Divergence in Mutual Fund Sustainability Labelling *

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Working Paper

May 2022

Abstract

Several labels for sustainable investment funds have emerged in Europe, providing important cues for investor decision making. Using a dataset of labeled equity and fixed-income funds, this paper examines the coherence of the signals sent by sustainable labels and certifications sponsored by governments and independent organizations versus private sector organizations. We find divergence between the labels of governmental and other independent entities and those of the private sector, with government-labeled funds being perceived as bearing high environmental, social, and governance (ESG) risks by the private sector. On average, multiple labeled funds have lower ESG risks than single labeled funds, but even multiple labeled funds can be exposed to high ESG risks. Additional analysis of the Sustainable Finance Disclosure Regulation shows that Article 9 funds do not always have better ratings than article 8 funds and that green-labeled funds do not always have low carbon footprint labels from the private sector. Finally, labeled funds might not carry ESG jargon in their name or their investment objectives. Although sustainable labels were created to give investors information about their options, our research draws the attention to the fact that the multiplicity of nonaligned signals might confuse investors or even cause skepticism in sustainability labels and certifications.

Keywords: asymmetric information, labelling**,** mutual funds, search costs, sustainable finance, third-party certifications

JEL Codes: G10, M14, Q56

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* This work was supported with funds of Labex MME DII (ANR-11-LABX-0023-01) and Institute Europlace Finance, and with National Funds of the FCT – Portuguese Foundation for Science and Technology within the project UIDB/03182/2020.

1. INTRODUCTION

Sustainable investing is on the rise, due to increasing societal awareness of sustainability issues and public pressure on organizations to behave in a responsible way. In financial markets, a substantial number of engaged investors are seeking not only to invest according to their personal values and beliefs but also to promote socially responsible behavior by companies (so-called ’doing good’), as documented in the literature on investors’ preferences (e.g., Riedl and Smeets, 2017; Rossi et al., 2019; Lagerkvist et al., 2020; Anderson and Robinson, 2021; Bauer et al., 2021). Consistent with this movement, sustainable mutual funds[1] have experienced one of the fastest growing rates within the financial industry, with Europe currently the largest market, both in terms of number of funds and assets under management (Morningstar, 2022a).

The growth of socially responsible investments has been accompanied by the emergence of sustainable labelling, ratings, and other certification schemes that aim to support investors in differentiating financial products with specific sustainable attributes from those without them. Although sustainable labelling schemes in financial markets only emerged at the turn of the millennium, sustainability labels in other consumer products (e.g., the organic food sector), particularly those of an environmental nature (so-called eco-labels),[2] date back to the 1970s. Since then, a multitude of eco-labels have proliferated (Iraldo et al., 2020)[3] in response to an increasing appetite for green products worldwide (De Chiara, 2016). Labels for investment funds emerged and gained popularity in Europe after the first sustainable label (Finansol) was launched in 1997 in France (Crifo et al., 2020). Currently, there are several well-recognized sustainable labels in Europe sponsored by governmental bodies and independent non-profit organizations (NPOs).[4]

Sustainable labels and certifications have become particularly germane in the mutual fund industry as a way to reinforce a differentiation strategy, considering the vast and diverse offering of products available.[5] For investors, the search for funds that match their social preferences can be a complicated effort, let alone assessing whether the investment strategies such funds actually follow are in fact consistent with the investment objectives declared in their mission statements. Clearly, the task of distinguishing the sustainability attributes of a rising number of competing and seemingly comparable products may pose a daunting challenge for investors. For instance, the different jargon used in the industry to communicate sustainability strategies, including appealing terminologies such as 'ESG', 'green', 'impact', 'responsible', may exacerbate uncertainty surrounding the sustainable attributes of investment products instead of simplifying the decision-making process. On top of a selection process that is already complex, many investors have difficulties processing sophisticated financial information (Evans and Sun, 2021) and bearing additional search costs associated with assessing sustainability (Darnall et al., 2018). In all, investors searching sustainability funds face additional complexity and significant information asymmetries (Rhodes, 2010). Sustainable labels and certifications can guide investors in choosing among a profusion of financial products that market themselves as sustainable.

To guide their investment decisions, investors rely on simple and accessible signals of fund performance from third parties, such as Morningstar star ratings (Del Guercio and Tkac, 2008; Evans and Sun, 2021; Ben-David et al., 2022). Similarly, the development of salient signals of sustainability, such as certifications and labelling schemes, aims to transform overly complex information into condensed figures and, as

Ammann et al. (2019, p. 522) put it, "has transformed sustainability from a difficult-to-grasp characteristic into an easy-to-understand figure".[6] As such, sustainability labels can play a role in helping investors overcome some of the barriers associated with investing in SRI funds, such as information and search costs (e.g., Gutsche and Zwergel, 2020).

Sustainable label certification services are undertaken primarily by governmental bodies and other NPOs, as they enjoy greater legitimacy and trust than for-profit companies (Castka and Corbett, 2016). But as sustainable investing goes mainstream, sustainable ratings and certifications have become a profit-making business line, attracting private-sector participants. For instance, in 2016, Morningstar, whose well-known star ratings convey risk-adjusted performance, launched an approach to classifying funds according to their sustainability. Using a scale of globes (5 globes for maximum and 1 globe for minimum sustainability), the rating scheme was intended to give investors information on funds' sustainability performance, which later evolved into ESG risk assessment. In 2018, Morningstar introduced the eco-label 'Low Carbon Designation' (LCD) to signal funds that perform well on two environmental metrics: carbon risk score and fossil fuel involvement. Another ESG data provider, MSCI, introduced ESG ratings at the company level in 2019 and extended them to mutual funds in 2020. These private ESG rating providers have become increasingly influential actors in financial markets due to the number of investors that rely on their assessments when making investment decisions (Berg et al., 2020).

The literature on sustainability labelling has largely overlooked the issue of consistency between the labelling of sustainable financial products by government and independent entities, and the ratings of private-sector companies. Such standards could meaningfully diverge. Notably, clients of private-sector ratings are primarily professional investors, whose interests and needs might differ from those of official labels sponsored by governmental bodies and other organizations, which reach out to more unsophisticated investors, like retail investors. Moreover, the motivations of different segments of sustainable investors differ: some aim to integrate ESG risks primarily because they are financially material (e.g. Principles of Responsible Investing (PRI)[7]), while others are pure socially or environmentally conscious investors who put less weight on the financial impact of ESG risks and more on the social and environmental contributions of their investments.[8] Furthermore, different stakeholders can take different perspectives when grounding the assessment of sustainability attributes, so assessments undertaken for labelling purposes can also differ in their goals, definitions, methodologies, and sources of data. Besides, because ESG data is often drawn on qualitative information, its analysis is inherently subjective (e.g., Chatterji, 2016; Berg et al., 2020; Christensen et al. 2022; Gangi et al., 2022). In addition, because private-sector ratings are a line of business framed by commercial and competitive purposes, they might diverge from government and independent sustainability labels. As a result, private-sector labels might communicate different standards from those provided by governments and other independent organizations, and conflicting information might be communicated to investors, leading to different conceptions regarding their objectives and requirements and, consequently, increasing investor confusion or even skepticism.

Sustainable labels play an important informational role in financial markets (Crifo et al., 2020). Socially responsible investments are so-called credence goods (Darby and

Karni, 1973), in which informed sellers provide products whose quality is unobservable to less-informed buyers. This setting generates an information asymmetry between the seller and the buyer (Balafoutas and Kerschbamer, 2020). Labels aim to mitigate informational asymmetries by communicating the financial products' sustainability characteristics (Crifo et al., 2020), thus narrowing the information gap (van Amstel et al., 2008) and creating an easily recognized and reliable mark of credibility (Gallastegui, 2002). By their very nature, these labels intend to provide transparency regarding the sustainable investment practices of portfolio managers.

There are, nevertheless, some concerns about labels. First, they can be used to greenwash investments whose actual environmental attributes fall short of their promises. In such cases, labels mislead investors about products' social and environmental benefits (Delmas and Gergaud, 2021), thereby undermining investors' ability to make informed choices. Second, the proliferation of sustainable labelling schemes can increase consumer confusion by complicating their assessment of the environmental quality associated to each label (Brécard, 2014) and increasing the noise provided by each of the quality signals (Crifo et al., 2020). Uncertainty around labelling standards and how to recognize the differences between them decreases their informativeness (Harbaugh et al., 2011), induces skepticism on social and green claims (Lyon and Montgomery, 2015), and weakens consumers' trust and confidence in labeled products.[9] Moreover, competition in the ESG industry and the profusion of labels could lead to information overload (Crifo et al., 2020) and add further layers of opacity, since most investors are not sophisticated enough to differentiate between them (Megaeva et al., 2021). This could magnify information asymmetry instead of reducing it.

Research assessing the alignment of different sustainable labels in financial products is scarce.[10] Gutsche and Zwergel (2020) use survey-based data to discuss the extent to which sustainable labels can help overcome investment barriers in the SRI arena. Two other papers provide an overview of eco-labelling schemes in Europe. First, Crifo et al. (2020) analyze the development of social responsible labels in European financial products, with a focus on the French market. Second, Megaeva et al. (2021) provide a detailed comparison of the major financial sustainable labels along several qualitative dimensions (eligibility criteria, structure and composition of the labels, transparency, governance, stringency, and impact). Yet, these studies do not analyze the penetration of these labels in the mutual fund industry; they limit their focus to official labels sponsored by governments and NPOs, thereby disregarding the fact that major industry players, such as Morningstar or MSCI, provide their own well-recognized sustainable metrics. As such, the literature on sustainable investments has not yet discussed governmental and independent versus private certifications in sustainable investments, particularly concerning the extent to which they are aligned. This paper fills this gap by investigating the extent to which the signals of sustainable labels and certifications in mutual funds in Europe, sponsored by governments and independent organizations versus private-sector ones, are aligned, thereby assessing whether they communicate useful signals that simplify investors' decision-making processes.

To our knowledge, this study is the first to analyze European sustainable certifications and labels sponsored by governments, NPOs, and private financial services providers; the extent to which they have been applied in Europe; and their consistency**.** This research aims to determine whether the information provided by labels sponsored by governments and NPOs is aligned with labels provided by the private sector. We do so by analyzing sustainable labelling schemes in European mutual funds and contributing to map the sustainable-labelling landscape. Notably, this paper does not aim to compare the assessment methodologies of label providers, but rather to inspect, from an investor perspective, the signals on sustainability that are conveyed. This topic is highly relevant, given the European Union (EU) strategy of empowering investors to make sustainable decisions, a goal that might be hampered by the existence of multiple and seemingly divergent signals.

