In labels we trust? The influence of sustainability labels in mutual fund flows

Sofia BRITO-RAMOS*
ESSEC Business School, France
sofia.ramos@essec.edu

Maria Céu CORTEZ
NIPE - School of Economics and Management, University of Minho
mccortez@eeg.uminho.pt

Svetoslav COVACHEV
Institute of Finance, Corvinus University of Budapest
svetoslav.covachev@uni-corvinus.hu

Florinda SILVA
NIPE - School of Economics and Management, University of Minho
fsilva@eeg.uminho.pt

* Corresponding author. We thank Rui Albuquerque, Patricia Crifo, Alberta di Giuli, Stefano Ramelli, Yves Rannou, Wei Wei, James Steeley and participants at 39th International Conference of the French Finance Association (AFFI), FMA 2023 European Conference, 2nd Conference on International Finance, Sustainable & Climate Finance, and Growth, 12th Portuguese Finance Network Conference, Lubrafin2023, 2023 Risk Forum and the 14th Annual Financial Market Liquidity Conference. The authors gratefully acknowledge the research assistance provided by Joseph Agossa of CERESSEC. We thank the funding from the FCT—Portuguese Foundation for Science and Technology within the project UIDB/03182/2020.

In labels we trust? The influence of sustainability labels in mutual fund flows

This Draft: May 2024

Abstract

The mutual fund market is characterized by the existence of several labels and certifications designed to assist investors in making informed investment decisions. This study investigates the impact of sustainability labels sponsored by government and non-profit organizations (GNPOs) on fund flows in a setting where multiple labels coexist. After being awarded a GNPO label, mutual funds attract additional flows compared to otherwise comparable funds. This effect is stronger for top-performing funds, small funds, and funds targeted to institutional investors. Furthermore, the flow effect associated with receiving a GNPO label is short-lived, consistent with the momentum of sustainability labels pealing upon their attribution. Additionally, investors respond positively to both GNPO labels and a Sustainable Finance Disclosure Regulation (SFDR) sustainability-linked classification, regardless of whether they hold prior sustainability labels. Altogether, our findings suggest that investors incorporate new information from sustainability signals, highlighting the salience of these signals in driving investment decisions.

Keywords: Flows, Mutual funds, SFDR, Signaling, Sustainability labels, Sustainable finance, Third-party certifications.

"Within the ESG industry you have a never-ending development of new signals"

Bob Mann, chief operating officer of Sustainalytics, Financial Times

1. Introduction

Currently, there is a great variety of labeling schemes aimed at guiding and promoting sustainable investments. Certifying the sustainable features of investment funds has gained popularity as sustainable investing moves into the mainstream, with investors facing an increasing offer of seemingly comparable sustainable options in financial markets. By the end of 2022, the number of sustainable funds worldwide reached 7,012, reflecting a tenfold surge in funds and a threefold increase in terms of assets under management since 2012 (UNCTAD, 2023). Europe is, by far, the largest sustainability fund market, holding a share of 83% of global sustainable funds' assets under management (UNCTAD, 2023). The European market is also at the forefront of regulatory efforts to drive capital toward sustainable projects, as established by the European Union (EU) Sustainable Finance Action Plan. In this context, sustainable labels serve as a crucial mechanism for directing flows to sustainable investments. Drawing on signaling theory (Spence, 1973), labels play an important role in mitigating information asymmetries[1], particularly in credence goods markets, where the qualities of the product are difficult to verify, thus putting buyers at a disadvantage relative to sellers (Atkinson & Rosenthal, 2014).

Labels can come in the form of a certification awarded by a third-party or they can be self-declared (Dekhili & Achabou, 2014). In the European context, an important category of third-party labels comprises those sponsored by governmental bodies or non-profit organizations (GNPOs, hereafter). Funds can apply voluntarily for several well-known GNPO labels at the country or regional level, such as the Ecolabel in Austria (*Österreichisches Umweltzeichen*); Towards Sustainability in Belgium; *Investissement Socialment Responsible (ISR)* and Greenfin in France; *Forum Nachhaltige Geldanlagen* (FNG) in Germany, Austria, Liechtenstein, and Switzerland; LuxFLAG ESG/Climate Finance/Environment in Luxembourg; and Nordic Swan in Nordic countries. Besides third-party labels endorsed by GNPOs, private financial data intermediaries have entered the business of sustainability ratings by providing third-party assessments of companies' and/or mutual funds' Environmental, Social, and Governance (ESG) performance or risks. Typically, these rating agencies evaluate companies on these three dimensions, which are then combined to provide an aggregate ESG score. One prominent player in this business is Morningstar, whose sustainability ratings, represented by a globe system, are widely used by investors. Morningstar also awards the 'Low Carbon Designation'

[1] In markets with imperfect and asymmetric information, companies often use signals to communicate product information (Mishra et al., 1998; Spence, 1973). Signaling theory implies that signals such as labels serve as cues of the quality of unobservable product attributes, thereby improving the functioning of markets (Erdem & Swait, 1998).

