)). In the specific case of Green Investments, some literature shows that attitude positively influences behavioral intention toward green bond investment (Azad et al., 2024) and that a positive attitude toward green investment has a significant positive effect

on green investment intention in Generation Z in Indonesia (Ratu Balqis Malzara et al., 2023).

Based on this information, the following is Hypothesized:

**H1: Attitude towards investing in Green Bonds shares a positive association with Intentions**

### *2.2.2 Reasons For* and *Reasons Against*

Reasons are key and differentiating concepts in BRT and, although designed to capture a wide array of specific factors in a specific context, they can be defined as the "specific subjective factors people use to explain their anticipated behavior" (Westaby, 2005). In other words, the theory is built upon the construct that people's reasons serve as determinants of behavior and represent not only pro/con and benefit/cost explanations but also their facilitator/constraint explanations, meaning that reasons will contribute to the prediction of intention, without fully activating attitude (Westaby, 2005). As they represent context-specific cognitions which are directly connected to behavioral explanation (Claudy et al., 2015; Westaby, 2005), reasons significantly differ from beliefs/values as the latter represent consumers' subjective probability that adoption could result in a broad spectrum of future outcomes (Claudy et al., 2015) – thus, demarcating itself from other frameworks such as the theory of planned behavior (Ajzen, 1991).

Moreover, reasons are theorized to sub-divide into two broad constructs: *reasons for* and *reasons against* behavior. *Reasons for* can be considered the motivators or facilitators that could instigate positive perceptions among consumers (Dhir et al., 2021). Whereas *reasons against* can be considered the resistors that have the power to create negative perceptions among individuals towards engaging in a given behavior (Sahu et al., 2020). BRT argues that they can explain some variance in intentions and help bridge the existing attitude-intention gap (Westaby, 2005) – meaning that a positive attitude towards a product does not always mean its purchasing and reasons can help explain this pattern. In this specific context, for example, an individual investor may have strong intentions to buy Green Bonds but may not do so because of lack of availability.

Regarding its influence on attitude and intention, BRT suggests a positive association between *reasons for* and consumer attitude and intentions (Westaby, 2005). Multiple studies also support a positive association between *reasons for* and attitude

(Claudy et al., 2013, 2015; Ryan and Casidy, 2018; Tandon et al., 2020) and also between *reasons for* and intention (Dhir et al., 2021; Tandon et al., 2020). As for *reasons against* and its relationship to consumer attitude and intention, BRT suggests a negative association between *reasons against* and consumer attitude and intentions (Westaby, 2005). This relation is corroborated by other studies, where *reasons against* had a negative relationship with attitude (Claudy et al., 2015; Huang & Qian, 2021; Ryan & Casidy, 2018; Tandon et al., 2020) and also with intention (Claudy et al., 2015; Dhir et al., 2021; Westaby et al., 2010).

Hence, based on this information, the following is Hypothesized:

**H2: *Reasons for* share a positive association with the attitude towards investing in Green Bonds**

**H3: *Reasons against* share a negative association with the attitude towards investing in Green Bonds**

**H4: *Reasons for* share a positive association with intentions towards investing in Green Bonds**

**H5: *Reasons against* share a negative association with intentions towards investing in Green Bonds**

#### 2.2.2.1 *Reasons For* Green Bond Investment

In the specific case of Green Bonds, to date, research on perceived benefits and barriers for retail consumers in Green Investment is very scarce, as most of the studies are being applied to institutional realities and issuers' perspective (Baker et al., 2025; Jones et al., 2020; Sangiorgi & Schopohl, 2021; Tang & Zhang, 2020). Although, there are some benefits that consistently appear in sustainability-related topics. For example, in the context of sustainable clothing consumption it was found that Sustainable Commitment (encompassing environmental and social dimensions) was a motive to buy sustainable clothing (Diddi et al., 2019). Also, it was found that most investors in a group of crowdfunding platforms offering both green and conventional investment projects were willing to give up a higher return as long as the environmental or social impact was large enough. (Siemroth and Hornuf, 2023). Likewise, European investors look for high impact deals (Climate Bonds Initiative, 2019). Therefore, "Environmental Benefits" can be considered as a component of "Reasons for". Moreover, investing in Green Bonds adds a new asset class for a retail investor's portfolio, which can enhance diversification

and bring financial benefits to the investor (Ben Ameur et al., 2024; Yousaf et al., 2022). Also, studies suggest that investors consider financial return as one of the most important factors when deciding on green investment (Paetzold et. al., 2014; Raut et al., 2020). Lastly, a good issuer's rating is also shown as a facilitator when it comes to green investing, meaning that investors place significant importance on the creditworthiness and financial stability of the green bond issuer (Azad et al., 2024; Climate Bonds Initiative, 2019).

Hence, "Environmental Benefits", "Financial Benefits" and "Issuer's Rating" can be considered *reasons for* investing in Green Bonds.

#### 2.2.2.2 Reasons Against Green Bond Investment

In line with *Reasons For*, the literature about perceived barriers for retail consumers in Green Bond market is limited. Although, there are some associated terms that consistently appear throughout the literature such as Greenwashing and Greenium(Larcker & Watts, 2020b; Pietsch & Salakhova, 2016; Pizzetti et al., 2021; Sergei & Alesya, 2022; Shi et al., 2023). Both can be perceived as a barrier to the investor. In fact, the absence of a universal definition of "green" raises investor concerns about greenwashing, where bond proceeds might be allocated to assets with questionable environmental value, leading to a discrepancy between corporate actions and their communications (Pizzetti et al., 2021). Moreover, the presence of a Greenium is considerably studied among the literature (Baker et al., 2018; Larcker & Watts, 2020a; Pietsch & Salakhova, 2016; Sergei & Alesya, 2022; Zerbib, 2019) and whilst there is evidence both for the presence and absence of a premium, this factor is vastly mentioned in official reports as a concern for investors, in which a part of them may not invest because of this barrier. Moreover, considering the context of this study, the overall aversion to risk investments – related to the market's volatility and possibility of financial losses - is also considered as a barrier towards financial investments in this context of analysis of retail investors' risk perceptions on sustainable investment (Gamel et al., 2017; Paetzold & Busch, 2014).

Therefore, "Risk of Greenwashing", "Non-Willingness to pay Premium" and "Financial Risk" are presented as *reasons against* Green Bond Investment.

### 2.2.3 Value

In the lenses of BRT, reasons are not assumed to exist independently from people's beliefs and values. Rather, it is presumed that the reasons people use to influence and maintain their behavior stem from the way they process their beliefs and values (Westaby, 2005). Hence, according to BRT, beliefs people hold about expected outcomes have a significant effect on motivational processes (Claudy et al., 2013; Sahu et al., 2020; Westaby, 2005), meaning that the processing of those beliefs has a direct effect on the reasons people use to explain their anticipated behavior (Westaby, 2005).

Additionally, values are also expected to have direct effects on attitude, without full mediation through reasons (Westaby, 2005). Considering this information, theoretically, it can be assumed that the reasoning process may not always be activated – which means that, for example, a consumer might choose to adopt an innovation without fully evaluating its benefits and costs (Claudy et al., 2015). According to Schwartz (2014), values are beliefs that act as motivator constructs referring to the desirable goals people strive to achieve. In order to operationalize this construct, "Environmental Concerns" can be used as a measure to understand the association of values with reasons and attitude in the context of Green Bond investment. Park & Lin (2020) conceptualize environmental concern "as the extent to which consumers are worried about threats to the environment". According to the literature, a higher level of environmental concern is related to a positive attitude towards pro-environmental behaviors with support that respondents with higher climate change concerns are not only more likely to intend to pay for mitigation of the effects of climate change but also more likely to take actions to minimize them (Dienes, 2015). Different studies among different fields have also supported a favorable relationship between values and *reasons for* (Ashfaq et al., 2021; Claudy et al., 2013, 2015; Ryan & Casidy, 2018); and an opposite relationship between values and *reasons against* (Claudy et al., 2013; Huang & Qian, 2021).