This paper makes contributions in several areas. First, we provide an analysis of mutual funds holding sustainable labels in Europe that are sponsored by governments or NPOs. Second, we investigate the alignment of these labels with those provided by the private sector. Are labels from the private sector consistent with official labels sponsored by governments and NPOs? ESG ratings from different private data providers have been criticized for their divergence (Berg et al., 2020). Do we also find this in the broad sustainability labelling landscape?

Besides the alignment of signals from external providers, we also analyze a second level of signals, represented by the voluntary information provided by the fund itself. The European Sustainable Finance Disclosure Regulation (SFDR) has been a landmark in the sustainability field, as it requires funds to integrate sustainability risks more transparently in the investment process and to self-declare their commitment to sustainability. Such classification can represent an important indication of funds' sustainability levels. We investigate the extent to which this classification is aligned with other sustainability labels and certifications.

Finally, funds can also signal their sustainable features through their names and stated investment objectives. We investigate ESG-related terms in labeled funds' names and investment objectives to assess the extent to which both are informative cues for investors. Figure 1 summarizes the framework we use to analyze the alignment of sustainability signals disclosed to investors from both external providers and the fund itself.

[Insert Figure 1 here]

Drawing on a dataset of 990 labeled equity and fixed-income funds in Europe, we find divergent signals from labels sponsored by government and NPOs and ratings from the private sector, such as Morningstar and MSCI, which assess labeled funds as bearing high ESG risks. We next analyze whether funds that hold multiple labels, thus offering greater assurance of meeting standards, have better ESG ratings. On average, multiple-labeled funds have lower ESG risks than single-labeled funds, although even multiple-labeled (governmental and independent) funds can have low ESG ratings. Inspecting other types of private labels, such as the Morningstar LCD eco-label, which focuses on the level of carbon emissions of funds' holdings, we find that while many equity ESG-labeled funds exhibit the Morningstar LCD eco-label, few fixed-income funds do so. Moreover, none of the fixed-income funds with a governmental or independent label with a green focus holds the LCD eco-label. Furthermore, our analysis looks for other sources of information on fund sustainability, such as the 'unofficial' label introduced by the SFDR, which categorizes funds as light-green (article 8) or dark-green (article 9). Although at the aggregate level, average Morningstar globes and MSCI ratings of article 9 funds are higher than those of article 8 funds, we find some misalignment within governmental/independent labels. As the name and objectives of the fund can signal an association with a particular investment style (Espenlaub et al., 2017), we further analyze whether labeled funds hold ESG-related appellations in their name. We find a discrepancy in cues for investors in this area, as labeled funds might not include ESG jargon on the name. Furthermore, ESG features might not even be mentioned in funds' investment objectives. Although sustainable labels were created to give information to investors, our research shows that the multiplicity of non-aligned signals might confuse investors or even cause skepticism.

The remainder of this paper is organized as follows: Section 2 overviews sustainable labels and certifications for investment funds, Section 3 describes the data, Section 4 presents the empirical analysis, and section 5 concludes.

2. SUSTAINABLE LABELS FOR INVESTMENT FUNDS

2.1. THE ROLE OF THIRD-PARTY CERTIFICATIONS

In this section we start by explaining why third-party certifications emerge in sustainable investments. Third-party certifications refer to certifications, accreditations, assurances, or endorsements from third parties that a business conforms to certain quality standards or follows specific socially acceptable practices or guidelines (Desai, 2016; Graffin and Ward, 2010; Polidoro, 2013; Rao, 1994). By representing relevant product attributes, certifications can function as signals, as they reduce the level of information asymmetry and search costs, facilitate decision making, and improve the functioning of a market (Erdem and Swait, 1998).

In the credence goods markets, where quality is difficult to ascertain even after purchase, third-party certifications are likely to emerge. In fact, certifications have flourished in sectors such as organic food (van Amstel et al., 2008), education (Alajoutsijärvi, et al., 2018), and health (Shaw et al., 2010). Sustainable qualities are difficult to verify; thus, trust is a crucial element in the decision-making process (Gorton et al., 2021). Lack of credibility might constrain investing by making investors skeptical of a product's sustainability. Thus, the marketing of sustainable products might benefit from certification by a third party. Yet, there is evidence that consumers' trust depends on who sponsors certification, such that they perceive government certifications as more trustworthy than certifications by private businesses (Darnall et al., 2012). The case of the financial sector is illustrative, as it has attracted strong public mistrust, particularly since the global financial crisis. In addition, society largely disapproves of some of its practices, such as speculative behaviors, taking excessive risks to increase profits, and disregarding the environmental and social impact of its investments. Thus, certification from governmental and non-profit bodies provides more credible signals that reduce the asymmetrical information gap and investors' search costs.

Another argument in favor of government labelling is that third-party certifications can be an instrument of public policy that enable the regulation of certain markets and promotion of certain public policies. The EU Action Plan on Sustainable Finance aims to reorient capital flows toward sustainable investment; to manage financial risks stemming from climate change, environmental degradation, and social issues; and to foster transparency and long-termism in financial and economic activity.[11] Labels do not directly promote sustainability or the reduction of greenhouse gas emissions, but they do provide information about whether investment funds meet certain standards, thereby fostering transparency and empowering investors to make informed investment choices. Thus, by separating the wheat from chaff, sustainable labels are an instrument for avoiding greenwashing, a main concern of regulators.

In recent years, sustainable funds have moved from a niche to the mainstream of financial markets, attracting more retail and less sophisticated investors. By certifying compliance with sustainability criteria, labels can reduce information asymmetry, increase trust, and guarantee that investors are not misled in their choices by greenwashing practices, thereby facilitating the allocation of capital to investments that contribute to the EU's ambitious sustainable strategy goals.

2.2. SUSTAINABLE LABELS IN EUROPE

2.2.1. Labels sponsored by governmental bodies and non-profit organizations

Since the first sustainability label appeared in France, one of the most developed SRI markets in Europe, in 1997 (Crifo et al., 2020), labels have become popular instruments for certifying and promoting sustainable investments. Table 1 presents nine major voluntary labels in Europe classified by the entity that sponsors them and their scope. Regarding sponsorship, labels can be sponsored by independent stakeholders and non-profit associations—namely, professional responsible investment associations—and by governments as part of their public policy goals for promoting sustainable investments, as is the case for France, Austria, and the Nordic countries. Labels can be segmented by whether they have a broad ESG scope (ESG labels) or specifically target environmental issues (Green labels). Six of these labels are categorized as ESG, and three have a specific green focus.

[Insert Table 1 here]

Most ESG labels require a certain level of ESG or other sustainability screening criteria, expressed as a percentage of the portfolio that must be subject to ESG analysis or as compulsory screening of a certain percentage of the direct holdings or items in the portfolio. The different ESG labels consider different ESG coverage, ranging from 90% to 100%.

Green labels focus more on the environmental dimension of ESG; as such, they have stringent criteria for activities that could harm the environment, in addition to basic social and governance criteria. They usually demand a minimum proportion of 'green' activities in the portfolio, a strict exclusion of fossil fuels, and a definition of what constitutes a 'green' asset (Megaeva et al. 2021).

2.2.2. Sustainability ratings from the private sector

Private companies have become important actors in the labelling industry. The interests and needs of their clients, primarily professional investors, might differ from those of retail investors, who are generally less sophisticated and more likely to pay attention to official labels. Moreover, in the financial community, concerns about risks related to ESG and their financial materiality are the main motivations for ESG investing, while socially or environmentally conscious investors might weigh the financial impact of ESG risks less and be more interested in assessing the contributions of their investments to social and environmental goals. By focusing on the specific needs of their clients, like financial materiality, and less on the environmental and social impact of investments, private labels might diverge from governmental labels.

U.S. financial services company Morningstar gained visibility with its star ratings, which rank investment funds according to their risk-adjusted performance. Funds receive from 1 to 5 stars, according to their ranking among funds with a similar strategy.[12] In August 2016, Morningstar introduced its sustainability ratings, which use a five-globe system to communicate funds' ESG level based on companies' ESG performance. At the end of 2019, this rating scheme evolved from a measure of companies' ESG performance to a measure of company-level ESG material risks. With this enhancement, the rating aims to assess how well companies in a portfolio are managing the material ESG issues they face within their industry and across industries. The methodology was further updated in late 2021 to also incorporate country ESG risk ratings.[13] A fund with high ESG risks relative to its Morningstar Global Category will receive one globe, meaning that it is exposed to significant ESG risks, while a fund with a five-globe rating faces negligible financial risks from ESG issues (see Figure 2).

In addition to its generic sustainability ratings, in 2018, Morningstar introduced its eco-label, Low Carbon Designation (LCD), which signals funds that have low overall carbon risk and lower-than-average exposure to companies with fossil-fuel involvement.[14] This label is represented by a green leaf icon (see Figure 2 below), an eye-catching signal that investors can associate with low-carbon investments aligned with the transition to a low carbon economy.

Another well-known ESG rating provider is MSCI. In 2020, MSCI launched its ESG fund ratings, which measure the ESG characteristics of a fund's underlying holdings.[15] According to MSCI, the ESG fund ratings are designed to assess the resilience of a fund's aggregate holdings to long-term ESG risks and opportunities. Highly rated funds consist of issuers with leading or improving management of key ESG risks. The MSCI ESG ratings scale is similar to that used for credit ratings, encompassing seven categories ranging from CCC (worst) to AAA (best). Thus, a fund is rated from CCC to AAA based on the weighted average score of its holdings and its ability to manage those risks relative to its peers. This rating scale is represented visually with the colors of a traffic light (see Figure 2). For investors, interpretation of the colors is straightforward, as there is a direct correspondence between the colors and funds' ESG risk assessment.

[Insert Figure 2 here]

2.2.3. The Sustainable Finance Disclosure Regulation (SFDR)

In 2018, the EU established an ambitious sustainable finance policy agenda aimed at reorienting capital flows towards a more sustainable economy, in line with the objectives of the Paris Agreement on climate change and the United Nations 2030 agenda for sustainable development goals (SDGs).[16] A key pillar of the European Action Plan for sustainable growth is the SFDR,[17] in force since March 2021, which sets new requirements for sustainability-related disclosures—namely, how fund managers should disclose ESG risks. The SFDR was designed to enhance transparency regarding the sustainability features of financial products and avoid greenwashing in the financial services sector of the European market. Ultimately, investors should benefit from greater transparency regarding the sustainability characteristics of investment funds. According to the SFDR, funds can be classified as article 9 or article 8 funds. Article 9 (dark-green funds) specifically have sustainable goals as their objective (for example, investing in companies whose goal it is to reduce carbon emissions); whereas article 8 (light-green funds) promote environmental or social characteristics but do not have them as the overarching objective. Classification of funds under articles 8 or 9 has been understood in the market as an unofficial label (EFAMA, 2021). After the regulation came into effect, investments in article 8 and 9 funds increased (Becker et al., 2022). Managers self-assign the sustainability level of the funds and their corresponding category (article 8 or 9).