(LCD) to funds that perform well on the carbon dimension. Unlike ESG ratings, computed by commercial data providers without any cost to the fund, GNPO labels are costly, as they are granted following an application process that entails costs (fee and disclosure costs) for mutual funds (Brito-Ramos et al., 2023).

In addition to third-party certifications, funds can make their sustainability profile salient through self-declared signals, such as adopting an ESG-related name or classifying themselves under Article 8 or 9 of the EU Sustainable Finance Disclosure Regulation (SFDR). Holding an ESG designation in the name is a simple, costless, and effective way of signaling an ESG strategy (Anderson & Robinson, 2022; Gounopoulos et al., 2023). In force since March 2021, the SFDR requires asset managers to disclose information regarding the integration of sustainability risks. Within this framework, funds can signal their commitment to ESG by aligning with a sustainability-linked SFDR classification. Specifically, Article 8 funds promote environmental and social characteristics but without prioritizing them as the overarching objective, Article 9 funds have sustainable goals as their primary objective, and all other funds fall under Article 6. Although conceived as a disclosure-based framework, SFDR's categories for financial products now embody a common language for sustainability in the investment industry (Eurosif, 2022) functioning in practice as an unofficial labeling for sustainability (EFAMA, 2021)[2].

Despite their well-acknowledged informational role and trust attributes, the profusion of sustainability labels can undermine the idea of a clear-cut quality signal, potentially leading to increased investors confusion (Brécard, 2014) as they struggle to differentiate between the numerous labels available. Thus, the proliferation of labels may compromise their effectiveness and have the adverse effect of reducing the likelihood of investors purchasing sustainable funds. In light of these concerns, the aim of this research is to investigate how investors respond to the multitude of sustainability labels in investment decision-making, using a dataset of equity funds sold in the EU countries. The existence of multiple sustainability labels in Europe represents an ideal setting to investigate investors' response to different types of labels. Do investors react differently to third-party labels (sponsored by GNPOs or ESG ratings from commercial data vendors) and self-declared labels (the SFDR classification and holding an ESG-related name)? Considering recent evidence that GNPO-sponsored labels and private sector ones are not fully aligned (Brito-Ramos et al., 2023), the issue of whether investors perceive certain labels as more trustworthy than others becomes even more relevant. While previous studies have shown that private sector labels like Morningstar globes or the LCD have impacted investors' decisions (e.g., Ammann et al., 2019; Hartzmark & Sussman, 2019; Ceccarelli et al., 2024), how GNPO labels

[2] Eurosif (2022) notes the distinct logics underlying a disclosure-based framework and labels in the strict sense. A disclosure-based regulation aims to foster transparency and, as such, is designed to be as broad as possible in scope whereas a label is a seal of approval awarded to products that comply with ambitious standards. Nevertheless, even though it was not the regulators' objective that the SFDR provisions were treated as labels (EFAMA, 2021), the SFDR acts as a financial product classification system. Furthermore, SFDR is not purely disclosure-based since, for instance, it sets several requirements for financial products to qualify as Article 9 (Eurosif, 2022).

compete with those of the private sector for investor's attention and how this translates into investment decisions has not yet been explored. In this context, our research investigates the salience of different sustainability signals on mutual fund investments. Our main objectives are twofold. First, we investigate how investors react to the awarding of GNPO labels**.** Building on the literature of signaling theory (Spence, 1973), we expect that investors view third-party costly signals such as GNPO-endorsed labels as trustworthy signals. Second, we explore how investors navigate the multitude of labels focusing on three dimensions: i) the persistence of the GNPO label flow effect over time; ii) the impact of the introduction of the Sustainable Finance Disclosure Regulation (SFDR) on fund flows; and iii) the influence of prior sustainability labels on investment decisions. This analysis provides insights into investor behavior within the framework of multiple sustainability signals.

The paper contributes to several strands of the literature. First, it contributes to the body of literature on how demand for sustainable investments is affected by financial versus non-financial motives**.** In particular, recent research documents the role of sustainable preferences in socially responsible investing (e.g., Rossi et al., 2019; Anderson & Robinson, 2022; Riedl & Smeets, 2017; Gutsche & Ziegler, 2019; Bauer et al., 2021; Giglio et al., 2023). Our results are consistent with these studies by documenting European investors' preferences for investments with sustainability signals.