Hence, based on this information, the following is Hypothesized:

**H6: Environmental Concern shares a positive association with *reasons for* investing in Green Bonds**

**H7: Environmental Concern shares a negative association with *reasons against* investing in Green Bonds**

**H8: Environmental Concern shares a positive association with the attitude towards Green Bond investment**

### 2.2.4 The mediating role of reasons

According to BRT, individuals often base their decisions on reasons they generate for or against a particular action, stating that they contribute to the prediction of intentions beyond what is explained solely by attitude (Westaby, 2005; Westaby et al., 2010). Therefore, reasons play an important role in understanding what leads individuals to decide to engage in specific actions and how they justify them (Claudy et al., 2013; Westaby, 2005; Westaby et al., 2010).

While the framework does not inherently conceptualize reasons as mediators, it is logical that such hypothesis is made as it has been stated that the value>reasons>attitude>intention path is of high significance (Sahu et al., 2020; Virmani et al., 2023). As reasons are context-specific, the examination of their part as mediators can possibly provide interesting insights into consumers' actions - as mentioned numerous times in the literature (Claudy et al., 2015; Ryan & Casidy, 2018; Sahu et al., 2020; Tandon et al., 2020; Virmani et al., 2023). Therefore, in the context of Green Bond Investment, reasons related to Green Bond investment (e.g., such as the desire to support projects with sustainable impacts or concerns about potential financial risk) may explain how underlying beliefs and values lead to the ultimate decision to either invest in or avoid Green Bonds, offering insights into the multiple factors that can drive to investment decisions.

Hence, the following is hypothesized:

**H9: Reasons for/against significantly mediate the association between values and attitude**

### 2.2.5 The Moderating role of investment experience

Investors' decision-making processes are influenced by different sociological factors that can shape how they evaluate *reasons for* and *reasons against* an investment, how they develop attitudes, and ultimately how they form intentions. The moderating effect of some sociological constructs has been tested in prior research, namely educational level, however no significant moderating effect was observed (Sahu et al., 2022). So, in that scenario, education alone did not hold a strong influence in shaping nor attitudes or intentions. Given these findings, it is important to explore alternative sociological factors that could influence the decision-making investment process such as

investment experience, which has been suggested to shape risk perception, decision-making heuristics and financial behaviors (Krische, 2019; Zhao & Zhang, 2021). Hence, this study aims to examine whether the investment experience of investors has a moderating effect on the association of reasons (for and against), ATT and INT towards investing in Green Bonds.

Hence, the following is hypothesized:

**H10: The investment experience of investors significantly moderates the relationship between reasons (for and against) and Attitude; and between reasons (for and against) and Intention.**

### 2.3 Conceptual Model

Below, the proposed conceptual model is presented in Fig.2

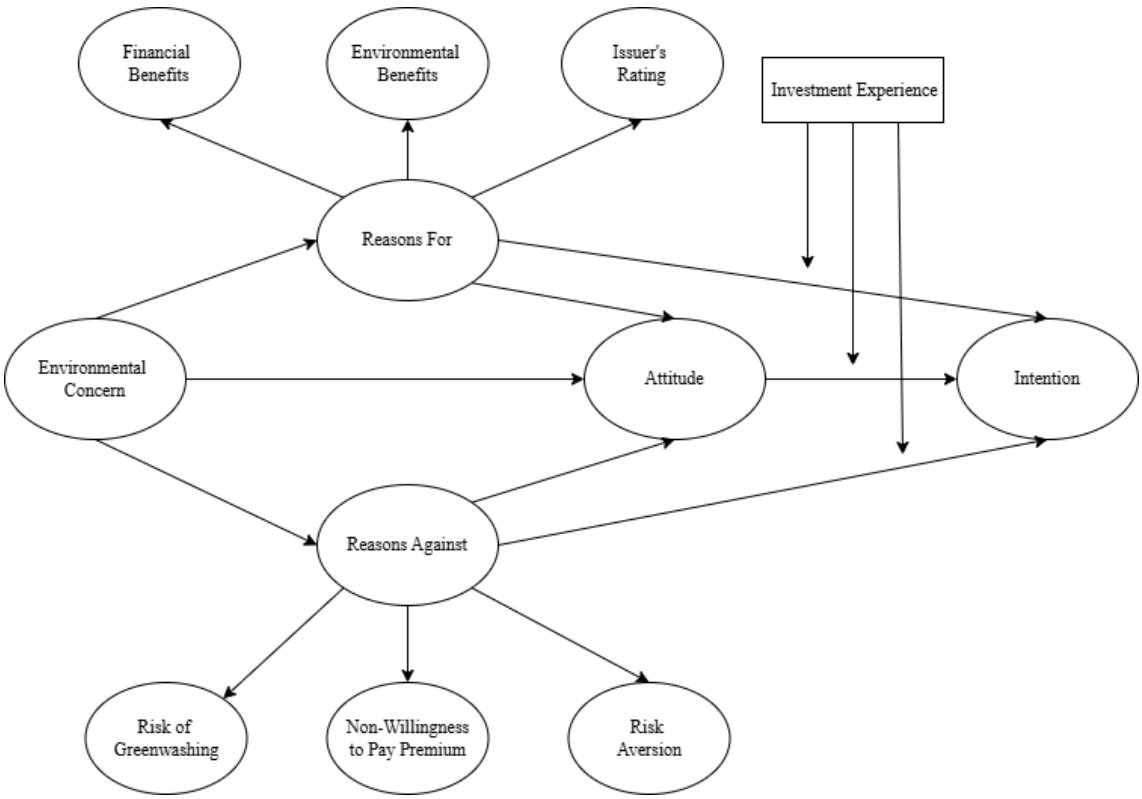


***Figure II***. *Hyphotesized Research Model*

## 3. METHODOLOGY

The main aim of this study is to address the research questions mentioned earlier. In this chapter, we outline the methodology, offering a comprehensive overview of the

strategic approach that directed the research process to effectively tackle those questions.

### 3.1 Data Collection

The study relied on a quantitative approach to investigate the interrelationships among the studied variables (Saunders et al., 2007) and focused on the population that has already engaged in some form of financial investment and, therefore, presents some sensitivity to the theme. To achieve this objective, a survey was carried out using a structured questionnaire as the main collection tool. The questionnaire was implemented via Qualtrics to ensure a systematic approach to the gathering of quantitative data. This method was chosen for its ease in gathering, analyzing and interpretating the results, in addition to being a cost-effective way of obtaining a large number of responses (Bryman, 2016; Saunders et al., 2007). The survey was intentionally distributed online and via social media platforms such as LinkedIn, WhatsApp, Instagram, as well as through personal networks to reach a bigger number of participants. It was available between October 29th, 2024 and January 15th, 2025, gathering a total of 338 responses of which 322 were considered valid.

### 3.2 Questionnaire

The questionnaire was designed and implemented via Qualtrics to ensure a systematic and consistent approach to the collection of quantitative data. The measurement items originally in English were translated into Portuguese and both versions were available to respondents and included only closed-ended questions.

The questionnaire started with an introduction which mentions the purpose of the study, the criteria which were defined for the target audience, the estimated time to complete the questionnaire, and assurances of anonymity and confidentiality. Then, it proceeded with questions related to the key concepts of the present research. All questions were mandatory to ensure no responses were left unanswered. Also, before its official release, the first version of the questionnaire was subject to review by 15 people and no changes were necessary. A copy of the questionnaire can be found in *Annex A*.

### 3.3 Measurement Items

The questionnaire was designed based on scales that had been previously used and validated by researchers in earlier studies.

Firstly, **Environmental Concern (EC)** was measured through the usage of items adapted from Matthes & Wonneberger (2014), that measure the degree to which individuals are aware of and care about environmental issues. Even though the original scale used a 7-point Likert scale, in this case we opted to use a 5-point Likert scale (1- *"Totally Disagree"* to 5- *"Totally Agree"*) based in similar studies within the literature (Azad et al., 2024; Chen & Chang, 2013; Gamel et al., 2017; Westaby, 2005). This approach is consistent with the review of extensive previous research that used 5-point scales. This means that, while longer scales may offer more fine-grained distinctions, 5-point scales are often sufficient and also produce reliable results for many types of research without losing the ability to capture significant distinctions between respondents, particularly in contexts where response simplicity and higher response rate are important (Bouranta et al., 2009; Dawes, 2008; Taherdoost, 2019).

**Attitude (ATT)** was measured using items adapted from Azad et al. (2024), and which objective was to assess retail investors' overall intention of investing in Green Bonds and how this intention translates their positive or negative perceptions. The original 5-point Likert scale was maintained (1- *"Totally Disagree"* to 5- *"Totally Agree"*).