3. DATA

3.1. FUNDS WITH LABELS

Our dataset comprises equity and fixed-income open-end funds classified under one of the following ESG labels sponsored by governmental entities or NPOs: Ecolabel (Austria); Towards Sustainability (Belgium); ISR for *Investissement Socialment Responsible* (France); FNG for *Forum Nachhaltige Geldanlagen* (Germany, Austria, Liechtenstein, and Switzerland), Forum for Sustainable Investments in English; LuxFLAG ESG (Luxembourg); Nordic Swan (Nordic countries); and Green labels: LuxFLAG Climate Finance (Luxembourg); LuxFLAG Environment (Luxembourg); and Greenfin (France).

From September to December 2021, we collected information on labels, drawing on two sources of information: Morningstar Direct and the websites of labeling agencies. Morningstar collects its information from the European MiFID template, a standardized document that provides features of funds. We crossed this information with lists of labeled funds available on the websites of labeling agencies. All fund features, such as domicile and number of share classes, come from Morningstar Direct.

We first provide a general overview of the data. A common strategy within the fund industry is to cater to different clienteles. Share classes tailor fund features, differentiating in terms of currency, fee structure, minimum amount of investment, and distribution of dividends. Considering all classes of shares, our sample has 3,409 equity and 1,066 fixed-income funds. Figure 6 shows the distribution of share classes. Most of the funds have one share class, while others have between two and five share classes. The funds with more share classes are domiciled in Luxembourg, a large hub of distribution in the European Union. As a label is awarded to the fund, and the different share classes present the same label, we conduct our analysis of the consistency of labels at the fund level rather than the class level, to keep funds with many share classes from biasing the results. Considering only the primary share class, the final dataset is composed of 746 equity funds and 244 fixed-income funds (a total of 990 funds).

[Insert Figure 3 here]

Table 2 reports the number of labels per fund. Seventy-six percent of the equity and fixed-income funds have just one label, about 22% of funds have two labels, and a few equity and fixed-income funds have three or more labels.

[Insert Table 2 here]

As shown in Table 3, the majority of labeled funds are domiciled in Luxembourg and France. The table also shows that the Belgium Towards Sustainability and French ISR labels are the most common. Funds tend to have the label of their domicile country, although some labels, such as the Belgium Towards Sustainability and LuxFLAG labels, do not require the fund to be domiciled on the country of the label. The broader ESG-labeled funds predominate, while green-labeled funds are still a minority. This is partly due to the more recent introduction of green funds but also due to the stringency of the 'greenness' requirements of their holdings.[18]

[Insert Table 3 here]

3.2. SUSTAINABILITY RATINGS FROM THE PRIVATE SECTOR

To assess the coherence of labels coming from governments and NPOs with those from private companies we consider the sustainability ratings that Morningstar and MSCI, two private financial services companies, offer their clients. We use the most recent Morningstar sustainability ratings, which consider both company-level and country-level ratings introduced in November 2021 (relative to September 2021). MSCI fund ratings are also relative to September 2021. Of the 746 (244) labeled equity (fixed-income) funds, 628 (196) present Morningstar sustainability ratings, and 517 (167) present MSCI ratings.

Figure 4 shows the distribution of Morningstar globes and MSCI ratings by type of funds. Considering funds offering Morningstar globes, around 10% of equity funds and 7% of fixed-income funds present one or two globes. In the fixed-income arena, funds with four globes predominate. Regarding MSCI-rated funds, the majority (77% and 74% of equity and fixed-income funds, respectively) are rated as A and AA, and only a small proportion (less than 8%) are rated lower than A.

[Insert Figure 4 here]

4. EMPIRICAL ANALYSIS

4.1. GOVERNMENTAL/NPOS VS. PRIVATE-SECTOR LABELS

In this section, we assess the coherence of signals sent by the various official labels in comparison to those provided by private companies, namely Morningstar and MSCI. The analysis is limited to government- and NPO-labeled funds for which sustainability ratings are available.[19] The final dataset consists of 628 equity funds and

196 fixed-income funds with Morningstar ratings, and 517 equity funds and 167 fixed-income funds with MSCI ratings. For comparison purposes, we convert the MSCI alphanumerical classification to a cardinal scale, starting with 1 as CCC and culminating with 7 as AAA.

4.1.1. Morningstar and MSCI ratings

Table 4 reports the main descriptive statistics of the labeled funds regarding their sustainability risks, based on Morningstar globes (Panel A) and MSCI ratings (Panel B). The mean values range from 3 to 5 globes for equity funds, and from 3.46 to 4.25 globes for fixed-income funds. Regarding ESG labels and equity funds, the Austrian and the German FNG labels present the highest average globes (above 4). For the fixed-income funds, those with the German FNG and the Nordic Swan labels present the highest average globes (4 globes and above). Within funds holding the Belgian Towards Sustainability, the French ISR, LuxFLAG ESG, and the Austrian labels, which represent the majority of funds, there are several funds with just one globe. As the sustainability globes are based on ESG risk scores, we conclude that several labeled funds present high ESG risks, implying that the signals from governmental/independent labels and Morningstar sustainability globes might not be aligned. This disagreement is also observable in Appendix (Table A1), which reports the descriptive statistics of the two components of the Morningstar Sustainability Rating: Portfolio Corporate Sustainability Ratings (PCSR) and Portfolio Sovereign Sustainability Ratings (PSSR). These ratings are based on the historical risk scores presented in Table A2 in the Appendix. As can be observed, the average risk scores are in the range of low (values between 10-19.99) or medium (values between 20-29.99) ESG risk. However, some funds present high ESG risks, with risk scores above 30.

The average MSCI ratings range from 5 to 6.02 for equity funds and from 4 to 6.5 for fixed-income funds. In the equity segment, the ESG labels with the highest MSCI ratings (above 6) coincide with those with the highest Morningstar globes: the Austrian Ecolabel and the FNG label. With respect to fixed-income funds, there is one label with an average MSCI rating above 6 (Nordic Swan label). The minimum MSCI ratings are higher than those of Morningstar globes, factoring in the different rating scales. For instance, the Nordic Swan label and the Austrian Ecolabel are awarded to funds with the lowest Morningstar rating (one globe), but the minimum MSCI rating of funds with these labels is five (corresponding to an A rating). Several labeled funds have a low minimum rating of 3 (corresponding to a BB rating). The analysis for green-labeled funds is more limited, as the only Green label awarded to more than one fund is the Greenfin label. Equity funds with this label show more divergence with Morningstar ratings than with MSCI ratings. These findings reinforce the divergence of signals from governmental/independent labels and private sustainability ratings, which do not seem to be aligned.

[Insert Table 4 here]

4.1.2. Do multiple labeled funds have better scores?

To explore whether funds with multiple labels show lower sustainability risk, we group funds by the number of labels held (1 to 4) and calculate the average Morningstar globes and MSCI ratings of each group (see Figure 5). With respect to equity funds, the average number of Morningstar globes is similar across groups, and there is no clear relationship between the number of labels held and the average number of Morningstar globes. Regarding fixed-income funds, the results show that the higher the number of labels held, the higher the average number of Morningstar globes, with the group of funds holding four labels exhibiting the best score, in terms of managing sustainability risks. A somewhat opposite conclusion can be drawn from MSCI ratings, as equity funds with more labels present slightly higher average ratings, while fixed-income funds show slightly lower average ratings.

[Insert Figure 5 here]

4.1.3. ESG pillars: Environmental, Social and Governance scores

We further analyze the three ESG components of the sustainability ratings for labeled funds. Figure 6 shows the average Morningstar Environmental, Social and Governance scores by label. More detailed descriptive statistics are presented in the Appendix (Table A3).

[Insert Figure 6 here]

The environmental dimension shows the lowest risk scores, consistent with the high standards labels typically have regarding environmental criteria. We do not find distinguishable differences on environmental risk scores between the few funds holding a Green label and those with an ESG label. With the exception of the LuxFLAG ESG label, the environmental risk scores of fixed-income funds tend to be lower than those of equity funds. The average scores of the different labels do not differ much in the case of equity funds. However, in the fixed-income segment, there is more discrepancy among labels: funds with the LuxFLAG ESG label exhibit higher ESG risk scores, whereas the fund with the LuxFlag Environment label presents lower ESG risk scores. This might reflect the label agency's strategy of opting to differentiate its sustainable focus using three labels.

The overall picture for the ESG pillars of MSCI ratings is somewhat similar (see Table A4 in the Appendix). Based on a 0 to 10 scale, the Environmental pillar rating presents higher average ratings (higher meaning a better risk score). As in the case of Morningstar, with MSCI ratings, there are not many differences across labels for either equity or fixed-income funds.

4.1.4. Morningstar Low Carbon Designation

We also analyze whether labeled funds hold the Morningstar LCD, which signals funds with low carbon scores. Table 5 reports statistics for the different types of funds. While many labeled equity funds present the LCD, only a very small percentage of fixed-income-labeled funds are awarded this label. Additionally, we would expect the few funds with Green labels to hold the LCD. However, while this expectation is confirmed in the case of equity funds, it is not observed for fixed-income funds, as none of the 14 funds with Green labels is awarded with the LCD.

[Insert Table 5 here]

Furthermore, both for equity and fixed-income funds, a t-test for the difference of means shows that the difference in average globes between funds with and without LCD is statistically significant, at the 1% level; that is, funds with the LCD label have higher average globes than those without this label.

4.2. SIGNALS FROM MORNINGSTAR VS. MSCI RATINGS

Several recent studies document disagreement on firms' ESG ratings (e.g., Semenova and Hassel, 2015; Chatterji, 2016; Berg et al., 2020; Dimson et al., 2020, Gangi et al., 2022). One of the main implications of this evidence is that it creates skepticism on the validity of the ESG methodologies and assessments, as noted by Berg et al. (2020), thus confusing investors. In this section, we analyze the (dis)agreement of fund ESG ratings by comparing Morningstar and MSCI ratings.

Figure 7 illustrates MSCI and Morningstar ratings for the same fund. The alignment of the ratings implies that the points should be around the diagonal of the figure. As the thick and darker bubbles symbolize a higher number of observations, we observe many points outside the diagonal, reflecting the non-alignment of MSCI and Morningstar ratings. For instance, for equity funds with 2 and 4 globes in Morningstar, we find funds rated as 3, 4, 5, 6, and 7 by MSCI.

[Insert Figure 7 here]

To further explore the extent to which these ratings are aligned by label, we convert both ratings to the same scale.[20] Next, we compute the difference of Morningstar and MSCI ratings per fund. Table 6 shows the summary statistics of the deviation of ratings per label.

