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To label or not? A choice experiment testing whether labelled green bonds matter to retail investors

Vasundhara Saravade[1]✉, Olaf Weber[2] & Adam Vitalis[3]

Green bonds are an important sustainable finance tool that can help reorient financial flows and influence public policy in addressing climate action across the global financial markets. However, this market is still in its infancy for the retail investor segment, and it has not been sufficiently examined from a behavioural policy lens. We fill this research gap by examining whether labelling and environmental benefits framing of a green bond can influence retail investor decision-making. By employing 1105 Amazon Mechanical Turk workers across three choice scenarios, we test whether alignment of pro-environmental personal norms or having specific personal traits can have a mediating effect on their green bond preferences. Using a mix of quantitative analyses, we find that most retail investors are influenced by the presence of a 'green label effect'. For most retail investors, we find that the presence of a green label matters more than the 'greenness' of a green bond or the higher financial return of a non-green bond. However, for a very small sub-set of our sample, the alignment of environmental performance-related framing with their pro-environmental personal norms, enables greater investment into enhanced performance green bonds, even at the cost of losing financial returns. Finally, personal traits like individual risk tolerance (high), or previous investment experience with investment products (bonds, stocks), gender (non-binary individuals) and those having employment experience with financial industry, are more likely to invest in a labelled green bond. Our findings have timely implications for sustainable finance public policy, as it relates to regulating the growth of such products through labelling schemes like green taxonomies as well as addressing greenwashing risks through improved regulatory oversight.

[1] Institute of the Environment & Smart Prosperity Institute, University of Ottawa, Ottawa, ON, Canada. [2] Schulich School of Business, York University, Toronto, ON, Canada. [3] School of Accounting and Finance, University of Waterloo, Waterloo, ON, Canada. ✉email: vsaravad@uottawa.ca

Introduction

Among the innovative financial tools available for sustainable investing, green bonds have exponentially grown in their global impact and popularity in raising climate awareness and closing the gap for sustainable finance flows (Weber & Saravade, 2019; Saravade, Chen, Weber & Song, 2022). Although institutional investors drive this market, there is growing evidence of retail investor participation and interest (Azad et al., 2024).

One of the first countries that provided retail-level access to green bonds was Canada – where retail investors had access to green bond investment through smaller energy co-operatives and boutique sustainable investment companies.[1] However, there is a problem of scale and liquidity in this market (Saravade & Weber, 2024) regarding retail investor participation and what could inhibit its growth. Furthermore, with retail investors accounting for almost 52% of global assets under management in 2021 and expected to grow to nearly 61% by 2030,[2] the rationale for examining a retail investor's perception of green bonds becomes the new frontier for scaling up sustainable finance.

The unique demand for a green bond has manifested through the concept of a 'greenium' in the mainstream green bond market, where investors have shown a preference for green bonds regardless of lower financial returns compared to a *pari-passu* conventional bond. Understanding the potential impact that the green bond label has on retail investors provides a unique opportunity to understand behavioural drivers and biases at the individual level. Even though there is a range of literature examining the role of green bonds in attracting investment (Karpf & Mandel, 2018; Henide, 2022; Hyun, Park & Tian, 2021; Gianfrate & Peri, 2019; Flammer, 2021; Baldi & Pandimiglio, 2022), only a few studies have looked at the behavioural aspects of green bond investing (Sangiorgi & Schopohl, 2021; Yeow & Ng, 2021). However, there is a still a lack of understanding of the behavioural effect of a green bond label at the individual level.

Hence, our first research objective is to understand whether this 'greenium' applies to the retail investor market (i.e., manifested as an investment preference for a labelled green bond), and subsequently, our second and third research objectives identify personal norms and personal traits that explain and predict green bond preferences, respectively. Using 1105 Amazon Mechanical Turk workers, we analyzed whether retail investors are aware of the nuances within green bonds, especially when it comes to debates on environmental additionality (Weber & Saravade, 2019; Gibon, Popescu, Hitaj, Petucco & Benetto, 2020; Schneeweiß, 2019) or reporting standards (Steuer & Tröger, 2022; Saravade & Weber, 2020; Deschryver & De Mariz, 2020).

We tested their investment behaviour across three experimental scenarios as related to their preferences for bond labelling (Scenario 1), its environmental benefits (Scenario 2), and reporting performance (Scenario 3). We manipulate our green bond framing across these scenarios by providing participants with three levels of bonds having varying interest rates: a traditional corporate, *non-green bond (NG)* with no green label but having the highest financial return; a *baseline labelled green bond (BG)*, where the label, environmental benefits and reporting performance of the bond is in line with market baseline for a green bond—which presents the lowest return in the labelling scenario (Scenario 1) and a mid-level return in the two performance-related scenarios (Scenarios 2 and 3); and a *hybrid green bond (HG)*, where the label, environmental benefits and reporting performance is not the market standard and goes above and beyond in terms of its performance levels—however, opposite to the BG, it showcases mid-level return in the labelling scenario and the lowest return in the two performance-related scenarios.