**Intention (INT)** was tested using items adapted from Azad et al. (2024) that measure the likelihood or willingness of retail investors to invest in Green Bonds in the future were used. The original 5-point Likert Scale was maintained (1- *"Totally Disagree"* to 5- *"Totally Agree"*).

Regarding **Risk of Greenwashing (RGW)**, items were adapted from Chen & Chang, (2013) with the intent of measuring this construct. The construct aims to evaluate consumers' perceptions of the potential negative consequences that can be associated with purchasing products with environmental claims. The original 5-point Likert Scale was maintained (1- *"Totally Disagree"* to 5- *"Totally Agree"*).

**Risk Aversion (RA)** was measured using items adapted from Gamel et al. (2017). These items intend to measure investors' perceptions of the potential risks associated with

investment activities. The original 5-point Likert Scale was maintained (1- *"Totally Disagree"* to 5- *"Totally Agree"*).

Concerning **Non-Willingness to Pay Premium (NWP),** we used items adapted from Azad et al. (2024). In its original form, the construct was in fact "Willingness to Pay Premium". In order to examinate this construct from another perspective, capturing potential resistance to accepting higher costs or lower financial returns for environmentally friendly investments, some changes were made:

1. The original measurement items were designed to evaluate the propension to which respondents were willing to pay a premium for Green Bonds, thus they were rephrased to reflect the opposite: non-willingness to pay premium.
2. To maintain comparability with the original scale, the adapted items were designed using the same Likert scale format (1- *"Totally Disagree"* to 5- *"Totally Agree"*).

Regarding **Environmental Benefits (EB)**, items were adapted from Claudy et al., (2015), with the intention of finding a measure of the investor's perspective on the potential to contribute to environmental preservation or align with ethical values. The original 5-point Likert Scale was maintained (1- *"Totally Disagree"* to 5- *"Totally Agree"*).

Lastly, to test for **Issuer's Rating (IR)** and **Financial Benefits (FB),** items adapted from Azad et al. (2024) were used. The first bundle of items looks to measure the issuer's rating influence on investors' perspectives, whilst the latter aim to measure the trade-offs that retail investors consider when evaluating green bonds, balancing their environmental motivations with financial pragmatism. In both cases, the original 5-point Likert Scale was maintained (1- *"Totally Disagree"* to 5- *"Totally Agree"*).

### 3.4 Data Analysis Method

The data were collected through a questionnaire, which was then processed, transformed and analyzed using Microsoft Excel, AMOS and SPSS. Microsoft Excel was used for data cleaning and demographic data analysis, AMOS and SPSS were utilized after initial data cleaning, for data transformation and also to analyze and validate both the measurement model and the structural model.

The objective of the analysis was to explore the relationships between reasons (both for and against) and consumers' values, attitudes, and intentions to engage in Green Bond Investment. The research framework was developed based on previous research and academic literature available and its applicability to the current context was validated through confirmatory factor analysis (CFA). The measurement model was used to assess various forms of construct validity and reliability. Structural equation modeling (SEM) was used to evaluate significant associations among the study's variables, including the mediating effect of reasons (both for and against). Additionally, descriptive statistics of the respondents' profiles were presented to provide an overall context for the study's findings.

# 4. RESULTS

In this chapter, the analysis of the empirical data obtained is presented. Firstly, through the sample characterization, followed by the validation of the measurement model.

## 4.1 Sample Characterization

After excluding participants who responded "No" to the initial control question of the questionnaire (see Annex A), the final sample consisted of 322 participants and data were analyzed considering different dimensions such as gender, age group, educational level and investment experience.

| | **Frequency** | **Percentage** |
|---|---|---|
| **Gender** | | |
| *Male* | 213 | 66.15% |
| *Female* | 105 | 32.61% |
| *Non-Binary* | 0 | 0.00% |
| *Rather not Disclose* | 4 | 1.24% |
| **Age Group** | | |
| *< 30 years* | 79 | 24.53% |
| *30 to 44 years* | 160 | 49.69% |
| *45 to 59 years* | 81 | 25.16% |
| *> 60 years* | 2 | 0.62% |
| ***Highest Education*** | | |
| *Basic Education* | 0 | 0.00% |
| *High School* | 19 | 5.90% |
| *Higher Education* | 303 | 94.10% |
| ***Investment Experience*** | | |
| *< 1 year* | 37 | 11.49% |
| *1 to 5 years* | 140 | 43.48% |
| *> 5 years* | 145 | 45.03% |

***Table I.*** *Sample Characterization Data*

Of these, 213 respondents identified as male (representing 66.15% of the total sample). Hence, this group represents most of the sample, reflecting a significant part of the overall participants. On the other hand, female participants contributed to 32.61% of the sample, with a total of 105 individuals. Moreover, no participants identified as non-binary and 4 chose the "Rather not disclose" option for gender, representing only about 1.24% of total respondents.

Regarding the age groups, these were divided into four categories: under 30 years old, between 30 and 44 years old, between 45 and 59 years old and over 60 years old. The first group obtained 79 responses, representing 24.53% of the total sample. The second group obtained 160 responses, representing 49.69% of the total sample. Those aged between 45 and 59 years of age made up 25.61% with 81 individuals choosing that option. Lastly, the smallest group consisted of only 2 individuals aged over 60 years old, corresponding to 0.62% of the total sample.

In terms of educational level, the majority of participants mentioned having a higher education, with 303 individuals (94.10%) falling into this category. High school graduates represented 5.90% of the sample (19 individuals), and there were no participants with lower education than the previously mentioned.

Participants' investment experience was categorized into three levels. Those with more than five years of experience formed the largest group, representing 45.03% (145 individuals). A substantial 43.48% (140 individuals) had between one and five years of experience. The least experienced group, with less than one year of investment experience, accounted for 11.49% (37 individuals). Respondents' profile is summarized in *Table 1*.

### 4.2 Measurement Model

In this study, the reliability and validity of the measurement model was tested to ensure that the constructs and items align withed with the theoretical framework. The measurement model served as the starting point for the study of the relationships within the context of this research, which investigates investment behavior towards green bonds using Behavioral Reasoning Theory (BRT). This was done through Confirmatory Factor

Analysis (CFA): a statistical technique that analyzes how well the indicators measure the latent variables (unobserved constructs) and if these variables significantly differentiate from one another. Measurement items were adopted from the established literature and so, the test of the individual item reliabilities, the convergent validity of the measures associated with individual constructs, and discriminant validity of the constructs in the study was performed by conducting a series of confirmatory factor analysis (CFA) as it is considered essential to guarantee the robustness of the study (Hulland, 1999).

Convergent validity was measured by the factor loadings of all the indicators, the composite reliability (CR) and the average variance extracted (AVE). With respect to the factor loadings, each indicator presented a result above the 0.7 threshold (Hulland, 1999), as shown in Appendix B. Regarding CR and AVE for each factor, the former should exceed 0,5 and the latter should be over 0.7 (Fornell & Larcker, 1981). In Table 2, values for AVE are all above 0.5 and CR minimum value is 0,85. Hence, considering these three indicators, convergent validity of the measures was established.

Regarding the internal consistency reliability, Cronbach alpha's values of measurements were calculated and can be consulted in Table 2. The values all range from 0.85 to 0.93, which are above the acceptable threshold of 0.7 (Hair et al., 2014). Thus, internal reliability was established.

Finally, regarding discriminant validity, the squared AVE value for each construct was compared with its correlation with any other construct (Fornell & Larcker, 1981; Hair et al., 2014). As pictured in Table 2, all squared AVE values are higher than 0.7 (as shown in the diagonal lines), which is greater than the corresponding correlation values. This established the discriminant validity of the model.