Second, this paper relates to a growing literature that highlights the salience of sustainability cues in driving investors' decisions. For instance, Hartzmark and Sussman (2019) and Ammann et al. (2019) document that the introduction of Morningstar's sustainability globe ratings triggered investor flows into top-rated funds. Likewise, Ceccarelli et al. (2024) highlight the preference for funds awarded with Morningstar's LCD. Additionally, Becker et al. (2022) and Ferriani (2023) provide evidence of heightened fund flows following the SFDR disclosures. We contribute to this line of work by investigating how fund flows react to different types of sustainability labels, namely those provided by third parties (GNPO *vs* private sector ones) and self-declared labels (an ESG name and the SFDR classification). While private-sector sustainability certifications and ratings are prevalent in the US, Europe is distinct in the rise of sustainability labels endorsed by GNPOs (Crifo et al., 2020). To our knowledge, no studies have explored how investors react to GNPO sustainability labels, particularly in the context of alternative labeling schemes for mutual funds. This paper fills this gap. The results highlight that fund flows are responsive to GNPO labels, in line with the argument that they are perceived as credible sustainability signals. The effect of GNPO labels on fund flows is more significant for top-performing funds, smaller funds, and those aimed at institutional investors. Although investors adjust their behavior in response to new information, the flow effect appears to be temporary, consistent with the findings of Gantchev et al. (2024). Notably, the positive flow response to GNPO labels and another set of recently launched labels - Articles 8 and 9 of the SFDR - is still observed even when funds already display prior sustainability labels. Overall, our evidence highlights the salience and

momentum of new sustainability signals that arrive in the market, driving investor attention around the hype.

The remainder of this paper is organized as follows. Section 2 presents an overview of the sustainable labeling landscape in Europe and discusses the relevant literature. Section 3 describes the data. Sections 4 to 6 analyze and discuss the empirical results. Finally, Section 7 concludes.

2. Institutional background and literature review

2.1. Overview of labeling schemes in Europe

GNPO labels have become popular instruments for certifying and promoting sustainable investments (Crifo et al., 2020). These labels can be sponsored by entities such as non-profit associations (e.g., professional responsible investment associations), and governments as part of their public policy goals for promoting sustainable investments, as in the case of France, Austria, and the Nordic countries. Labels can be segmented by whether they have a broad ESG scope (ESG labels) or if they specifically target environmental issues (Green labels). 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. Green labels prioritize the environmental dimension of ESG, employing stringent criteria regarding environmentally harmful activities while potentially incorporating social and governance considerations as well. They usually demand a minimum proportion of 'green' activities in the portfolio, strict exclusion of fossil fuels, and a definition of what constitutes a 'green' asset (Megaeva et al., 2021).

Private financial data providers have become important actors in the ESG rating industry. In August 2016, Morningstar introduced its sustainability ratings, which use a five-globe system to communicate the ESG level of funds based on companies' ESG performance. At the end of 2019, this rating scheme evolved to measure company-level ESG material risks, aiming to assess how well companies manage the material ESG issues they face within their industry and across industries. The methodology was further updated in late 2021 to also incorporate country-level ESG risk ratings. 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 facing negligible financial risks in terms of ESG issues will receive a five-globe rating. In addition to its generic sustainability ratings, Morningstar introduced its LCD eco-label in 2018, which signals funds that have low overall carbon risk and lower-than-average exposure to companies with fossil-fuel involvement. This label is represented by a green leaf icon, an eye-catching signal that investors can associate with low-carbon investments aligned with the transition to a low-carbon economy. Besides awarding the globes and the LCD, Morningstar also signals funds with an ESG profile by flagging them as having a sustainable investment attribute.

Labels sponsored by GNPOs and those provided by private financial data companies differ in several aspects besides the private nature of the sponsor. GNPO labels are binary (funds either meet standards or not), whereas labels sponsored by the private sector can be binary (e.g., in the case of the LCD) or use a numerical or categorical scale, like a rating (e.g., Morningstar globes, which can range from one to five globes based on ESG risks, or the underlying fund's sustainability scores). Unlike GNPO labels, which are voluntary and require that funds submit themselves for certification, private sector ones are assigned by rating agencies without fund involvement. Furthermore, an important distinction concerns the costs borne by funds. GNPO labels involve additional costs, including the payment of fees to the labeling agency and disclosure costs. In contrast, labels from ESG rating agencies are assigned at no additional cost[3].