Using a mix of quantitative analysis—including paired differences t-tests, multivariate analysis of variance and regression analysis—we found that most retail investors are influenced by the presence of a 'green label effect'. Our findings show that retail investors consistently preferred baseline-labelled green bonds across all scenarios. With limited framing information (such as label and financial performance in Scenario 1), investors prioritize environmental considerations over financial returns by selecting the lowest-return bond (the baseline-labelled green bond). However, when additional framing around labelled green bonds is introduced, such as environmental benefits and reporting performance (Scenarios 2 & 3), they still prefer investing in a labelled green bond (even though it has mid-level returns) but tend to discount the 'greenness' of a green bond (hybrid or enhanced performance green bonds having the lowest returns) and assign greater value to its financial performance over environmental considerations.

Our findings also show that most retail investors do not react to the nuances in the performance-related framing – rather, they tend to invest based on labelling-related framing (we term this the 'green label effect'). However, for a small portion of our sample (4.34%), personal norms appear to be activated when comprehending a bond's performance-related framing. Subsequently, personal norms tend to positively and significantly affect their investment into the hybrid (labelled) green bonds, which showcase enhanced environmental and reporting performance, even if it is antithetical to their economic interests but is in line with their beliefs. Our analysis found that personal traits like individual risk tolerance (high), gender (non-binary), employment experience in the financial industry, and experience with stocks (moderate) or bonds (none to high) show a positive and significant relationship with investing in a labelled green bond. On the other hand, institutional risk tolerance (high), age (young and middle-aged), and investment experience with term deposits (moderate) have a negative significant relationship.

Our study shows that labelling can help influence the flow of funds into a sustainable finance market like the green bond. However, the impact is greater with retail investors with a certain type of risk tolerance, socioeconomic characteristics, or investment experience level, along with experiencing the correct comprehension of the performance-related framing effects. Further, our results show that retail investors do not react to the 'greenness' of a green bond, suggesting a higher risk of financial product greenwashing could be possible given the lack of market regulation around what counts as 'green' and what does not.

Our research has a three-fold contribution to literature—firstly, we fill the theoretical gap on the role of disclosure framing and personal norms in influencing the investment preferences of individuals; secondly, we create a green investor profile of those retail investors that might be interested in investing in green bonds; and thirdly, we provide policy recommendations for this market in terms of protecting investors from greenwashing risks and improving best practices for environmental impact disclosure reporting.

The paper is structured as follows: the background section highlights the relevant theoretical concepts and provides a literature overview related to green bonds and behavioural norms in investment decision-making. The section on methods highlights our experimental survey design, implementation and analysis. The results section displays our findings for the three research questions. The discussion and conclusion section highlights theoretical and scholarship implications, limitations as well as presents future research avenues.

Background

A green bond is similar in structure to a traditional bond; however, the green bond adds green-focused factors, which leads to unique framing from its green labelling (Hyun, Park & Tian, 2021; Gianfrate & Peri, 2019, Saravade & Weber, 2024; Flammer, 2021; Tang & Zhang, 2020)—a tag which creates transparency about its use-of-proceeds. Although labelling is an important feature, there is still a market segment of unlabelled green bonds. Compared to labelled green bonds, Hyun, Park & Tian (2021) find that unlabelled bonds are likely to have higher yields despite having the same characteristics as labelled green bonds. The key differentiating factor here is the official green label, which offers greater greenness information to its investors, allowing its issuers to enjoy a better pricing advantage than those offered by the unlabelled green bond (Hyun, Park & Tian, 2021). This phenomenon is called the 'greenium' or the green premium paid or accepted by investors.

Recent studies (Agliardi & Agliardi, 2021; Nanayakkara & Colombage, 2019; Hachenberg & Schiereck, 2018; Liaw, 2020; Hyun, Park & Tian, 2021; Gianfrate & Peri, 2019) have shown that institutional investors are willing to pay more for green bonds. However, with a growing demand for ESG preferences among retail investors (Badía et al., 2020; Diouf, Hebb & Touré, 2016), a literature gap emerges in understanding whether a green bond label or a 'greenium' effect would transfer to the retail investor setting. Although retail investors have been studied experimentally in terms of various socially responsible products, including green projects (Siemroth & Hornuf, 2023), impact investing (Barber, Morse, & Yasuda, 2021), and green mutual funds (Riedl & Smeets, 2017)—no study to our knowledge examines the framing effects (green bond label vs. an unlabelled climate-aligned bond) on retail investors.