Lastly, the Confirmatory Factor Analysis (CFA) results indicated a good model fit, as supported by widely accepted fit indices in structural equation modeling (SEM) literature. The normative chi-square ($\chi^2/df = 2.2$) falls within the recommended range ($\leq 3$), which suggests an acceptable level of model complexity (Kline, 2016). The Comparative Fit Index (CFI = 0.96) and Tucker-Lewis Index (TLI = 0.95) exceed the 0.95 threshold, which confirms strong model adequacy (Bentler, 1980). Similarly, the Normed Fit Index (NFI = 0.92) is above the acceptable 0.90 cutoff, supporting good model fit (Bentler, 1980). Additionally, the Root Mean Square Error of Approximation (RMSEA = 0.06) is below the 0.08 threshold. So, given these results, the measurement model effectively represents

the data, supporting the validity and reliability of the constructs for further structural analysis.

| | *CR* | *AVE* | *Cronbach's α* | *INT* | *ATT* | *IR* | *EB* | *FB* | *RGW* | *NWP* | *RA* | *EC* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***INT*** | 0.89 | 0.73 | 0.89 | **0.94** | | | | | | | | |
| ***ATT*** | 0.89 | 0.73 | 0.88 | 0.85 | **0.86** | | | | | | | |
| ***IR*** | 0.88 | 0.72 | 0.88 | 0.68 | 0.67 | **0.85** | | | | | | |
| ***EB*** | 0.92 | 0.81 | 0.92 | 0.75 | 0.76 | 0.57 | **0.90** | | | | | |
| ***FB*** | 0.87 | 0.69 | 0.86 | 0.70 | 0.74 | 0.58 | 0.78 | **0.83** | | | | |
| ***RGW*** | 0.90 | 0.76 | 0.90 | -0.74 | -0.69 | -0.49 | -0.73 | -0.68 | **0.87** | | | |
| ***NWP*** | 0.94 | 0.83 | 0.93 | -0.76 | -0.73 | -0.49 | -0.72 | -0.66 | -0.76 | **0.91** | | |
| ***RA*** | 0.93 | 0.78 | 0.93 | -0.60 | -0.52 | -0.40 | -0.49 | -0.46 | 0.49 | 0.57 | **0.88** | |
| ***EC*** | 0.85 | 0.67 | 0.85 | 0.68 | 0.7 | 0.49 | 0.74 | 0.63 | -0.58 | -0.63 | -0.43 | **0.82** |

***Table II.*** *Correlations between latent constructs and descriptive statistics*

*Note: CR- Composite Reliability, AVE- Average Variance Extracted; INT-Intention; ATT-Attitude, IR- Issuer's Rating, EB- Environmental Benefits, FB- Financial Benefits, RGW- Risk of Greenwashing, NWP- Non-Willingness to Pay Premium, RA- Risk Aversion, EC- Value: Environmental Concern.*

### 4.3 Structural Model

Once acceptable levels of reliability and convergent and discriminant validity have been verified, the next step is to analyze the structural model in order to test the hypotheses.

One of the most widely used measures to assess the structural model in statistical analysis is the coefficient of determination ($R^2$) (Hair et al., 2014). This metric evaluates how well the proposed model predicts the constructs by indicating the proportion of variance in the dependent variables that is explained by the independent variables. A higher $R^2$ value suggests a greater predictive accuracy of the model, meaning that the constructs are well explained by the relationships established in the model. Typically, constructs are considered significant, moderate, or weak when their values are 0.75, 0.50, or 0.25, respectively (Hair et al., 2014).

The $R^2$ values obtained for the endogenous constructs in the model indicate varying levels of explanatory power.

Intention (INT) has an $R^2$ of 0.807, indicating that over 80% of the variance in intention is accounted by its predictors. This reflects a high level of predictive power and also suggests that the model effectively captures the key drivers of behavioral intention. Similarly, Attitude (ATT) exhibits a substantial $R^2$ of 0.758, demonstrating that more than three-quarters of the variance in attitude can be explained by the constructs included in the model. The reasoning constructs themselves are also well explained. Reasons For shows an $R^2$ of 0.738, while Reasons Against has an $R^2$ of 0.614. These values indicate that Environmental Concern (EC) plays as the main character when it comes to shape the reasoning process, significantly influencing both enabling and inhibiting beliefs. Overall, the high $R^2$ values across all four constructs suggest a well-fitting model that aligns with the theoretical foundations of Behavioral Reasoning Theory (BRT). Besides this, structural model also returned Good Model Fit ($\chi^2/df = 2.5$, CFI= 0.95, RMSEA= 0.07, NFI=0.90). The overall values are presented in Table 3.

The structural model tested several hypothesized relationships based on Behavioral Reasoning Theory (BRT). Results indicate that (H1) Attitude remains a significant and strong predictor of Intention ($\beta = 0.382$, $p < 0.001$), confirming that individuals with more favorable attitudes are more likely to intend to perform the behavior. Among the reasoning constructs, (H2) Reasons For (Issuer's Rating, Environmental Benefits, Financial Benefits) had a strong positive effect on ATT ($\beta = 0.635$, $p < 0.001$), while (H3) Reasons Against (e.g., Risk of Greenwashing, Non-Willingness to Pay Premium, Risk Aversion) negatively influenced ATT ($\beta = -0.373$, $p < 0.001$). These findings are consistent with BRT, which means that both enabling and inhibiting reasons are central to attitude formation.

| H. No | Path | β | *p* |
|---|---|---|---|
| 1 | ATT > INT | 0.382 | *** |
| 2 | Reasons For > ATT | 0.635 | *** |
| 3 | Reasons Against > ATT | -0.373 | *** |
| 4 | Reasons For > INT | 0.179 | ** |
| 5 | Reasons Against > INT | -0.419 | *** |
| 6 | EC > Reasons For | 0,859 | *** |
| 7 | EC > Reasons Against | -0.783 | *** |
| 8 | EC > ATT | 0.064 | ns |

***p<0.05*
****p<0.001*

***Table III.*** *Hyphotesis Testing Results*

When examining their direct effects on intention, (H4) Reasons For continued to show a significant and positive influence (β = 0.179, $p$ <0.05) and (H5) Reasons Against a significant and negative influence (β = -0.419, $p$ <0.001), indicating that perceived barriers not only reduce positive attitudes but also directly lower intention. Environmental Concern was a strong and significant antecedent to both reasoning constructs. It positively influenced (H6) Reasons For (β = 0.859, $p$ <0.001) and negatively influenced (H7) Reasons Against (β = -0.783, $p$ <0.001), strengthening the idea that individuals with stronger environmental values are more prone to perceive benefits and fewer barriers. However, EC's direct effect on (H8) ATT was not significant (β = 0.064, *n.s.*), implying its influence on attitude operates indirectly through the reasoning constructs rather than as a direct attitudinal driver. Results are summarized in Figure 3.

