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Is investor behavior on sustainable products heterogeneous? The case of Spanish investors on investment in SGDs

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Abstract

Nowadays most of Economies are involved in the 2030 Agenda. But, are business decisions affected by the 2030 Agenda? In order to answer this question, we propose to analyze the effect of SDGs 6: “clean water and sanitation” in the financial market throughout investors choices. Then, the aim of this letter consists of analyzing investors' preferences about investment funds which investment policy contributes to the achievement of Sustainable Development Goal 6: "clean water and sanitation", given the global importance of achieving this goal. To do that, a survey was carried out in which a total of 456 valid observations were obtained. Choice experiment methodology has been applied to try to obtain a valuation by Spanish investors.. The results show that there is a high valuation of funds whose portfolios include investments that contribute to SDG 6 and that there is also heterogeneity in preferences. These results have important implications for economic and professional policy.

Keywords: sustainable investment, SDGs; willingness to invest, heterogeneity

JEL Classification Codes: C90, G40, G50, Q50

1. Introduction

The 2030 Agenda for Sustainable Development establishes the so-called Sustainable Development Goals (SDGs), which are a global call to eradicate poverty, protect the environment and pursue peace and development of Economies. To this end, each goal establishes several targets to be achieved by 2030. On many occasions, the achievement of these goals entails the recruitment of large amounts of financial resources, which will be obtained from different financial instruments (United Nations, 2017). Specifically, we have chosen SDG 6: "clean water and sanitation", given the global importance of achieving this goal. Water can be considered as one of the most important resources and its pollution and improper use may cause significant problems for economic growth as well as for the wellbeing of individuals (Jiang, 2022). Furthermore, water is central to sustainable development as stated in the report of the High-Level Panel on Water of the United Nations and World Bank.

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One of the most market instruments in the financial industry is the investment fund. As a result of social concern for the planet and humanity in general, the development of so-called thematic investment funds has grown, having among their investment policy the contribution to the SDGs. There are various ways to contribute to the SDGs, such as direct investment, (blue) bond financing, impact investment, or thematic investment, which will be analyzed here. This type of investment can be considered as a sustainable investment, so the contribution to the SDGs could be considered as a non-financial motivation, as pointed out by Gutsche and Ziegler (2019) and Lagerkvist et. al. (2020) towards sustainable investments. On the other hand, the literature shows how sustainable investments are preferred despite a reduction in financial returns, as illustrated in the Netherlands case for pension plans (Bauer, R. et al, 2021).

The aim of this paper is to analyze the preferences of Spanish investors regarding investment funds that contribute to the goals of the 2030 Agenda through their investment policy. In the same way that Spanish investors present differentiated patterns in terms of the weight in their portfolio (real estate vs. financial), we consider that there may be differences in this area with respect to other international investors. Thus, we consider the analysis of heterogeneous preferences to be relevant so they can have effects on the creation and design of incentives and policies for the achievement of stated objectives. . For this purpose, a choice experiment was carried out based on three alternatives, in which the contribution to the achievement of the SDG 6 was considered as an attribute. In addition, the investors' willingness to pay was calculated to obtain a valuation in terms of the interest rate to quantify the different attributes.

2. Choice experiment

The Choice Experiment (CE) was considered in this study to be the most appropriate technique for estimating the preferences of investors in funds whose investment policy is to achieve Goal 6: "clean water and sanitation".

The CE is based on the idea that a good or service can be described by its component attributes (Lancaster, 1966) and that consumers, in this case investors, make financing decisions based on these attributes. A CE is characterized by including alternative options of the same product with different attributes and characteristics and the respondent selects the option or alternative that best reflects their preferences (Gutsche and Ziegler (2019) and Lagerkvist et. al. (2020)).

The first step in a CE study is the selection of the attributes and levels that will make up the different products presented to investors. Table 1 shows the attributes and levels selected for this study, which have been selected based on the review of previous literature in studies that analyze the preferences of investors (Apostolakis et, al, 2018; Gutsche and Ziegler (2019) and Lagerkvist et. al. (2020)).

The interest rate refers to the investment fund return shown by the investment fund in its disclosures. The variable SDGs shows the information that the investment fund reports on the specific contribution (yes/no) to the SDGs.

The total set of hypothetical products that can be created by combining the selected attributes/levels amounts to 54 ($3*3*3*3*2$), which would be an excessive number of products for respondents to compare. Considering that they are presented with "choice sets" consisting of two products and a "no choice" option, there would be a total set of possible comparisons of 2,862 (54×53), which is unmanageable in both, economic and time terms. Therefore, a fractional design was used to reduce the number of comparisons to an efficient level using Stata's "Dcreate" module, which allows such designs to be generated (Hole, 2017). This module uses the modified Fedorov algorithm to create an efficient design (Carlsson and Martinsson, 2003). Finally, eight choice sets were created and used for the survey. Table 2 shows an example of a choice set.