A second unique feature of green bonds is their ability to undertake unique disclosure reporting in annual reports documenting the environmental impact of its use-of-proceeds. However, as Lebelle et al., (2022) highlight, green bonds face disclosure-related challenges regarding information disclosure to the public, especially concerning the level of disclosure details and the challenges posed by market information asymmetry. They show that green bonds with greater disclosures and readability of their environmental impact documentation tend to have more liquidity (Lebelle et al., (2022), indicating a higher institutional investor demand. In contrast, literature on retail investor's reaction to disclosures points to their lack of use of environmental, social, and governance (ESG) information (Moss et al., 2024) and instead shows their preference for economic information disclosures for evaluating company-level performance (Cohen, Holder-Webb, Nath, & Wood, 2011) Hence, the presence and detail of environmental disclosure reporting.[3] are still evolving questions for retail investors.

Therefore, our first research question is: *Do different levels of bond framing influence retail investors' choice in green bond investments*?

Personal norms and traits in socially responsible investment (SRI) decision-making. To better understand the factors that shape green bond preferences, we can look at the role of personal norms and traits in decision-making. Several studies (Dreyer, Sharma & Smith, 2023; Díaz-Caro, Crespo-Cebada, Goenechea, Mirón Sanguino, 2023; Andrews, Delton & Kline, 2018; Diouf, Hebb & Touré, 2016) have analyzed the effect of SRI portfolio-level preferences on the behavioural norms and personal traits of investors. Personal norms are defined as the 'inner moral conviction that is defended irrespective of the expectation of others' (Hunecke et al., 2001, p. 832), and can differ based on an individual's internal motivation (de Groot et al., 2013; Barrett et al., 2004).

As shown by previous studies, it is the relevant activation of these personal norms that has a direct and positive influence on an individual's pro-environmental investment preferences (Church, Jiang, Kuang, & Vitalis, 2019; Diouf, Hebb & Touré, 2016; Garg et al., 2022). For green bonds, personal norms can be identified as the pro-environmental attitudes and the pro-environmental disclosure preferences of investors. Our research looks to contribute to this behavioural finance policy area by identifying personal norms' influence on green bond preferences, and the role of public policy in protecting and nurturing these norms, without the risk of being misused.

As shown by Church et al. (2019), activating pro-environmental personal norms in conjunction with relevant non-financial information disclosures tends to moderate an individual's green investment decision to the extent that it influences them to go against their economically rational mindset. We posit that, in line with previous literature, alignment with personal norms will have an explanatory effect on identifying the green bond preferences of retail investors. Given that the green bond literature has highlighted that investors choose a green bond at the cost of their economic benefit (Agliardi & Agliardi, 2021; Nanayakkara & Colombage, 2019; Hachenberg & Schiereck, 2018; Liaw, 2020; Hyun, Park & Tian, 2021; Gianfrate & Peri, 2019), our study goes one step further to understand whether the type and interaction between personal norms and framing effects provided by a green bond can allow for this norm activation to occur (Gajewski, Heimann, Meunier & Ohadi, 2024).

Based on the foregoing, our second research question is: *Do investors' personal norms*[4] *have an explanatory effect regarding their choice in green bond investments*?

In contrast to norms that are based on an individual's values, beliefs, and ethical convictions, personal traits are linked to the already existing features of an individual. Sociodemographic characteristics, portfolio- and risk-linked preferences can be seen as personal traits that may be used to identify the overall profile of an individual and influence their investment decisions (Dreyer, Sharma & Smith, 2023; Diouf, Hebb & Touré, 2016). For instance, personal traits like gender (Cheah & Phau, 2011), age (Berry & Junkus, 2013; Löfgren & Nordblom, 2024), and education play a positive role in mediating SRI preferences of retail investors (Siddiqui, 2018; Masters, 1989). However, aspects like employment history (especially in the financial sector) tend to negatively affect the sustainability preferences of individuals (Hasebrook et al., (2022)). These findings signal that not all personal traits favour green investment behaviour, and perhaps it is the context or framing of the situation that seems to matter.

Finally, our third research question is: *What are the personal traits of retail investors that positively mediate their preference for a labelled green bond*?

Conceptual framework. Based on our conceptual framework (in Fig. 1), we posit that bond framing effects as operationalized in the three unique scenarios of labelling, environmental impact perception and the environmental disclosure reporting of the bond, tend to have a direct impact on retail investors' preferences for a green bond (as compared to a non-green bond with higher financial returns). We explain their green bond investment preferences based on their pro-environmental personal norms (with environmental benefits perception of bonds in Scenario 2 taken as an ex-post proxy) and identify relevant personal traits (across risk tolerance, investment portfolio preferences and socio-demographic characteristics) that help predict the investment into a labelled green bond.