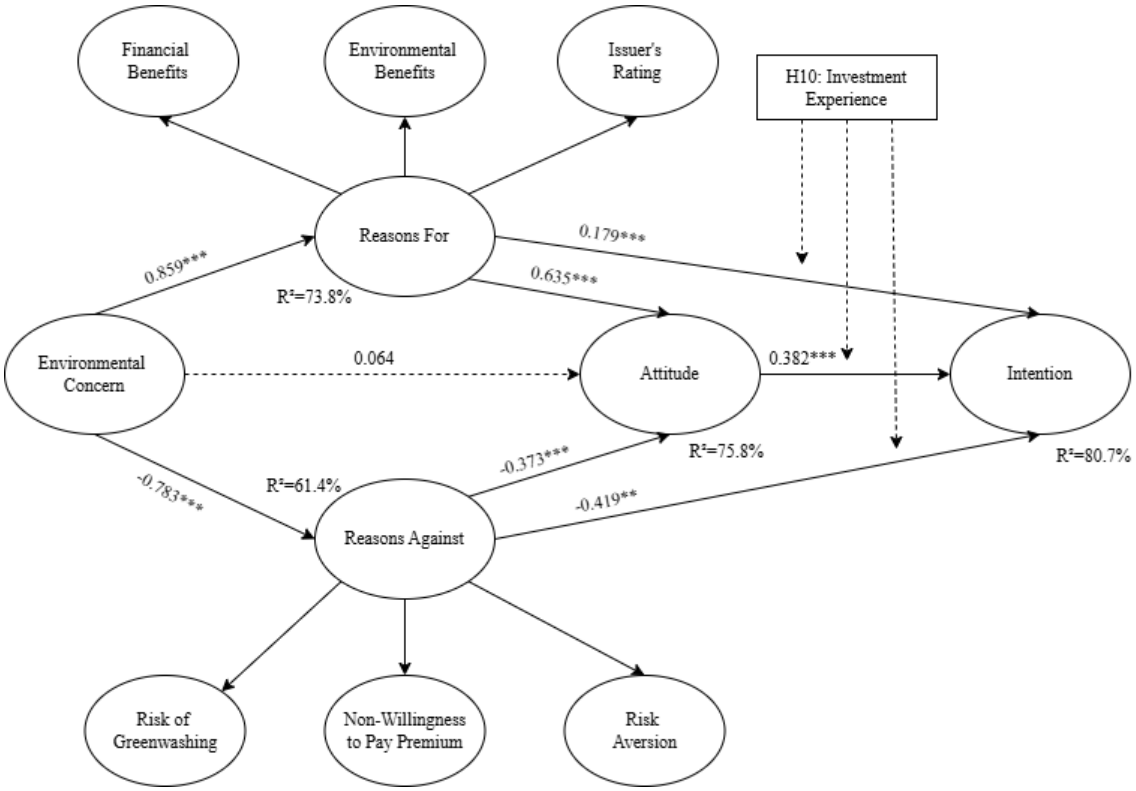


***Figure III.*** *Results of Structural Equation Modelling (SEM)*

*** indicates significance at p<0.05; ***indicates significance at p <0.001*

### 4.4 Mediation Results

Mediation analysis using Model 4 in the PROCESS macro of SPSS was conducted with the intention to examine if Reasons (For and Against) mediate the relationship between Environmental Concern and Attitude. Results can be found in Table 4.

| | β | se | t | *p* | LLCI | ULCI |
|---|---|---|---|---|---|---|
| **Total Effect** | | | | | | |
| EC > ATT | 0,67 | 0,05 | 14,08 | <.001 | 0,57 | 0,76 |
| **Direct Effect** | | | | | | |
| EC > ATT | 0,20 | 0,05 | 4,09 | <.001 | 0,1 | 0,29 |
| **Indirect Effect** | | | | | | |
| EC > Rfor > ATT | 0,29 | 0,04 | * | * | 0.21 | 0.38 |
| EC > Ragainst > ATT | 0,18 | 0,04 | * | * | 0.11 | 0.25 |
| *total indirect effect* | 0,47 | 0,04 | * | * | 0.40 | 0.55 |

***Table IV.*** *Mediation Results*

EC = Environmental Concern (centered); RFor = Reasons For (centered); RAga = Reasons Against (centered). Bootstrapped CIs based on 5,000 samples. *Indirect effects are significant if 95% CI excludes zero.

The results of the mediation analysis showed a significant and positive total effect of Environmental Concern on attitude towards Green Bond investment ($\beta = 0.67$, $p < .001$). This indicates that individuals with higher Environmental Concern are also associated with higher levels of positive attitude towards Green Bond investment. Although, after mediators were introduced, even though significant, the direct effect of Environmental Concern on attitude was substantially reduced ($\beta = 0.20$, $p < .001$) - suggesting partial mediation. This is additionally supported by the significance of the total indirect effect ($\beta = 0.47$), confirming that, collectively, the mediators *Reasons For* and *Reasons Against* explain a considerable part of the relationship in study - thus, supporting H9. Additionally, it demonstrates that Environmental Concern impacts attitude in two different ways: first, a higher level of Environmental Concern fuels *Reasons For* sustainable investment ($\beta = 0.29$), which in turn enhances positive attitudes; second, it weakens *Reasons Against* sustainable investment ($\beta = 0.18$), consequently reducing barriers to a favorable attitude.

### 4.5 Moderation Results

Moderation analysis using Model 1 in the PROCESS macro of SPSS was conducted with the intention to examine whether investment experience moderates the relationships

between three predictors (attitude, reasons for investing, and reasons against investing) and behavioral intention. Investment experience was categorized into three groups: less than 1 year (reference group), 1-3 years, and more than 3 years. The results can be found in Table 5.

| *Predictor* | *Moderator* | *β* | *t* | *p* | *LLCI* | *ULCI* |
|---|---|---|---|---|---|---|
| ***Attitude*** | 1-3 years (vs. <1 year) | 0,056 | 0,35 | 0,73 | -0,26 | 0,37 |
| | >3 years (vs. <1 year) | 0,15 | 0,95 | 0,34 | -0,16 | 0,46 |
| ***Reasons For*** | 1-3 years (vs. <1 year) | -0,06 | -0,26 | 0,79 | -0,45 | 0,36 |
| | >3 years (vs. <1 year) | -0,19 | -0,09 | 0,93 | -0,42 | 0,38 |
| ***Reasons Against*** | 1-3 years (vs. <1 year) | -0,28 | -1,85 | 0,06 | -0,57 | 0,02 |
| | >3 years (vs. <1 year) | -0,21 | -1,51 | 0,13 | -0,5 | 0,07 |

***Table V.*** *Moderation Results*

For the attitude-intention relationship, neither investors with 1-3 years of experience (β = 0.056, *p* = 0.73) nor those with more than 3 years of experience (β = 0.15, *p* = 0.34) showed significantly different effects compared to more inexperienced investors with less than 1 year of experience.

Regarding "Reasons For", the interaction term was negative and non-significant for both investors with 1-3 years of experience (β = -0.06, *p* = 0.79) and for those with more than 3 years of experience (β = -0.19, *p* = 0.93). Hence, the analysis reveals non-significant moderations effects in this case.

Regarding "Reasons Against", moderation effect analysis for investors with 1-3 years of experience almost reached significance levels (β = -0.28, p = 0.06). Both β and *p* level suggest a marginal trend where this group is more influenced by "Reasons Against" when compared to more inexperienced investors. In the case of the most experienced investors (>3 years), the moderation effect was, again, not significant (β = -0.21, *p* = 0.13)

Overall, the results indicate that investment experience does not systematically moderate the above relationships, except for a very subtle trend for mid-experience investors being potentially more sensitive to reasons against investing. Thus, in broader terms, H10 is not supported.

# 5. DISCUSSION

Sustainability and sustainable investment have increasingly become central topics in both academic research and practical financial decision-making across the globe (Jones et al., 2020; United Nations, 2023). In fact, and considering the growing development of environmental concern, social responsibility and ethical financial, there is a growing curiosity on understanding how investors' engage with sustainable financial instruments, including Green Bonds. Hence, the present study intended to explore investors' behavioral intentions toward Green Bond investments, specifically through the analysis of two central research questions: **(1)** What are the behavioral patterns of individual investors toward Green Bond investments*?* and **(2)** "Is the decision-making process influenced by context-specific particularities?". To address these questions, the study used Behavioral Reasoning Theory as a theoretical underpinning and structural equation modeling (SEM) to access the conceptual research model developed. The study suggests that, out of ten proposed hypotheses, eight are supported (H1, H2, H3, H4, H5, H6, H7, H9).

The results indicated that H1, which examined the relationship between investors' attitudes toward Green Bonds and their intention to invest in them, was supported. From this we see that the critical role of individual attitudes in shaping behavioral intentions is emphasized and provides empirical backing for the framework adopted in this study. Specifically, when investors see Green Bonds as something positive (ethical, aligned with their personal values, profitable, environmentally beneficial, etc) –i.e., presenting a more positive attitude - they appear to be more prone to express a strong intention to invest in them. The conclusion of the positive influence of attitude on investment intention is also consistently highlighted in most of the available literature on Behavioral Reasoning Theory in multiple contexts (Claudy et al., 2015; Dhir et al., 2021; Sahu et al., 2022), offering even more support to the theories' foundations.

H2 and H4 examined the relationship between *Reasons For* and attitude and intention, respectively. A positive relationship between *Reasons For* and Attitude was established, thus supporting H2 and indicating that context-specific reasons that present as favorable to the idea of Green Bond investment – such as the Issuer's credibility, the presence of Environmental Benefits and the existence of Financial Benefits – culminate in a higher attitude level, which is aligned with previous research (Dhir et al., 2021; Sahu

et al., 2022; Tandon et al., 2020) Likewise, H4, which aimed to test the positive impact of *Reasons For* in intention, was also supported in this context and is also in line with the literature (Dhir et al., 2021; Sahu et al., 2022).

On the other hand, H3 and H5 tested the association between *Reasons Against*, attitude and intention, respectively. The results supported both hypotheses which, once again, are consistent with previous literature (Ashfaq et al., 2021; Mobarak et al., 2024). Albeit consistent, it is also particularly common to see the association between *Reasons Against* and intention as non-significant (Sahu et al., 2022; Tandon et al., 2020; Virmani et al., 2023), which is natural as it has been emphasized that the association between these constructs might differ according to the context (Claudy et al., 2015). This highlights that barriers such as greenwashing risk, financial risk, and non-willingness to pay a premium play a decisive role in dissuading investors regardless of their overall attitude.