[Insert Table 6 here]

In general, MSCI and Morningstar ESG fund ratings show agreement (or small disagreement of around 1 point) for 80% of the sample, but there remains a set of funds for which there is a high level of disagreement (2 to 4 points). For equity funds, those with the LuxFLAG ESG label exhibit a larger level of disagreement between Morningstar and MSCI ratings; a lower disagreement is observed for those with Austrian and FNG labels. For fixed-income funds, those with the Nordic label show the highest level of disagreement, whereas those with the LuxFLAG ESG label show the lowest. For Green labels, equity funds with the Greenfin label also show some level of disagreement, but is it important to note that the analysis is restricted to five funds.

The analysis reveals that investors receive conflicting signals regarding ESG ratings of funds. For example, funds can simultaneously receive the best and worst ESG rating from different data providers. Notably, this disagreement refers to the sample of labeled funds, which is expected to be a more homogenous group of funds within the overall universe of sustainable funds. Therefore, even inside the dataset of ESG and green-labeled funds, we find a substantial degree of divergence.

4.3. SELF-DECLARED SUSTAINABILITY SIGNALS OF LABELED FUNDS

Having assessed the level of alignment between the labels of governmental bodies and private companies, we complement the analysis by inspecting sustainability information provided by the funds themselves such as the SFDR classification, name and investment objective, as they are also signals of fund sustainability to investors.

4.3.1. Labeled funds and the Sustainable Finance Disclosure Regulation (SFDR) classification

In this subsection, we aim to assess the sustainability performance of article 8 and 9 funds based on Morningstar and MSCI ratings and the government/NPO labels they hold. Table 7 shows that the great majority of funds with labels from Nordic Swan and LuxFLAG ESG are classified under articles 8 or 9. The other labels have more funds not classified as articles 8 or 9. Further, although we might expect funds with Green labels to fall under article 9 (dark-green), we do not observe this. These results are consistent with Morningstar's (2022b) observation that mutual fund companies take different approaches to classifying funds into articles 8 and 9, based on their varying interpretation of SFDR. As suggested by the Dutch Authority of Financial Markets (AFM, 2021), the description of fund objectives could be clearer, and the observance of the transparency obligations in article 8 or 9 could be more specific. In many cases, the information on sustainability risks in prospectuses appeared to be too general and lacking in depth.

[Insert Table 7 here]

Table 8 reports the average Morningstar globes and MSCI ratings of funds classified into articles 8 and 9 of the SFDR. For equity funds, there are two labels (Austrian Ecolabel and German FNG) with average globes and MSCI ratings that are higher for article 8 funds than for article 9 funds. All other labeled equity funds show the reverse, indicating that dark-green funds have higher sustainability ratings than light-green ones. In the case of fixed-income funds, all labels show higher average globes for article 9 funds than article 8 funds, while in the case of the MSCI ratings, the French ISR-labeled funds under article 9 have lower ratings than their article 8 counterparts. On aggregate, the results of the t-test for the difference of means between article 8 and article 9 funds shows that, for equity funds, the average rating is statistically different, with article 9 funds exhibiting, on average, more globes and higher MSCI ratings. In the case of fixed-income funds, the difference in the average rating between article 8 and 9 is more significant when we consider the Morningstar ratings than when we consider the MSCI ratings.

Overall, there seems to be consistency in the signals that investors can take from the SFDR and Morningstar globes or MSCI ratings at the aggregate level, in the sense that dark-green funds tend to have higher ratings than light-green funds. Yet, at the individual level, this relationship is not always present.

[Insert Table 8 here]

4.3.2. Is a fund's name a good cue?

A fund's name is an important signal that fund managers can use to communicate the fund's strategies and attract investor attention. Some research shows that the use of specific terms in a fund's name can play a key role in investors' decision-making processes and that changing names to more appealing designations can be an effective marketing tool. For instance, Green and Jame (2013) find that fluently named funds experience higher inflows than less fluently named funds. And, analyzing the effect of fund name changes that reflect hot investment styles, Cooper et al. (2005) and Arbaa and Varon (2019) find abnormal flows following name changes. Further, these inflows are observed even when name changes are merely 'cosmetic' (Cooper et al, 2005) or are 'misleading' (Espenlaub et al., 2017), and do not translate into changes in holdings to match the new style implied by the name. In the sustainability arena, including ESG-related terms in a fund's name signals its commitment to sustainability issues and also impacts investors' capital allocation. Analyzing the impact of name changes designed to incorporate appealing ESG designations, El Ghoul and Karoui (2021) observe that funds with these name changes experience higher net flows. This evidence shows the influential nature of names in signaling sustainability features of the fund.

In this section, we examine whether the names of labeled funds are informative of their sustainability features. For each fund, we examine whether the name has a sustainable terminology. For equity-labeled funds, we find more than 85 different ESG-related appellations in their names, with variations like 'Climate Action', 'Climate Ambition', 'Climate Change', 'Climate Impact', 'Climate Awareness', 'Climate and Environment'. Figure 8 presents word clouds containing the sustainability jargon in the names of equity and fixed-income funds. The figure shows the diversity of the sustainability terminology used in funds' names, with many appealing and hot designations. 'Sustainable' and 'ISR' (SRI) are the most common terms, appearing in 33% of the dataset of labeled funds; the term ISR is traditionally used in France. Surprisingly, 40% of equity-labeled funds do not have any allusion to sustainability jargon in their names. Additionally, we observe that having more labels does not make a fund's name more informative with respect to its ESG features. These findings are somewhat surprising, considering our expectation that fund managers would use these signals to target the promising sustainability segment. Our analysis also shows that 23% of fixed-income funds do not use any ESG jargon in the names. 'Sustainable', 'Green', and 'ISR' (for French funds) are the most commonly used names in the fixed-income segment. The term 'Green' stands out in the fixed-income arena, particularly because of green bonds.

[Insert Figure 8 here]

Table 9 reports the frequency of ESG-related appellations in funds' names by label. The analysis shows a diversity of terminology in the names of labeled funds, which is not surprising, considering the heterogeneity of SRI mutual funds (Sandberg et al., 2009). Yet, investors might perceive this heterogeneity to be confusing. Interestingly, while greenwashing has captured a lot of attention in the literature, our analysis uncovers a substantial percentage of so-called 'Green Blushers'—funds that have sustainable features despite not bearing any ESG appellation in their names. Altogether, our findings are somewhat consistent with those of Candelon et al. (2021), in the sense that the signals provided by funds' names do not fully reveal their ESG characteristics.[21] These results have implications for research that uses sustainable jargon to identify ESG funds.[22] In this case, the sample might be incomplete, as funds may not have ESG terminology in their names despite being validated SRI funds.

[Insert Table 9 here]

4.3.3. Is the description on the fund investment objectives informative?

Since mutual funds are required to provide fund investment objectives in their prospectuses, fund objectives form the basis of an implicit contract between fund managers and investors (Nofsinger and Varma, 2021). As such, integrating ESG issues explicitly as an investment objective signals a strong commitment to building more sustainable portfolios (Nofsinger and Varma, 2021). Thus, we examine descriptions of funds' investment objectives to investigate whether they offer a helpful cue to investors seeking sustainable funds. For funds without information from Morningstar on investment objectives, we collected information from the Internet. We define a bag of words of general ESG terminology to identify the ESG information conveyed in the funds' objectives: exclusion, ESG strategies (e.g., integration, best-in-class), engagement (e.g., voting rights, voting at assemblies), carbon and climate, social (e.g., inclusion, human rights), environmental (e.g., biodiversity, ecological).

We find that a considerable portion of labeled funds (17% equity and 10% fixed-income funds) do not use ESG/sustainable expressions in their description of fund objectives. A percentage of these also do not use any ESG jargon in their names, which makes it difficult for investors to grasp whether they are sustainable funds.

Furthermore, funds vary widely in the number of words they use to describe their investment objectives: some only use one or two words, while others use many more (for instance, for some equity funds, more than 30 words were used). We focus on the extremes—i.e., those that are briefer and those that are more exhaustive in the description of their objectives. For those labeled funds that use just one or two words to describe their investment objectives, the sustainable expressions mostly used are 'social', 'governance', 'sustainable', 'best', 'impact', 'SDG', and 'sustainable development' for equity funds, whereas the most common ones for fixed-income funds are 'best', 'sustainability', 'green', 'socially', 'responsible', 'governance', 'environmental', 'green bonds', 'impact', 'climate' and 'screening'.

5. DISCUSSION AND CONCLUSION

As socially responsible investing has moved into the mainstream of financial markets, the sustainable labelling and certification of mutual funds has gained popularity in the 2000s in Europe. In addition to addressing information asymmetries, labels act as mechanisms for reducing investors' search costs and increasing transparency in the market. Yet the proliferation of different labelling and certification schemes is accompanied by concerns about their effectiveness at providing credible information and establishing confidence in the investment products' sustainable features. Does the proliferation of labelling schemes facilitate investor decision making or does it induce confusion?

Our research is the first to examine the consistency of sustainability certification and labels sponsored by governments/NPOs and the private sector in the mutual fund industry. The analysis of our dataset, comprised of labeled equity and fixed-income funds in Europe, shows divergence between labels sponsored by governmental/NPO entities and those of the private sector, with the private sector perceiving governmental and non-profit labeled funds as bearing high ESG risks. On average, funds with multiple governmental and independent labels have lower ESG risks than funds with one label, but even funds with one label can be categorized as having high ESG risks. Furthermore, while many ESG-labeled equity funds hold the Morningstar LCD label, just a small percentage of fixed-income funds do. Moreover, none of the fixed-income funds with a governmental or independent Green label hold the LCD. Having documented divergence, in terms of external signals, we also observe some inconsistencies regarding internal sustainability signals. Regarding the SFDR labeled funds, at the aggregate level, the private-sector average ratings for article 9 funds are higher than those for article 8. However, we observe some misalignment within governmental/NPO labels. Furthermore, we find that funds with governmental and NPO labels might not have ESG jargon in their names. Likewise, labeled funds' investment objectives may not convey any reference to ESG features.

In sum, our results uncover divergent signals from several sustainability labels and certifications, which raises concerns about whether labels fulfill their purpose of acting as credible informational cues and encouraging investment in sustainable financial products. Our findings have important implications for investors, fund managers, and regulators, particularly concerning information asymmetries. Sustainability labels were created to inform investors about how funds manage ESG risks, yet our research suggests that the multiplicity of nonaligned signals might lead to skepticism, mistrust, and confusion regarding sustainability labelling. For fund managers, our results reveal the level of competition among sustainability labels and the degree to which they can be used effectively to communicate funds' ESG attributes. The results of this research challenge fund managers to implement more efficient communication strategies and improve transparency through increased ESG disclosure and communication regarding funds' ESG strategy.