Table 1. Attributes and levels used in the CE.

Attributes	Levels
Supplier (Type of financial institution)	Conventional Bank ; Cooperative; Sustainable
Interest rate (yield)	1%; 3%; 5%
Risk	Low; Medium; High
Contribution to SDGs 6	Yes (Water); No

Source: Own compilation.

Table 2. Example of choice card presented to respondents.

	Comparison 1		
	Option 1	Option 2	Option 3
Supplier	Sustainable Bank	Bank	None before
Interest Rate	3%	5%	(Status quo)
Risk	Medium	High	
Contribution SGDs	None	Water	

Source: Own compilation.

Before Table 2, participants are shown information on what each type of attribute means and its corresponding level. To correct the hypothetical bias that can appear in this type of study, the cheap talk technique was used trying to actively put oneself in a real investment situation. To this aim we incorporate a text explaining the hypothetical bias and its importance for the validity of the study into the questionnaire:

“Imagine that you go to your financial institution to take out an investment fund and you are offered the following options (select the one you prefer)”

The mixed logit has been used to evaluate the heterogeneous preferences of investors. This model is based on Random Utility (McFadden, 1974; Train, 2009), which assumes that the utility function of each investor is the sum of two components: a deterministic part that can be derived as a function of the factors that influence the investor's utility and another random part, not directly observed and considered stochastic. Thus, the utility U_{njt} for an investor n who chooses alternative j in comparison t is:

$$U_{njt} = \beta'_n x_{njt} + \varepsilon_{njt} \tag{1}$$

where β'_n is the vector of individual-specific coefficients, x_{njt} is the vector of observable attributes for individual n and ε_{njt} is the random term assumed to be an independently and identically distributed extreme value. Hence, it represents the probability that consumer n chooses alternative j in comparison t . One of the limitations of the conditional logit model is the assumption that preferences are the same for everyone, in this sense the mixed logit model corrects this limitation by allowing different coefficients for each person. Particularly, the mixed logit choice can be estimated as follows:

$$SLL(\theta) = \sum_{n=1}^N \ln \left\{ \frac{1}{R} \sum_{r=1}^R \prod_{t=1}^T \prod_{j=1}^J \left[\frac{\exp(x'_{njt} \beta'_n)}{\sum_{j=1}^J \exp(x'_{njt} \beta'_n)} \right]^{y_{njt}} \right\} \tag{2}$$

Base levels were selected for each qualitative attributes in order to establish a benchmark (zero utility) for the other attribute levels. The base levels selected were "Conventional" (for the Supplier attribute) and "Low" (for Risk), while, for the interest rate attribute, instead of disaggregating it into different variables: 1%, 3% and 5%, it has been unified into a single continuous "non-dummy" variable, so that it can then be monetized. Therefore, the econometric specification used in this paper is defined as follows:

$$U_{njt} = \beta_0 ASC + \beta_1 Coop_{njt} + \beta_2 Sost_{njt} + \beta_3 Int_{njt} + \beta_4 Riesm_{njt} + \beta_5 Riesa_{njt} + \beta_6 Ods_{njt} + \varepsilon_{njt} \quad [3]$$

where β_0 refers to the current situation (ASC), i.e., not buying either of the two proposed products, and β_k is the marginal utility associated with each attribute provided by the specific product.

On the other hand, price (interest rate) is included as an attribute in a choice experiment, so the marginal ratio of substitution between a coefficient and price is called willingness to pay for the specific attribute, which is calculated as follows:

$$WTP_k = - \left(\frac{\beta_k}{\beta_{Price}} \right) \quad [4]$$

Therefore, WTP_k represents how much investors would be willing to pay in monetary terms for each increase in the level of attribute k provided by the product.

3. Database

Data were collected between January and March 2022 from a sample of current Spanish investors. The questionnaire was designed using Google Forms (www.docs.google.com) and participants were recruited through social networks, using research databases created from previous investment studies.

The questionnaire was designed in Spanish with closed questions. In turn, the survey was divided into two blocks, one, the choice experiment, to estimate the preferences of investors in investment funds and two, the socio-economic questions. The research was conducted in compliance with the regulations of the Bioethics and Biosafety Committee of the University of Extremadura on studies with human participants. All participants gave their consent to participate in the study and were assured that their responses would be confidential and completely anonymous. Respondents did not receive any compensation for their participation in the study.