In addition to third-party labels, funds can also self-signal their sustainability profile by choosing a sustainability-linked SFDR classification and/or including ESG-related terms in their names. In practice, the classification of funds under Articles 8 or 9 of the SFDR has been understood by the market as a sustainable labeling scheme (EFAMA, 2021; European Commission, 2024). As to the name, incorporating an ESG-related expression is among the foremost and self-evident means to communicate a sustainability strategy to investors[4].

Table 1 provides an overview of the main types of sustainability labels available for mutual funds in the EU. Panel A lists the nine major GNPO-sponsored labels (Novethic, 2022). Six labels are categorized as ESG, and three have a specific green focus. The six ESG labels are Ecolabel (Austria), Towards Sustainability (Belgium), ISR (France), FNG (Germany, Austria, Liechtenstein, and Switzerland), LuxFLAG ESG (Luxembourg), and Nordic Swan (Nordic countries). LuxFLAG Climate Finance (Luxembourg), LuxFLAG Environment (Luxembourg), and Greenfin (France) are green-specific labels. Panel B displays the labels provided by Morningstar, namely the well-known globes and the LCD[5], while Panel C addresses fund classification under Articles 8 or 9 of SFDR.

[Table 1 around here]

Figure 1 shows the evolution of labeled equity funds from January 2019 to December 2021. We observe that there is a clear increase in the percentage of funds classified as Sustainable by Morningstar[6] and those holding the LCD. After the introduction of the SFDR, there is also a notable

[3] Unlike credit rating services, ESG ratings are not paid for by the companies or funds being rated; instead, the cost of ESG ratings is supported by their clients, which are mainly institutional investors and asset managers.

[4] Several papers (e.g., Capotă et al., 2022; Dikolli et al., 2022) classify funds as ESG based solely on the inclusion of specific terms such as 'ESG', 'climate', 'environment', 'green', etc., in their names.

[5] Other private providers of mutual funds ESG data include MSCI and Refinitiv. However, this study specifically focuses on Morningstar, as it was the pioneer in developing ESG scores at the fund level, in addition to offering significant labels of fund-level ESG performance and risks.

[6] The Sustainable Attributes framework was adopted by Morningstar in 2020, having replaced the prior data points 'Socially Responsible Fund/Socially Conscious'. We consider Sustainable funds as those that during the period under analysis were classified as 'Socially Responsible Fund/Socially Conscious' or as having Sustainable Intentions.

increase in funds classifying themselves as Article 8. Fewer funds hold GNPO labels and are classified as Article 9, but these also show a slightly increasing trend. The percentage of funds that receive 5 globes tends to be stable as it is capped to a percentage of the total number of funds in the category as defined by Morningstar methodology.

[Figure 1 around here]

2.2. Investors' response to salient information on sustainability and environmental features

The growth of socially responsible investment has led to a significant body of research investigating investors' social preferences. A set of studies have highlighted the role of social preferences in influencing investors' decisions (e.g., Riedl & Smeets, 2017). Specifically, survey-based (e.g., Gutsche & Ziegler, 2019; Rossi et al., 2019; Bauer et al., 2021; Giglio et al., 2023) and experiment-based studies (e.g., Apostolakis et al., 2016; Heeb et al., 2023) provide evidence of investors' willingness-to-pay for such investments, consistent with investors deriving utility from positive social and environmental externalities. This evidence extends to the mutual fund landscape, with investors showing a strong motivation to invest in funds with sustainability attributes compared to their conventional peers (M. Baker et al., 2022). A growing body of literature also provides insights on social and environmental preferences of institutional investors, showing that professional money managers are increasingly concerned with managing ESG risks, particularly climate risks (Krueger et al., 2020; Stroebel & Wurgler 2021; Ceccarelli et al., 2023) and engaging with companies to improve their ESG performance (Dimson et al., 2015; Kim et al., 2019; Krueger et al., 2020; Flammer et al., 2021).

An established literature documents factors that are salient to investors when making mutual fund investment decisions, including advertising (Sirri & Tufano, 1998), performance rankings (Kaniel & Parham, 2017), and fund style categories (Fang et al., 2021). Considering the information overload and the complexity associated to choosing from a vast array of funds, the literature acknowledges that investors pay attention to prominent, accessible and easy-to-understand signals to guide their investment decisions. In particular, it has been shown that investors resort to simple and well-known performance indicators provided by third parties, such as Morningstar star ratings (Del Guercio & Tkac, 2008; Evans & Sun, 2021; Ben-David et al., 2022), to guide their investment decisions. For investors who look for sustainable investments, the task of identifying funds that satisfy their needs is even more burdensome due to the additional search costs involved in this process (Anderson & Robinson, 2022; Gutsche & Zwergel, 2020). Commercial data vendors have responded to these needs by extending performance indicators to the sustainability arena and introducing intuitive and simple signals designed to ease investors' assessment of mutual funds' sustainability profiles. The salience of this information is confirmed by several studies. For instance, Hartzmark and Sussman (2019) and Ammann et al. (2019)