Therefore, in the context of Green Bond investment, considering the the β values of both *Reasons For* and *Reasons Against*, although both constructs contribute to the formation of attitude, *Reasons For* play a more critical role in this stage *whilst Reasons Against* exhibit greater explanatory power as individuals transition to the intention formation stage. Moreover, the varying impact of reasons (H2–H5), reflected in the β values as well, highlights that *Reasons Against* are not simply the logical opposite of *Reasons For* but represent a separate and independent construct (Claudy et al., 2015).

H6, H7, and H8 examined the relationships between Environmental Concern and, respectively, *Reasons For*, *Reasons Against*, and Attitude. H6 found a significant positive relationship shared between Environmental Concern and *Reasons For*, which seems to suggest that values, such as Environmental Concern, shape the reasoning processes. It also supports the concept that individuals with higher concern for the environment are more likely to identify and internalize positive justifications for engaging in green purchase behavior (Fontes et al., 2021). H7 found a significant negative relationship between Environmental Concern and *Reasons Against*. This is in line with previous research (Dhir et al., 2021; Huang & Qian, 2021; Tandon et al., 2020) and may imply that environmentally concerned individuals may cognitively diminish or reject information that conflicts with their values. Moreover, the results support the rationale that a strong environmental value – in this case, environmental concern – doesn't merely contribute to the justification for action, it simultaneously serves as a filter that reduces the acceptance of contrary ideas.

Lastly, and consistent with previous research findings on BRT, H8 was not supported (Dhir et al., 2021; Sahu et al., 2022; Virmani et al., 2023). This non-significant link between value (Environmental Concern) and attitude challenges the assumption that individuals form attitudes toward a concept based directly on personal values, without the need to process reasoning (Westaby, 2005). These results, together with the supported mediation analysis (H9), strengthen the view that Environmental Concern influences Attitude indirectly through cognitive mechanisms that amplify the relevance of "Reasons For" and mitigate "Reasons Against" i.e., predicting Attitude through a more heuristic cognitive path: Value>Reasons>ATT and therefore emphasizing that attitude formation is primarily a reasoning-driven process rather than one shaped solely by abstract concern (Claudy et al., 2015; Westaby, 2005).

Finally, H10 tested the moderating effect of individual investment experience in the relationships between reasoning, attitude, and intention. Regarding the Attitude>Intention path, neither the 1–3 years nor the >3 years groups exhibited statistically significant differences in the relationship between Attitude and Intention, when compared to the reference group. Thus, it is reasonable to state that, in this context, the association between a positive attitude toward Green Bonds and investment intentions remains consistent, regardless of the investor's experience level. Likewise, the moderation effects for "Reasons For" were not significant for either the 1–3 years or the >3 years group and so, the relationship between the perceived benefits of Green Bonds and investment intentions is not directly affected by the investor's experience. However, for "Reasons Against", when comparing investors with 1-3 years of experience with those with less than one year of experience, results of the moderation analysis produced results close to significant levels and suggested that investors with 1–3 years of experience may be slightly less discouraged by perceived barriers, when compared to more inexperienced ones. However, the lack of strong significance does not allow strong conclusions. This finding is in line with those of Sahu et al., 2022) and may reflect a growing familiarity with green bonds among investors of all generations (The World Bank Treasury, 2024).

# 6. CONCLUSION

## 6.1 Conclusion

This study's objective was to identify and understand individual investors' behavioral patterns regarding Green Bond investments with the use of Behavioral Reasoning Theory framework. After investigating the influence of values, reasons for and against, attitudes and intentions, it is reasonable to state that this research provides empirical evidence that supports the relevance of context-specific reasoning in shaping sustainable investment behaviors.

Regarding Research Question 1 "What are the behavioral patterns of the individual investor towards Green Bond investment?", the study's findings show that individual investors' behavioral patterns towards Green Bond investment are predominantly shaped by their attitudes, which in turn are influenced by specific reasons for and against the behavior. Moreover, and in line with Behavioral Reasoning Theory, investors with a favorable attitude regarding Green Bonds show a significantly higher intention to invest. Furthermore, *Reasons For* investment – such as respondents' perceptions of environmental benefits, financial benefits, and the credibility of the issuer – result in positive behavioral patterns that enhance both attitude and intention. Inversely, *Reasons Against* – such as concerns about greenwashing, unwillingness to pay premium (greenium) and level of risk aversion – act as critical inhibitors, creating barriers that impact both attitude and intention in a negative way. Consequently, it becomes clear that investors' decision-making process is not only about the presence of motivating factors but is also heavily influenced by the perception of possible obstacles. Additionally, the results indicate that although positive reasons are crucial during the attitude formation phase, negative reasons carry a greater weight when it comes to transitioning to intention, suggesting a more complex cognitive evaluation when the investor moves from attitude to intention. This highlights that favorable attitudes do not automatically translate into behavioral intentions unless perceived barriers are addressed first. Thus, the behavioral pattern of individual investors is characterized by a balancing relationship between perceived benefits and perceived barrier.

Regarding Research Question 2 "Is the decision process influenced by context-specific particularities?", the study provides strong support that the decision-making process of individual investors is influenced by context-specific particularities. In fact, and in line with BRT, *Reasons For* and *Reasons Against* represent context-specific

particularities that explain most part of the variance in both attitude and intention - thus being established as great predictors in the scope of the study. Conversely, the study's findings also show that Environmental Concern – a core value – does not directly influence attitude towards Green Bond investment but rather operates through an indirect path that has effect on context-specific reasons. In other words, investors with high environmental concern are more likely to justify their positive attitude and intention towards Green Bonds investment by generating positive reasons for investing or by diminishing or even rejecting negative reasons. Furthermore, context-specific barriers - such as the perceived risk of greenwashing, the presence of a greenium, and concerns over financial risk - were found to significantly deteriorate intention even when attitudes are favorable. Inevitably, this highlights the importance of context-specific barriers in shaping behavior – even though general pro-environmental values might be highly positive, alone they become insufficient to predict sustainable investment behavior unless they are cognitively framed through context-relevant reasoning.

### 6.2 Academic and Practical Contributions

This study makes several key theoretical contributions. First, it extends the application of Behavioral Reasoning Theory (BRT) into the domain of sustainable finance, an area where BRT has been underexplored. By empirically testing BRT within the context of Green Bond investment, the research validates its suitability for understanding investment behavior shaped by both enabling and inhibiting context-specific reasons.

Second, the study provides new insights into the attitude-intention gap in sustainable investment by identifying how context-specific factors (reasons for and against) mediate the influence of core values (Environmental Concern) on investor attitudes and intentions. This nuanced use of BRT highlights the asymmetric roles that facilitators and barriers play in shaping behavior, advancing theoretical understanding of decision-making in pro-environmental financial contexts.

Finally, the study contributes to the Behavioral Finance and Sustainability Literature by addressing a notable gap: the lack of focus on retail investors and their behavioral drivers in the context of Green Bonds - an area previously dominated by issuer-focused or institutional analyses.

From a practical perspective, this research offers actionable insights for multiple stakeholders:

- **Policy makers and regulators** can better understand the behavioral barriers faced by individual investors, such as concerns about greenwashing and premium costs. This can inform the design of regulatory frameworks that increase trust and transparency in green financial markets.
- **Issuers of Green Bonds** gain valuable knowledge on how to align their offerings with the values and expectations of potential retail investors. Highlighting financial benefits and issuer credibility while addressing common concerns could enhance bond appeal.
- **Financial educators and sustainability advocates** can use the findings to improve their communication strategies, helping to close the "green gap" by turning environmentally favorable attitudes into concrete investment behaviors.

Overall, by providing a deeper understanding of the motivational processes that drive or inhibit Green Bond investment, this study supports the development of more effective tools and strategies to promote sustainable investment among individuals.

### 6.3 Limitations and Future Research

There are a few limitations to this study. Firstly, the listed set of reasons (for and against) were limited and derived from the existing literature. Although BRT provides a comprehensive framework to analyze the impact of context-specific reasons, it is possible that other, not listed reasons – such as trust in regulatory frameworks, financial liquidity capacity, among others – can further explain variations in behavior.