Although a total of 529 questionnaires were received, 73 of them were discarded for different reasons, mainly incomplete responses, so the final number of valid questionnaires used in this investigation was 456.

Table 3. Mean statistic of sample.

Variable	Mean
Age (S.D)	43.58 (15.69)
Gender (female)	46.25%
Income (less than 900€)	3.74%
Between 901€ and 1,500€	21.10%
Between 1.501€ and 2.500€	44.40%
More than 2.501€	30.77%
Household size 1	13.63%
Household size 2	19.12%
Household size 3	35.82%
Household size 4 or more	31.43%

Source: Own compilation.

4. Results

Table 4 shows the results of the mixed logit model for sample.

Table 4 contains the mean and the standard deviation of each parameter. The sign of estimated coefficients indicates if the presence of the level from some attribute ads (positive sign) or reduces (negative sign) utility to investors. Therefore, the interest rate, sustainable bank and

SGDs have all of them positive and significant coefficients, indicating a positive utility for investors through these levels of attributes. Moreover, both, medium and high risk, show a negative and significant coefficient. These results are consistent with other papers where investors preferences for sustainability were analysed (Gutsche and Ziegler (2019) and Lagerkvist et. al., (2020)).

Above all, standard deviation is significant in all coefficients, showing that exists a level of heterogeneity in the preferences. The higher value corresponds to higher risk levels, however the contribution to goal presents a high standard deviation too. Then, the medium risk and interest rate. Finally, sustainable bank is the variable with less variability in the sample.

Table 5 contains the results of willingness to pay (invest) based in the interest rate.

As the willingness to invest is based on the interest rate, the results are interpreted as the interest rate that the investor is willing to demand/refuse for the attribute in terms of percentage points. As we appreciate, both, high and medium risk, present higher willingness to invest, so investors demand 32.8 percentage points interest rate to assume a high-risk investment, indicating that investors are very sensitive to risk. The SGDs present a negative willingness to invest, which means that investors are willing to refuse to 6.79 percentage points interest rate to invest in funds that contribute to the Goal 6. Similarly, investors are willing to refuse 3.75 percentage points of interest rate if the fund is market by a sustainable bank. Finally, cooperative bank is not significant.

Table 4. Mixlogit model results.

	Mean of the parameter (Standard error)	z-value	Standard deviation of the parameter
Interest rate	0.08*** (0.04)	2.04	0.69***
Cooperative	- 0.13 (0.13)	-0.97	0.29
Sustainable	0.31** (0.12)	2.67	0.67**
Medium risk	- 0.76*** (0.11)	-6.86	0.95***
High risk	- 2.78*** (0.25)	-10.85	3.19***
SGDs	0.57*** (0.09)	5.95	0.95***
ASC	-2.15*** (0.28)	-7.48	3.41***

Source: Own compilation. (*, **, ***) means that the appropriate parameter is different from zero at the 10%, 5%, 1% significance level, respectively.

Table 5. Results of the willingness to invest based in the interest rate

	Cooperative	Sustainable	Medium risk	High risk	SGDs
WTP	<i>n.s.</i>	- 3.75	9.04	32.80	- 6.79
Ll	<i>n.s.</i>	- 7.87	-0.31	0.44	- 13.48
Ul	<i>n.s.</i>	- 0.35	18.39	65.13	- 0.09

Source: Own compilation.

5. Concluding remarks

The aim of this paper is to analyze investors' preferences about sustainable investments and their willingness to pay for them. The main contribution of this paper is to analyze heterogeneous preferences about thematic investment funds that contribute with their investment policy to the achievement of SDGs 6. The main results show that the level of risk plays a relevant role in the investors' decisions, which are quite sensitive to risk.

Moreover, they are willing to refuse to any profitability to contribute to the achievement Goal 6 or to operate with sustainable bank. In addition, it is observed how the preferences are not homogeneous, highlighting the high variability in the risk attribute, followed by the SDG attribute.

The main implications for policy or practitioners are the following. Firstly, knowledge of preferences for sustainable investment is relevant to understand and create the right incentives. Secondly, it allows us to understand why investors would be willing to lower their returns to increase global welfare (via SDGs funds). Finally, the presence of heterogeneity is relevant to consider that not everyone will respond to incentives in the same way and intensity.

The main lines of future research that are proposed are the following. In the first place, investigate the heterogeneity of preferences trying to obtain homogeneous groups of investors and classify them. And secondly, try to analyze whether the same results are obtained by analyzing another type of SDG.

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