As new ecolabels come onto the scene, such as the EU Ecolabel for investment funds (European Commission, 2020) and a proposed UK label (FCA, 2021), potentially adding with existing ones, our research findings will be increasingly relevant to regulators and policymakers considering the effectiveness of labelling schemes in promoting the allocation of capital resources towards a sustainable economy. More than the proliferation of labels, it is disagreement among signals that can hamper their effectiveness, our research suggests. We thus advise regulators to attend to the alignment of signals. Our work also opens avenues for discussing ways to address the inherent heterogeneity of sustainable funds, such as using a subclassification labelling scheme, in line with what has been the strategy in France or Luxembourg (broad ESG, climate, environment, etc.). In this vein, differentiating multiple labelling schemes with distinct focus requires sustainability literacy, which adds to the multiple layers of information that investors face when choosing such funds. Overall, our results reinforce the need for education that would enable retail investors to distinguish the different nuances of sustainability certification. Nevertheless, the role of labels as a public policy instrument for reducing greenwashing risk and prompting a race to the top, in terms of sustainability features, should not be dismissed. A market without reliable signals of investments' sustainable features will not prevail, because investors will not know how to distinguish socially and environmentally responsible from conventional funds (Akerlof, 1970), jeopardizing the goal of redirecting capital to a greener economy.

Now that we have documented the divergence of signals in the market for sustainable labelling of financial products, further research is needed to assess how investors react to extant labels and certifications. Which sustainability signals have the most impact on investors’ responses? This issue can be explored by investigating the impact of sustainable labels and certifications sponsored by different types of entities (governments/NPOs versus private companies) on investor choices, as measured by the magnitude and direction of flows to mutual funds awarded with these signals. Whether these flows are channeled toward investments with a positive sustainability impact is also an issue that deserves further research.

[1] We use the term sustainable funds to identify funds that market themselves as socially responsible investment (SRI) funds, such as ESG, thematic, or impact funds.

[2] In a strict perspective, the term eco-label refers to certifications that focus specifically on environmental issues, but it is often used in a broader sense to refer to certifications that address a wider range of sustainable issues. In this paper, we will use the expression in its broader meaning.

[3] As of mid-2021, the Ecolabel Index website (www.ecolabelindex.com) reported more than 455 eco-labelling schemes in 199 countries and across 25 industries.

[4] For an overview of the historical development of labels, see Crifo et al. (2020).

[5] Sustainable funds can combine different screening strategies (e.g., positive, negative, or best-in-class) with different types of screens (e.g., of the environmental or social type) to identify companies that conform to various ESG standards, leading to a substantial heterogeneity in the screening processes used by different funds (Sandberg et al., 2009).

[6] This is consistent with the argument that the way environmental information is displayed to investors influences investment decisions (Bassen et al., 2019).

[7] https://www.unpri.org/

[8] Derwall et al. (2011) designate these two types of investors as profit-driven and values-driven, respectively.

[9] Regulators have taken major steps to prevent greenwashing and reduce investor confusion. In particular, the European Union taxonomy offers a classification system for providing market clarity on what is 'sustainable'. Published in July 2020, the Taxonomy Regulation establishes a list of environmentally sustainable activities by defining technical screening criteria for each environmental objective. It works as a tool to clarify how the term sustainable investment may be used and how products that claim to be sustainable can be marketed.

[10] It is also worth noting that several studies use the expression "label" broadly to refer to a self-designation that funds assign themselves. In this paper, we stick to the strict meaning of a label as a certification that is awarded by an independent external entity.

[11]https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-teg-frequently-asked-questions_en.pdf

[12] The star ratings are simple cues that investors can easily interpret and relate, similar to hotel ratings. Several studies show that star rankings are well acknowledged by investors (e.g., Del Guercio and Tkac, 2008; Evans and Sun, 2021; Ben-David et al., 2022). Star ratings reflect solely financial factors, such as risk and past performance.

[13] See Morningstar (2021) for details on the computation of the ratings. The source of ESG data is Sustainalytics, a company acquired recently by Morningstar that focus on material risks.

[14] The LCD is awarded to funds with a Portfolio Carbon Risk Score below 10 for the trailing 12 months, and exposure to companies with fossil-fuel involvement below 7% over the same trailing 12 months. Details on the computation of these ratings can be found in Morningstar (2018).

[15] https://www.msci.com/our-solutions/esg-investing/esg-fund-ratings

[16] https://ec.europa.eu/info/publications/sustainable-finance-renewed-strategy_en

[17] Regulation (EU) 2019/2088 of the European Parliament and of the Council of November 27, 2019, on sustainability-related disclosures in the financial services sector.

[18] Some management companies have a strong presence on labeled funds. For equity funds, Natixis presents more labeled funds, followed by Amundi and BNP Paribas. For fixed-income funds, Amundi, Blackrock, and Natixis offer more labeled funds. Table not reported, but available on request.

[19] This is explained not only by the fact that not all securities are rated by Sustainalytics and MSCI but also by the fact that they impose different thresholds to display the rating (percentage of eligible portfolio covered).

[20] We have not done any other kind of adjustment, as we are interested in investigating the information conveyed directly to investors.

[21] These results are in line with those of previous studies documenting that funds shun socially controversial companies, despite not assuming an explicit SRI strategy (e.g., Hong and Kostovesky, 2012; Borgers et al. 2015; Statman and Gluskov, 2016).

[22] An example of studies that base the identification of SRI on funds' names is Nofsinger and Varma (2014) or Brière and Ramelli (2021).

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Figure 1: Sources of information/signals on fund sustainability level

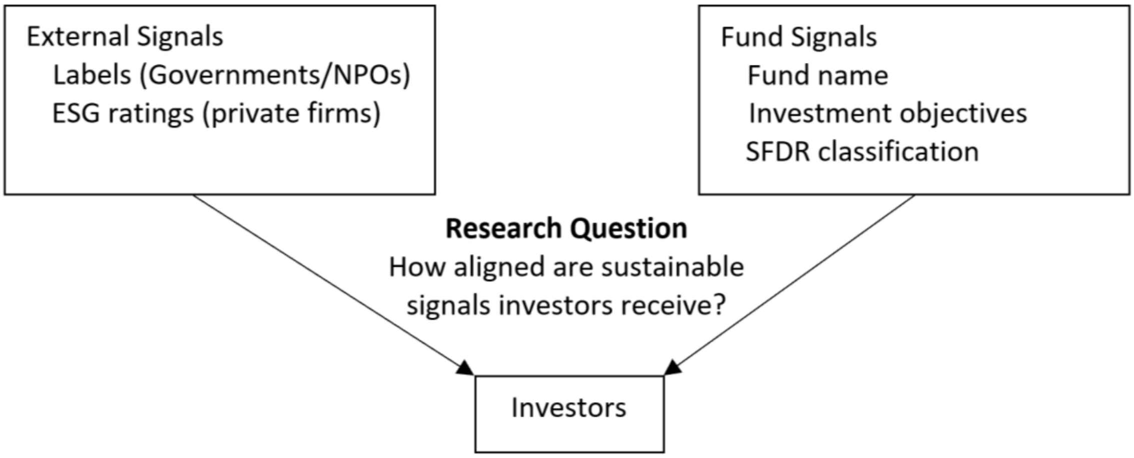
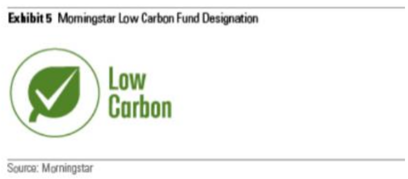


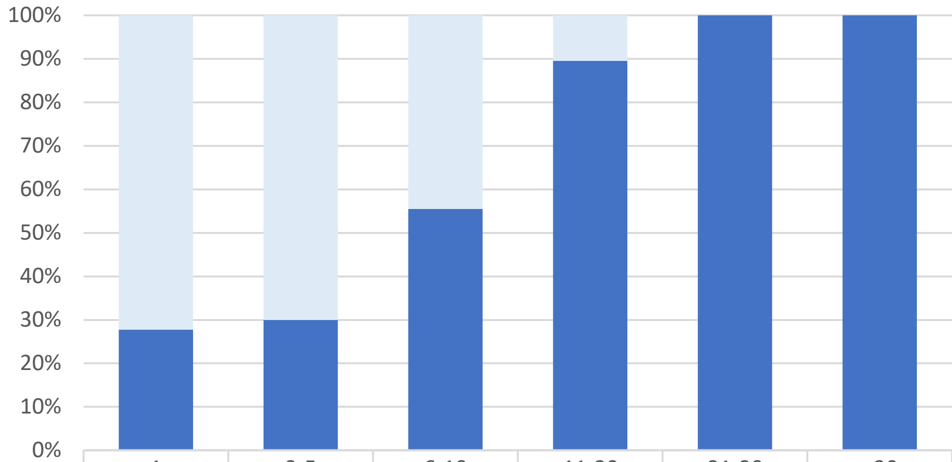
Figure 2: Sustainability ratings symbols



Source: Morningstar

Source: MSCI

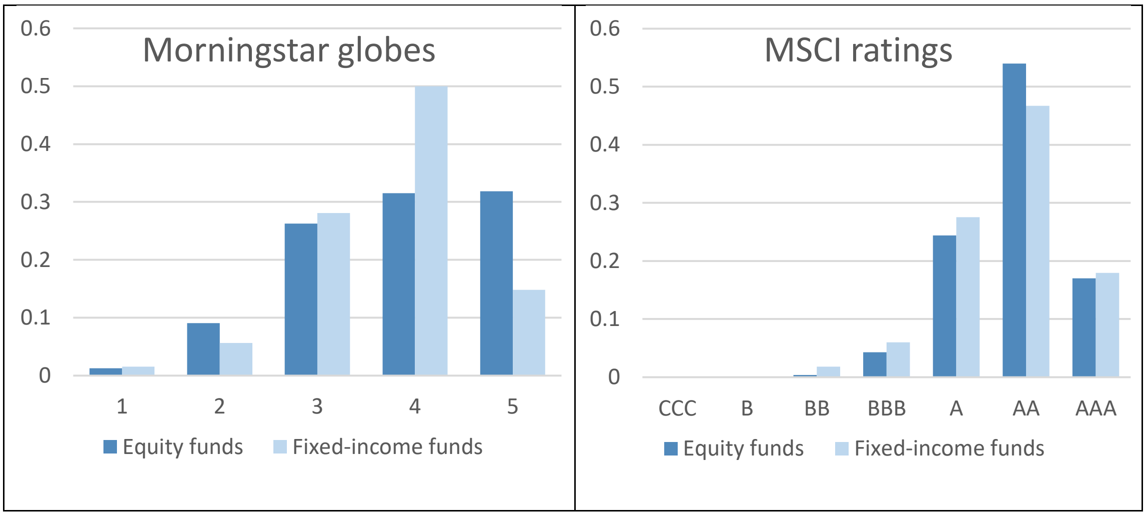
Figure 3: Distribution of share classes per fund