Secondly, the study focused on self-reported measures of value, reasons, attitude and intentions which can be associated to personal biases such as the social desirability bias. Indeed, respondents could have possibly given emphasis to their pro-environmental attitudes or attenuate their barriers to align their responses with what they believe is right. To address possible biases from self-reported data, future research can keep track of actual investment decisions or even use experimental design. This could help to understand if respondents' stated intentions align with their real-world actions and reduce the influence of social desirability bias.

Moderation analysis explored investment experience as a potential moderator but failed to include other possible moderating variables such as income level or financial literacy. Future research can introduce other sociological factors as moderators to help obtain a more granular understanding of how “Reasons For” and “Reasons Against” investment are processed by investors.

Lastly, the research employed a cross-sectional survey design, capturing respondents' views at a single point in time. The implementation of longitudinal studies can help confirm the stability and directionality of the proposed relationships over time and also assess whether intentions effectively translate into actual investment behavior.

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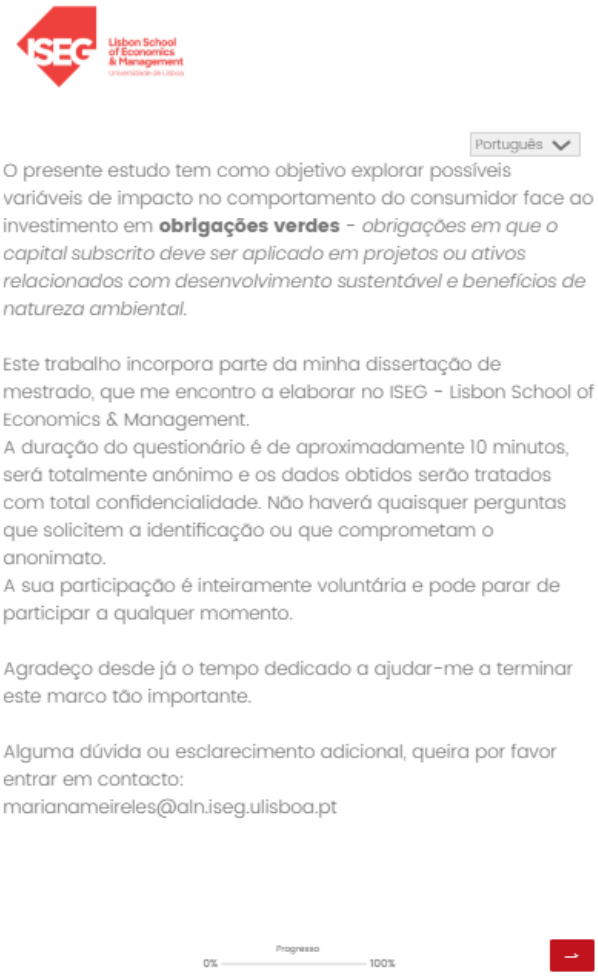
# Appendix

## Appendix A – Questionnaire



Português

O presente estudo tem como objetivo explorar possíveis variáveis de impacto no comportamento do consumidor face ao investimento em **obrigações verdes** - *obrigações em que o capital subscrito deve ser aplicado em projetos ou ativos relacionados com desenvolvimento sustentável e benefícios de natureza ambiental.*

Este trabalho incorpora parte da minha dissertação de mestrado, que me encontro a elaborar no ISEG - Lisbon School of Economics & Management.
A duração do questionário é de aproximadamente 10 minutos, será totalmente anónimo e os dados obtidos serão tratados com total confidencialidade. Não haverá quaisquer perguntas que solicitem a identificação ou que comprometam o anonimato.
A sua participação é inteiramente voluntária e pode parar de participar a qualquer momento.

Agradeço desde já o tempo dedicado a ajudar-me a terminar este marco tão importante.

Alguma dúvida ou esclarecimento adicional, queira por favor entrar em contacto:
marianameireles@aln.iseg.ulisboa.pt

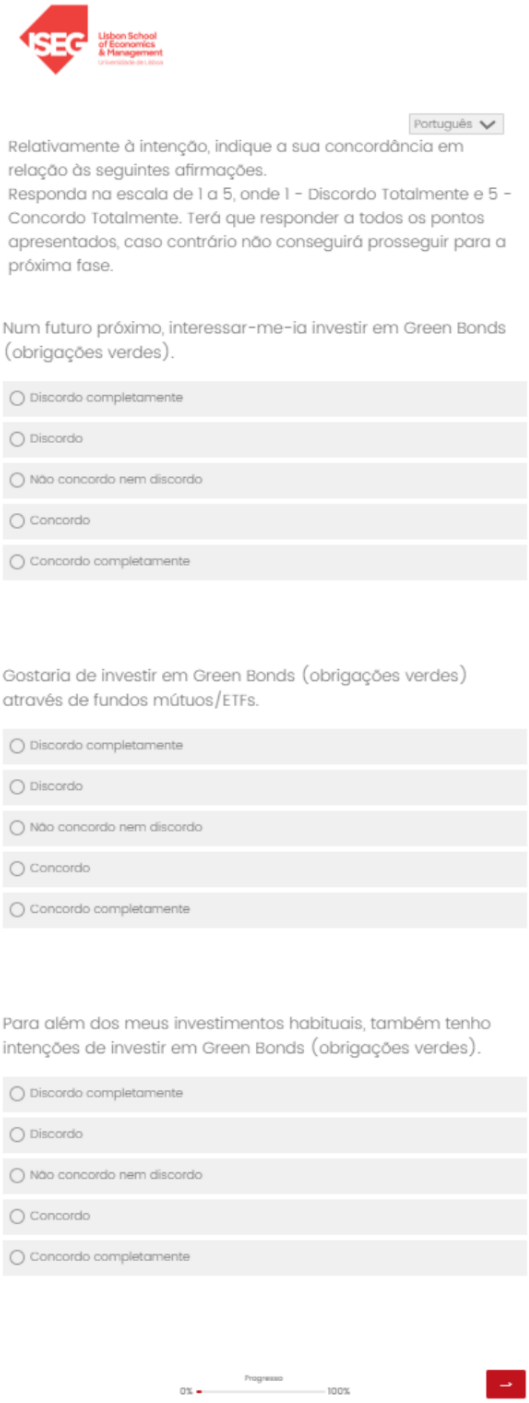
Progresso
0% 100%

Português

Já fez algum tipo de investimento financeiro?

- Sim
- Não

Progresso
0% 100%



Português

Relativamente à intenção, indique a sua concordância em relação às seguintes afirmações.
Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

Num futuro próximo, interessar-me-ia investir em Green Bonds (obrigações verdes).

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Gostaria de investir em Green Bonds (obrigações verdes) através de fundos mútuos/ETFs.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Para além dos meus investimentos habituais, também tenho intenções de investir em Green Bonds (obrigações verdes).

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Progresso
0% 100%

Português

Relativamente à atitude, indique a sua concordância em relação às seguintes afirmações.
Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

Investir em Green Bonds (obrigações verdes) é uma boa ideia.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

No geral, a minha opinião sobre investimento em Green Bonds (obrigações verdes) é positiva.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Eu gosto da ideia de investir em Green Bonds (obrigações verdes).

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Progresso
0% — 100%

→

Português

Relativamente à importância do Rating do Emitente, indique a sua concordância em relação às seguintes afirmações.
Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

Eu gostaria de ver o rating do emitente antes de investir em Green Bonds (obrigações verdes).

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Emitentes de Green Bonds com ratings elevados são importantes para mim pois simbolizam uma garantia de investimento.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Eu prefiro uma classificação mais alta para o emissor de Green Bonds (obrigações verdes), pois indica que existe menor risco de perda de investimento.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Progresso
0% — 100%

→

Português

Relativamente à importância dos Benefícios Ambientais, indique a sua concordância em relação às seguintes afirmações. Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

Ao investir em Green Bonds (obrigações verdes) estou a contribuir para o meio ambiente.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Ao investir em Green Bonds (obrigações verdes), estou a contribuir para a melhoria do meu meio ambiente local.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

O investimento em Green Bonds (obrigações verdes) é muito bom para o meio ambiente.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Progresso 0% 100%

Português

Relativamente à importância dos Benefícios Financeiros, indique a sua concordância em relação às seguintes afirmações. Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

Acredito que o retorno de investimentos em Green Bonds (obrigações verdes) corresponderão às minhas expectativas.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Acredito que, no futuro, o retorno do investimento em Green Bonds (obrigações verdes) será superior ao de obrigações convencionais.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Acredito que as Green Bonds (obrigações verdes) irão providenciar políticas fiscais que me beneficiem.