	1	2-5	6-10	11-20	21-30	>30
Other Domiciles	352	180	53	10	0	0
Luxembourg	135	77	66	86	20	11

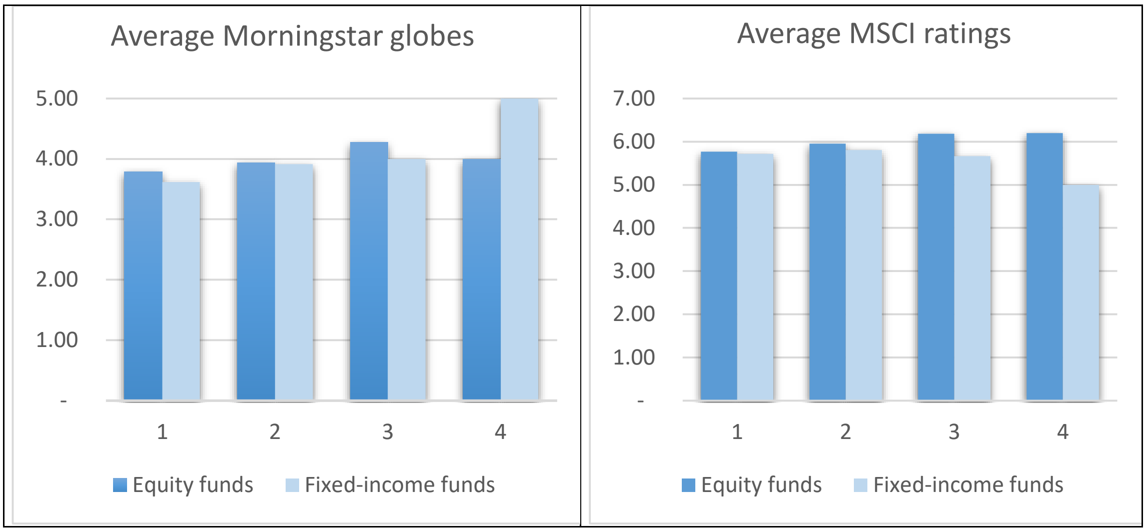
This figure presents the number of shares classes per fund for the full sample of equity and fixed-income funds (a total of 990 funds). It distinguishes funds domiciled in Luxembourg from those domiciled in other countries.

Figure 4: Distribution of ratings by type of funds



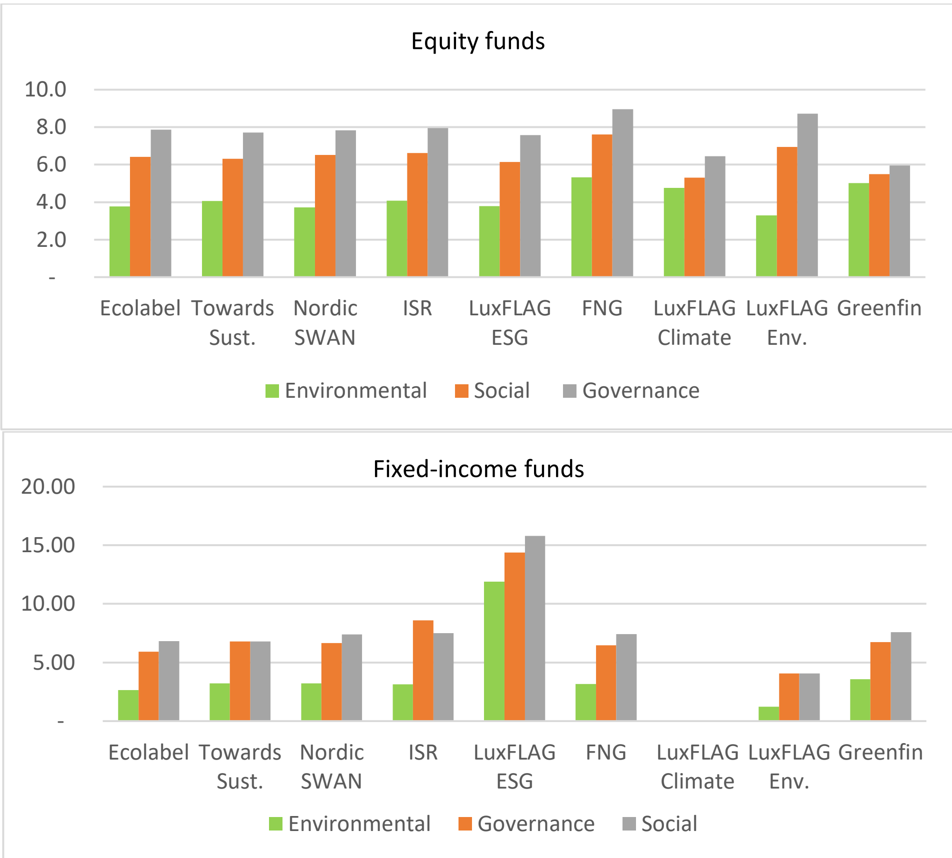
This figure reports the percentage of equity and fixed-income funds presenting Morningstar globes (1-5) and MSCI ratings (CCC-AAA).

Figure 5: Average ratings by number of labels



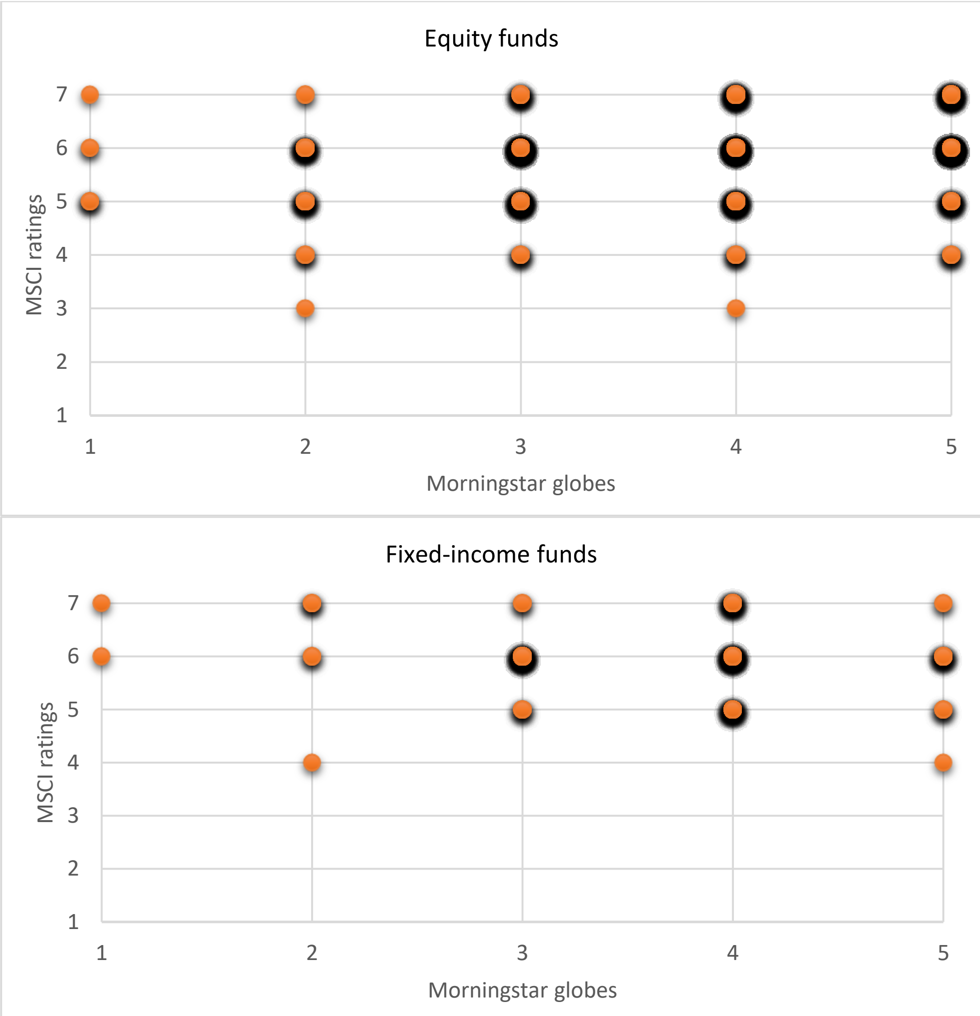
This figure reports the average Morningstar globes (1-5) and average MSCI ratings (1-7) by number of labels per equity and fixed-income funds. MSCI ratings are converted in a scale of 1 to 7 (with 1 corresponding to CCC and 7 to AAA).

Figure 6: Average Environmental, Social and Governance risk scores – Equity funds



This figure reports the average Morningstar risk scores for the three ESG pillars—Environmental, Social, and Governance—by label.

Figure 7. MSCI vs Morningstar ESG fund ratings



This figure shows the Morningstar globes and the MSCI ratings per fund. MSCI ratings are converted in a scale of 1 to 7 (with 1 corresponding to CCC and 7 to AAA).

Figure 8. Word cloud with sustainable jargon in the name of labeled funds

Equity funds

Fixed-income funds

This figure presents the word clouds of sustainable jargon in the names of labeled equity and fixed-income funds.

Table 1: Labels included in this study

Label (country)	Sponsor	Scope	Introduction date	ESG coverage
Umweltzeichen - Ecolabel in English (Austria)	Government	ESG	1990/**2004** for financial products	100%
Towards Sustainability (Belgium)	Not-for-profit organization	ESG	February 2019	100%
Nordic Swan (Nordic countries)	Government	ESG	1989/ **June 2017** for financial products	90%
ISR (France)	Government	ESG	January 2016	90%
LuxFLAG ESG (Luxembourg)	Non-profit organization	ESG	May 2014	100%
FNG (Germany, Austria, Liechtenstein, and Switzerland)	Non-profit organization	ESG	2015	100%
LuxFLAG Climate Finance (Luxembourg)	Non-profit organization	Green	September 2016	100%
LuxFLAG Environment (Luxembourg)	Non-profit organization	Green	June 2011	100%
Greenfin (France)	Government	Green	December 2015	100%

Although there are differences between a non-profit organization and a not-for-profit organization, we use the expression non-profit as an umbrella term for these types of independent organizations.

Table 2: *Number of labels per fund – Equity and fixed-income funds*

Number of labels	Equity funds	Fixed-income funds	All dataset	
1 label	565	184	749	75.7%
2 labels	163	54	217	21.9%
3 labels	12	3	15	1.5%
4 labels	6	2	8	0.8%
5 or more labels	0	1	1	0.1%
Total number of funds	746	244	990	

This table summarizes the information regarding the number of labels per fund by type of funds, equity and fixed-income funds, as well as for the entire dataset.