- ◯ Discordo completamente
- ◯ Discordo
- ◯ Não concordo nem discordo
- ◯ Concordo
- ◯ Concordo completamente

Progresso 0% 100%

Português

Relativamente ao pagamento de prémio, indique a sua concordância em relação às seguintes afirmações. Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

Não estou disposto a pagar um preço mais elevado por Green Bonds (obrigações verdes).

- ○ Discordo completamente
- ○ Discordo
- ○ Não concordo nem discordo
- ○ Concordo
- ○ Concordo completamente

Não estou disposto a abdicar de potenciais retornos de investimento em prol de causas ambientais.

- ○ Discordo completamente
- ○ Discordo
- ○ Não concordo nem discordo
- ○ Concordo
- ○ Concordo completamente

Não estou disposto a aceitar yields inferiores, mesmo que se trate de um investimento verde.

- ○ Discordo completamente
- ○ Discordo
- ○ Não concordo nem discordo
- ○ Concordo
- ○ Concordo completamente

Progresso 0% 100%

→

Português

Relativamente ao risco de greenwashing, indique a sua concordância em relação às seguintes afirmações. Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

As Green Bonds (obrigações verdes) estão associadas a reivindicações vagas e difíceis de comprovar.

- ○ Discordo completamente
- ○ Discordo
- ○ Não concordo nem discordo
- ○ Concordo
- ○ Concordo completamente

As Green Bonds (obrigações verdes) sobrestimam ou exageram os seus impactos ambientais.

- ○ Discordo completamente
- ○ Discordo
- ○ Não concordo nem discordo
- ○ Concordo
- ○ Concordo completamente

As Green Bonds (obrigações verdes) omitem ou mascaram informações importantes, fazendo com que o seu alegado impacto ambiental soe melhor do que realmente é.

- ○ Discordo completamente
- ○ Discordo
- ○ Não concordo nem discordo
- ○ Concordo
- ○ Concordo completamente

Progresso 0% 100%

→

Português

Relativamente à aversão ao risco, indique a sua concordância em relação às seguintes afirmações.
Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

O risco de perder dinheiro no mercado financeiro causa-me stress.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

A estabilidade e continuidade dos meus investimentos financeiros são mais importantes para mim do que a possibilidade de obter um retorno rápido do investimento.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Perdas financeiras, mesmo que pequenas, deixam-me nervoso.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Tenho relutância em correr riscos de natureza financeira.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Português

Relativamente à preocupação ambiental, indique a sua concordância em relação às seguintes afirmações.
Responda na escala de 1 a 5, onde 1 - Discordo Totalmente e 5 - Concordo Totalmente. Terá que responder a todos os pontos apresentados, caso contrário não conseguirá prosseguir para a próxima fase.

Sou uma pessoa preocupada com o meio ambiente.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concodo
- Concordo completamente

As condições do meio ambiente afetam a minha qualidade de vida.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Estou disposto a fazer sacrifícios para proteger o meio ambiente.

- Discordo completamente
- Discordo
- Não concordo nem discordo
- Concordo
- Concordo completamente

Progresso
0% 100%

Português

## Dados Sociodemográficos

### Género

- Masculino
- Feminino
- Não Binário
- Prefiro não dizer

### Faixa Etária

- < 30 anos
- 30 aos 44 anos
- 45 aos 59 anos
- > 60 anos

### Qualificação académica

- Ensino Básico
- Ensino Secundário
- Ensino Superior

### Experiência de Investimento

- < 1 ano
- 1 a 5 anos
- > 5 anos

Progresso 0% 100%

→

Agradecemos a sua participação neste inquérito.
A sua resposta foi registada.

Progresso 0% 100%

## Appendix B – Measurement Items and Factor Loadings

| Latent Variables | Indicators | Factor Loadings (CFA) | Factor Loadings (SEM) |
|---|---|---|---|
| **Environmental Concern** | **EC1** I am concerned about the environment. | 0.73 | 0.71 |
| | **EC2** The condition of the environment affects the quality of my life. | 0.8 | 0.78 |
| | **EC3** I am willing to make sacrifices to protect the environment. | 0.91 | 0,87 |
| **Reasons For: Issuer's Rating** | **IR1** I would like to look at the issuer's credit rating before investing in green bonds. | 0.86 | 0.85 |
| | **IR2** A higher rating for green bond issuers attracts me as it symbolizes a guarantee of investment. | 0.81 | 0.81 |
| | **IR3** I prefer a higher rating to the green bond issuer as it indicates a lower risk of default | 0.88 | 0.88 |
| **Reasons For: Environmental Benefits** | **EB1.** By investing in Green Bonds, I would help to significantly improve the green environment. | 0.91 | 0.91 |
| | **EB2:** By investing in Green Bonds**,** I would help to improve my local environment. | 0.85 | 0.85 |
| | **EB3:** Investing in Green Bonds, is really good for the environment. | 0.93 | 0.92 |
| **Reasons For: Financial Benefits** | **FB1.** I believe that the return from green bonds will meet my expectation. | 0.88 | 0.88 |
| | **FB2** I believe that the return from green bonds will be more than conventional bonds in the future. | 0.87 | 0.88 |
| | **FB3** Green bonds will provide favorable government tax policies | 0.73 | 0.73 |
| **Reasons Against: Risk of Greenwashing** | **RGW1.** Green Bonds possess a green claim that is vague or seemingly un-provable. | 0.82 | 0.82 |
| | **RGW2.** Green Bonds overstate or exaggerates how its green functionality actually is. | 0.87 | 0.87 |
| | **RGW3.** Green Bonds leave out or mask important information, making the green claim sound better than it is. | 0.93 | 0.92 |
| **Reasons Against: Non-willingness to pay Greenium** | **NWP1** I am not willing to pay a premium price for green bonds. | 0.82 | 0.82 |
| | **NWP2** I am not ready to trade off potential investment returns for environmental causes. | 0.94 | 0.94 |
| | **NWP3** I could not accept lower yields despite the 'green label' of the bond. | 0.97 | 0.97 |
| **Reasons Against: Risk Aversion** | **RA1.** The risk of losing money on the stock market causes me mental stress. | 0.90 | 0.9 |
| | **RA2.** Stability and continuity of my investments are more important to me than the chance of a quick profit. | 0.92 | 0.93 |
| | **RA3.** Even small financial losses make me nervous. | 0.85 | 0.86 |

| | | | |
|---|---|---|---|
| | **RA4.** I am reluctant to take risks regarding financial matters | 0.84 | 0.84 |
| **Attitude** | **ATT1** Investment in green bonds is a nice idea. | 0.83 | 0.83 |
| | **ATT2** My overall opinion on investment in green bonds is positive. | 0.87 | 0.86 |
| | **ATT3** I like the idea of investment in green bonds | 0.87 | 0.86 |
| **Intention** | **INT1** I would like to invest in green bonds in the near future. | 0.92 | 0.91 |
| | **INT2** I would like to invest in green bonds through mutual funds/ETFs. | 0.79 | 0.78 |
| | **INT3** I intend to invest in green bonds besides my regular investments. | 0.85 | 0.85 |

## Appendix C – Correlations between latent constructs and descriptive statistics (Second Order Constructs)

| | ***CR*** | ***AVE*** | ***Cronbach's α*** | ***INT*** | ***ATT*** | ***RFor*** | ***RAga*** | ***EC*** |
|---|---|---|---|---|---|---|---|---|
| ***INT*** | 0,89 | 0,74 | 0,89 | **0,86** | | | | |
| ***ATT*** | 0,89 | 0,74 | 0,88 | 0,85 | **0,86** | | | |
| ***RFor*** | 0,96 | 0,91 | 0,95 | 0,87 | 0,88 | **0,95** | | |
| ***RAga*** | 0,88 | 0,72 | 0,94 | -0,84 | -0,85 | -0,80 | **-0,85** | |
| ***EC*** | 0,9 | 0,76 | 0,89 | -0,84 | 0,83 | 0,82 | -0,87 | **0,87** |