Table 3: Equity and fixed-income fund labels by domicile

Domicile Country	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
					Panel A: Equity funds (746)				
Australia	0	1	0	0	0	0	0	0	0
Austria	29	0	0	0	0	17	0	0	0
Belgium	0	42	0	0	10	0	0	1	0
Denmark	0	17	17	0	0	0	0	0	0
Finland	2	0	2	0	0	0	0	0	0
France	3	15	0	264	8	5	0	0	4
Germany	5	0	0	1	0	14	0	0	0
Ireland	1	19	0	6	0	3	0	0	0
Luxembourg	11	166	5	161	30	39	1	4	3
Netherlands	0	3	0	0	0	0	0	0	0
Norway	0	3	3	0	0	0	0	0	0
Sweden	0	10	15	0	0	0	0	0	0
Taiwan	0	1	0	0	0	0	0	0	0
United Kingdom	0	4	0	6	0	0	0	0	0
Total	51	281	42	438	48	78	1	5	7
					Panel B: Fixed-income funds (244)				
Austria	39	0	0	0	0	15	0	0	0
Belgium	0	5	0	0	0	0	0	0	0
Denmark	0	3	3	0	0	0	0	0	0
Finland	0	0	1	0	0	0	0	0	0
France	1	4	0	69	0	2	0	0	9
Germany	4	0	0	0	0	9	0	0	0
Ireland	0	3	0	3	0	0	0	0	1
Luxembourg	5	52	1	43	7	7	0	1	7
Norway	1	7	3	1	1	1	1	1	1
Sweden	0	4	1	1	0	0	0	0	0
United Kingdom	0	0	0	1	0	0	0	0	0
Total	50	78	9	118	8	34	1	2	18

This table reports the number of labeled funds per domicile for each of the ESG and Green labels. Panel A refers to equity funds and Panel B to fixed-income funds. Funds can receive multiple labels.

Table 4: Summary statistics of Morningstar globes and MSCI ratings

Sustainability ratings	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
	Panel A: Morningstar globes								
	Equity funds								
Mean	4.23	3.89	3.64	3.83	3.58	4.01	3.00	5.00	4.00
Max	5.00	5.00	5.00	5.00	5.00	5.00			5.00
Min	1.00	1.00	1.00	1.00	2.00	2.00			2.00
SD	0.98	1.00	0.96	0.99	1.22	1.06			1.41
Observations	47	232	36	380	38	71	1	1	5
	Fixed-income funds								
Mean	3.95	3.80	4.00	3.46	3.86	4.25		4.00	4.15
Max	5.00	5.00	5.00	5.00	5.00	5.00			5.00
Min	2.00	2.00	3.00	1.00	2.00	3.00			4.00
SD	0.82	0.71	0.58	0.88	0.90	0.67			0.38
Observations	43	60	7	92	7	32		1	13
	Panel B: MSCI ratings								
	Equity funds								
Mean	6.02	5.86	5.94	5.84	5.78	6.00	5.00	6.00	6.00
Max	7.00	7.00	7.00	7.00	7.00	7.00			6.00
Min	5.00	4.00	5.00	3.00	3.00	5.00			6.00
SD	0.61	0.79	0.69	0.76	0.90	0.67			
Observations	46	207	34	294	36	68	1	1	5
	Fixed-income funds								
Mean	5.53	5.63	6.50	5.89	5.33	5.71		4.00	5.83
Max	7.00	7.00	7.00	5.00	6.00	7.00			7.00
Min	4.00	3.00	6.00	5.00	4.00	3.00			5.00
SD	0.91	0.92	0.55	0.74	0.82	0.86			0.58
Observations	40	57	6	72	6	31		1	12

This table reports the descriptive statistics of the Morningstar Sustainability Ratings (MSR or globes) and MSCI ratings by label (Panels A and B, respectively). Summary statistics are the mean, maximum, minimum, and standard deviation. Observations correspond to the number of funds. Each panel presents statistics for both equity funds and fixed-income funds. MSCI ratings are converted on a scale of 1 to 7 (with 1 corresponding to CCC and 7 to AAA).

Table 5: Low Carbon Designation (LCD) per label

LCD	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
	Panel A: Equity funds								
Mean	0.86	0.70	0.82	0.61	0.68	0.75	0	1	0.80
SD	0.35	0.46	0.39	0.49	0.47	0.44			0.45
Observations	44	220	34	352	38	67	1	1	5
t-test	-7.436 ***								
	Panel B: Fixed-income funds								
Mean	0.24	0.27	0.17	0.21	0.40	0.37		0	0
SD	0.43	0.45	0.41	0.41	0.55	0.49			
Observations	34	52	6	80	5	27		1	13
t-test	-3.025 ***								

This table reports descriptive statistics for the Morningstar LCD label. Panel A refers to equity funds and Panel B to fixed-income funds. LCD is a dummy variable assuming the value of 1 if the fund is awarded with this label and zero otherwise. Summary statistics are the mean and standard deviation. Observations correspond to the number of funds. The t-test is for the difference in average globes of the funds not holding the LCD and those holding it. *** denotes statistical significance at the 1% level.

Table 6: (Dis)Agreement of Morningstar and MSCI fund ESG ratings

Sustainability ratings deviation	ESG Labels						Green Labels		
	EcoLabel	Towards Sust.	Nordic SWAN	French ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
	Panel A: Equity funds								
Mean	0.47	0.61	0.57	0.60	0.73	0.52	0.40	0.51	0.81
Max	1.82	2.83	2.32	2.32	1.62	2.12			1.62
Min	0.00	0.00	0.20	0.00	0.00	0.00			0.51
SD	0.39	0.44	0.46	0.46	0.50	0.44			0.48
Observations	46	207	34	294	36	68	1	1	5
	Panel B: Fixed-income funds								
Mean	0.43	0.48	0.62	0.69	0.42	0.48		0.81	0.32
Max	1.41	1.41	0.91	2.83	1.01	1.31			0.71
Min	0.00	0.00	0.20	0.00	0.20	0.00			0.20
SD	0.32	0.33	0.24	0.59	0.33	0.32			0.17
Observations	40	57	6	72	6	31		1	12

This table reports descriptive statistics for the deviation of Morningstar and MSCI fund ratings per label. Panel A refers to equity funds and Panel B to fixed-income funds. Summary statistics are the mean, maximum, minimum, and standard deviation. Observations correspond to the number of funds.

Table 7: Funds classified into articles 8 and 9 of the SFDR

SFDR	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
				Panel A: Morningstar globes					
				Equity funds					
Article 8	45%	43%	64%	33%	50%	34%		100%	
Article 9	13%	39%	33%	22%	37%	30%	100%		40%
				Fixed-income funds					
Article 8	70%	32%	57%	47%	43%	59%		100%	8%
Article 9	7%	47%	43%	23%	43%	22%			69%
				Panel B: MSCI ratings					
				Equity funds					
Article 8	43%	41%	62%	35%	50%	34%		100%	
Article 9	13%	43%	35%	26%	39%	31%	100%		40%
				Fixed-income funds					
Article 8	68%	30%	50%	46%	50%	61%		100%	
Article 9	8%	49%	50%	28%	50%	23%			75%

This table reports the percentage of equity and fixed-income funds classified under article 8 and article 9 of the SFDR. Panel A refers to funds with Morningstar ratings and Panel B to funds with MSCI ratings.

Table 8: Average Morningstar globes and MSCI ratings of funds classified into articles 8 and 9 of the SFDR

SFDR	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
				Panel A: Average Morningstar globes					
				Equity funds					
Article 8	4.29	3.88	3.48	3.94	3.05	4.00		5.00	
Article 9	4.00	4.10	4.08	4.08	4.14	3.95	3.00		4.00
t-test	-2.344 **								
				Fixed-income funds					
Article 8	3.90	3.68	3.75	3.37	3.67	4.11		4.00	4.00
Article 9	5.00	3.93	4.33	3.76	4.00	4.71			4.22
t-test	-2.689 ***								
				Panel B: Average MSCI ratings					
				Equity funds					
Article 8	6.10	5.80	5.71	5.66	5.50	6.04		6.00	
Article 9	6.00	5.92	6.33	6.07	6.29	5.86	5.00		6.00
t-test	-2.248 **								
				Fixed-income funds					
Article 8	5.52	5.35	6.33	6.12	4.67	5.58		4.00	
Article 9	5.67	5.82	6.67	5.75	6.00	6.00			5.78
t-test	-1.706 *								

This table reports average Morningstar globes (Panel A) and MSCI ratings (Panel B) of funds classified under article 8 and article 9 of the SFDR. The t-test is for the difference in average Morningstar globes and MSCI rating of the funds classified under article 8 and those classified under article 9. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Table 9: Sustainability terminology in the fund name

ESG jargon in fund names	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
				Panel A: Equity funds					
No mention	17%	34%	42%	38%	38%	21%		100%	
Sustainable terminology									
Climate	4%	2%		3%	3%	3%	100%		
Environment	6%	3%		1%	1%	6%			20%
ESG	6%	3%		3%	3%	3%			
Green	2%	1%		1%	1%	1%			20%
ISR				18%	18%				20%
Responsible	11%	2%		2%	2%	10%			
SRI		5%	8%	6%	6%	3%			
Sustainable	36%	25%	28%	11%	11%	32%			
Others	34%	58%	64%	55%	55%	42%		100%	40%
				Panel B: Fixed-income funds					
No mention	33%	28%		18%	43%	9%		100%	
Sustainable terminology									
Sustainable	30%	25%	29%	17%	43%	38%			
Green		13%	14%			6%			85%
ISR				32%					
Others	37%	33%	57%	33%	14%	47%			15%

This table reports the frequency of ESG-related words in funds' names by label. Panel A refers to equity funds and Panel B to fixed-income funds.

Appendixes

Table A1 – Summary statistics of Portfolio Corporate Sustainability Ratings and Portfolio Sovereign Sustainability Ratings

Morningstar globes	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
				Panel A: Equity funds					
PCSR									
Mean	4.24	3.90	3.64	3.85	3.54	4.06	3.00	5.00	4.00
Median	5.00	4.00	4.00	4.00	3.00	4.00			5.00
Max	5.00	5.00	5.00	5.00	5.00	5.00			5.00
Min	1.00	1.00	1.00	1.00	2.00	2.00			2.00
SD	0.99	1.00	0.96	0.97	1.22	1.04			1.41
Observations	46	220	36	362	37	69	1	1	5
PSSR									
Mean	3.00	3.59		2.99	2.60	3.33			3.33
Median	3.00	4.00		3.00	2.00	3.50			3.00
Max	4.00	5.00		5.00	4.00	4.00			5.00
Min	2.00	1.00		1.00	2.00	2.00			2.00
SD	1.00	0.91		1.02	0.89	0.82			1.53
Observations	3	39		128	5	6			3
				Panel B: Fixed-income funds					
PCSR									
Mean	4.14	3.73	4.00	3.45	3.86	4.25		5.00	4.00
Median	4.00	4.00	4.00	4.00	4.00	4.00			4.00
Max	5.00	5.00	5.00	5.00	5.00	5.00			5.00
Min	1.00	2.00	3.00	1.00	3.00	3.00			3.00
SD	1.03	0.78	0.71	0.89	0.90	0.65			0.58
Observations	37	51	5	82	7	28		1	13
PSSR									
Mean	3.33	3.71	3.83	3.16	3.75	3.53		4.00	3.54
Median	3.00	4.00	4.00	3.00	4.00	4.00			3.00
Max	5.00	5.00	5.00	5.00	4.00	5.00			5.00
Min	1.00	2.00	3.00	1.00	3.00	1.00			3.00
SD	0.73	0.83	0.75	0.79	0.50	0.97			0.66
Observations	40	55	6	88	4	30		1	13

This table reports the descriptive statistics for the Morningstar Portfolio Corporate Sustainability Rating (PCSR) and Portfolio Sovereign Sustainability Rating (PSSR) by label. Summary statistics are the mean, median, maximum, minimum, and standard deviation. Observations correspond to the number of funds. Panel A refers to equity funds and Panel B to fixed-income funds.

Table A2 – Morningstar Historical Corporate Sustainability and Historical Sovereign Sustainability risk scores

Morningstar risk scores	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
	ESG Labels						Green Labels		
	Panel A: Equity funds								
HCS score									
Mean	19.93	20.79	20.64	20.42	20.34	20.24	23.30	19.40	19.61
Median	19.31	20.41	20.24	19.95	20.46	19.53			19.91
Max	25.47	**32.87**	25.94	**32.87**	27.97	26.36			21.71
Min	17.23	12.70	18.70	16.54	12.70	16.56			18.14
SD	2.15	2.86	1.51	2.29	3.59	2.34			1.48
Observations	46	226	36	365	37	69	1	1	5
HSS score									
Mean	16.85	15.30		16.92	17.37	15.54			16.30
Median	16.11	14.41		16.62	17.38	15.45			15.89
Max	18.48	26.32		26.32	18.31	18.48			18.62
Min	15.97	14.04		12.45	15.97	13.68			14.39
SD	1.41	2.15		2.32	0.79	1.75			2.14
Observations	3	40		130	6	6			3
	Panel B: Fixed-income funds								
HCS score									
Mean	19.2	20.07	20.89	21.13	25.04	20.04		9.91	19.63
Median	19.8	20.37	21.29	20.90	21.66	19.84			19.81
Max	**30.34**	24.84	22.48	27.78	**43.07**	29.41			21.22
Min	5.67	7.66	18.12	9.98	20.26	13.98			17.04
SD	4.73	2.80	1.51	2.08	8.89	3.04			1.14
Observations	40	53	7	90	6	32		1	13
HSS score									
Mean	16.35	16.14	15.01	16.87	15.72	16.19		24.45	15.86
Median	15.89	16.02	14.22	16.75	16.27	15.44			15.81
Max	28.42	26.02	18.75	**30.43**	18.92	**32.36**			18.17
Min	12.80	9.65	13.01	12.23	12.76	11.79			14.31
SD	2.85	3.00	2.04	2.58	2.26	4.04			1.20
Observations	40	58	6	90	7	30		1	13

This table reports the descriptive statistics for the Morningstar Historical Corporate Sustainability (HCS) and Historical Sovereign Sustainability (HSS) risk scores by label. Summary statistics are the mean, median, maximum, minimum, and standard deviation. Observations correspond to the number of funds. Panel A refers to equity funds and Panel B to fixed-income funds.

Table A3 - Descriptive statistics of Morningstar ESG pillars: Environmental, Social and Governance scores

Environmental, Social and Governance Scores	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
	Panel A: Equity funds								
Environmental score									
Mean	3.77	4.07	3.72	4.09	3.79	5.32	4.76	3.29	5.01
Median	3.72	3.76	3.56	3.85	3.70	3.92			4.94
Max	6.69	12.85	6.02	**47.40**	7.74	**56.71**			5.52
Min	1.53	0.26	1.84	0.37	0.87	2.37			4.63
SD	0.96	1.67	0.84	2.62	1.51	8.30			0.38
Observations	47	226	36	379	38	71	1	1	5
Social score									
Mean	6.41	6.31	6.52	6.62	6.14	7.61	5.30	6.95	5.50
Median	6.54	6.48	6.62	6.62	6.69	6.44			5.56
Max	8.87	9.46	8.19	**50.07**	8.80	**54.05**			6.05
Min	4.13	2.80	4.64	0.43	2.80	4.01			4.51
SD	0.82	1.06	0.89	2.47	1.49	7.59			0.61
Observations	47	226	36	379	38	71	1	1	5
Governance score									
Mean	7.87	7.71	7.83	7.96	7.57	8.95	6.45	8.71	5.96
Median	7.84	7.90	8.22	7.86	8.08	7.70			6.08
Max	12.84	11.11	9.69	**56.40**	11.74	**62.36**			6.62
Min	4.96	2.82	4.96	0.49	2.82	5.09			5.09
SD	1.29	1.47	1.24	2.84	2.40	8.04			0.59
Observations	47	226	36	379	38	71	1	1	5
	Panel B: Fixed-income funds								
Environmental score									
Mean	2.64	3.21	3.21	3.12	11.88	3.15		1.24	3.58
Median	2.90	3.18	3.25	3.16	4.21	3.21			3.42
Max	4.66	8.08	4.35	6.48	**51.75**	4.85			4.37
Min	0.47	0.58	2.20	0.52	3.15	1.59			2.26
SD	1.10	1.12	0.79	0.86	19.54	0.77			0.64
Observations	40	53	7	90	6	32		1	13
Social score									
Mean	5.93	6.78	6.64	8.58	14.36	6.46		4.06	6.74
Median	6.19	7.03	6.63	8.70	7.70	6.60			6.86
Max	9.65	9.41	8.20	11.00	**49.90**	8.72			7.36
Min	1.97	2.77	4.60	1.95	5.93	4.37			5.80
SD	1.84	1.14	1.12	1.22	17.43	1.04			0.50
Observations	40	53	7	90	6	32		1	13
Governance score									
Mean	6.82	7.79	7.40	7.50	15.79	7.40		4.05	7.57
Median	7.29	7.97	7.30	7.58	8.85	7.63			7.67
Max	9.68	10.74	9.11	9.98	**50.74**	9.20			8.23
Min	2.15	1.76	5.74	1.54	8.44	4.98			6.62
SD	1.99	1.73	1.25	1.17	17.12	1.09			0.45
Observations	40	53	7	90	6	32		1	13

This table reports the descriptive statistics for the Morningstar ESG pillars, the Environmental, Social and Governance risk scores by label. Morningstar risk scores range from 1 to 100, with a higher value corresponding to a higher risk. Summary statistics are the mean, median, maximum, minimum, and standard deviation. Observations correspond to the number of funds. Panel A refers to equity funds and Panel B to fixed-income funds.

Table A4 - Descriptive statistics of MSCI ESG pillars: Environmental, Social and Governance scores

Environmental, Social and Governance Scores	ESG Labels						Green Labels		
	Ecolabel	Towards Sust.	Nordic SWAN	ISR	LuxFLAG ESG	FNG	LuxFLAG Climate Finance	LuxFLAG Environment	Greenfin
Panel A: Equity funds									
MSCI Environmental Score									
Mean	6.49	6.12	5.97	6.27	5.99	6.34	5.41	6.86	6.45
Median	6.53	6.23	5.98	6.46	6.15	6.39			6.37
Max	7.13	7.64	6.76	7.76	8.87	7.26			6.96
Min	5.59	2.93	4.87	2.93	4.23	5.20			6.19
SD	0.35	0.67	0.47	0.71	0.85	0.46			0.30
Observations	46	207	34	294	36	68	1	1	5
MSCI Social Score									
Mean	5.44	5.31	5.31	5.35	5.33	5.42	5.38	5.50	5.61
Median	5.40	5.31	5.33	5.33	5.28	5.38			5.45
Max	5.98	6.59	6.12	6.38	5.94	6.36			5.99
Min	5.02	4.28	4.69	4.19	4.72	4.83			5.32
SD	0.23	0.37	0.29	0.38	0.31	0.32			0.31
Observations	46	207	34	294	36	68	1	1	5
MSCI Governance Score									
Mean	5.52	5.50	5.50	5.41	5.50	5.50	5.27	5.30	5.91
Median	5.53	5.53	5.50	5.46	5.47	5.58			5.94
Max	6.33	6.85	6.85	6.61	6.84	6.33			6.18
Min	4.28	4.04	4.19	3.37	3.90	4.08			5.63
SD	0.35	0.54	0.53	0.52	0.70	0.45			0.20
Observations	46	207	34	294	36	68	1	1	5
Panel B: Fixed-income funds									
MSCI Environmental Score									
Mean	6.07	6.22	6.59	6.32	6.16	6.36		5.87	7.02
Median	6.25	6.27	6.43	6.40	6.37	6.50			7.04
Max	7.15	7.86	7.09	7.42	7.16	7.14			7.86
Min	4.29	4.13	6.24	4.16	4.25	4.83			6.47
SD	0.79	0.84	0.36	0.71	1.12	0.65			0.39
Observations	40	57	6	72	6	31		1	12
MSCI Social Score									
Mean	5.78	5.82	5.20	5.42	5.45	5.49		6.39	5.72
Median	5.50	5.46	5.21	5.26	5.26	5.43			5.77
Max	7.70	8.44	5.88	7.83	7.83	6.86			6.01
Min	4.61	4.70	4.70	4.64	4.64	4.61			5.39
SD	0.78	0.94	0.39	0.59	0.59	0.46			0.24
Observations	40	57	6	72	72	31		1	12
MSCI Governance Score									
Mean	6.03	6.00	5.96	5.61	5.49	5.74		5.77	5.81
Median	6.01	5.78	6.02	5.48	5.15	5.79			5.73
Max	7.75	9.17	6.80	7.16	7.71	7.06			6.18
Min	4.17	4.71	5.25	4.14	4.74	3.66			5.33
SD	0.73	0.82	0.53	0.52	1.12	0.66			0.26
Observations	40	57	6	72	6	31		1	12

This table reports the descriptive statistics for the MSCI ESG pillars, the Environmental, Social and Governance scores by label. MSCI ESG scores range from 1 to 10, with a higher value corresponding to a better risk management. Summary statistics are the mean, median, maximum, minimum, and standard deviation. Observations correspond to the number of funds. Panel A refers to equity funds and Panel B to fixed-income funds.