find that following the introduction of Morningstar's sustainability globe ratings in 2016, US investors redirected their savings from low-rated funds to high-rated ones, consistent with investors favoring sustainability attributes. Empirical evidence further highlights this trend during times of economic and social stress, such as during the Covid-19 pandemic, with investors still favoring five-globe funds during this period (Pástor & Vorsatz, 2020; Ferriani & Natoli, 2021). More recent evidence from Gantchev et al. (2024) shows that the positive impact of Morningstar globes on fund flows is temporary. The authors claim that, in the long term, globe ratings become ineffective in attracting flows due to the trade-off between performance and sustainability.

In addition to salient measures of general sustainability, there is also evidence of a link between salient carbon-related information and fund flows, reflecting investors' increasing sensitivity to green investments. Ceccarelli et al. (2024) investigate investors' capital allocation to funds in the aftermath of the introduction, in 2018, of Morningstar's LCD eco-label and find that funds awarded with this label experience higher flows compared to other funds. Likewise, Reboredo and Otero (2021) document that investors allocate more flows to funds with lower carbon risk scores, as disclosed by Morningstar[7].

Besides sustainability signals provided by third parties, there are also salient self-declared signals that funds can resort to with the aim of attracting additional flows. Previous evidence outside the sustainability arena shows evidence that investors are sensitive to changes in fund names to reflect trending styles (Arbaa & Varon, 2019; Cooper et al., 2005). Therefore, adopting sustainability jargon in fund names can be a simple strategy to cater to socially and green conscious investors. For instance, Anderson and Robinson (2022) find that environmentally engaged investors with low levels of literacy are more likely to allocate their portfolios toward funds with ESG-appealing names, consistent with the belief that the name is a salient signal of sustainability. In turn, El Ghoul and Karoui (2021), Cochardt et al. (2023), Gibbon et al. (2023), and Huij et al. (2023) investigate the impact of fund name changes that are undertaken to reflect ESG-related expressions and find that greening fund names increases fund flows, consistent with fund names playing an influential role in the investor's decision-making process. Furthermore, Gounopoulos et al. (2023) claim that having an ESG name is a more impactful signal in attracting fund flows compared to Morningstar globes.

In the EU, funds can also self-signal their sustainability profile by classifying themselves under Article 8 (so-called 'light green') or 9 (so-called 'dark green') of the SFDR, depending on whether they promote environmental or social characteristics or have a sustainable investment as its objective, respectively. These classifications can enhance a fund's visibility, potentially influencing investors' mutual fund choices. Recent research explores investor reactions to SFDR classifications, with evidence of increased flows towards funds labeled as Article 8 or 9 (Emiris et al., 2023), predominantly Article

[7] The carbon risk score of a fund is one of the indicators used by Morningstar to award the LCD label. Indeed, this label is attributed to funds depending on whether the carbon risk score is below 10 and the fossil fuel involvement is less than 7% of the (weighted) assets in the fund portfolio.

8 (Becker et al., 2022) or predominantly Article 9 (Ferriani, 2023; Spaans et al., 2024). Additionally, evidence shows that funds downgraded from Article 9 to Article 8 experience outflows (Scherer & Hasaj, 2023; Nishi et al., 2024). While extant studies investigating investors' reaction to sustainability labels typically focus on one or two labels in isolation, this paper performs a comprehensive analysis of the salience of sustainability signals considering both labels provided by third parties (GNPO vs private sector ones) and self-declared labels (an ESG name and the SFDR classification). Further, our analysis is the first to consider the impact of GNPO labels, widely popular in Europe, on investors' decision-making.

3. Data

3.1. Dataset

Our unique dataset combines information obtained from several data sources. We select all equity funds that were available for sale in EU countries in the period 2019-2021. We collected data on GNPO-labeled funds from the lists of funds available on the websites of the labeling agencies and Novethic for French funds. From Morningstar, we collect all other information regarding fund features. Although mutual funds often issue several share classes to cater to different groups of investors, the underlying portfolio is the same across share classes. This means that the ESG label applies to all share classes, regardless of the fee structure or other features. For this reason, our analyses are conducted at the fund level. In aggregating data from the share class to the fund level, we compute funds' returns as value-weighted average values across different share classes. Fund assets value (in US dollars) is the sum of the assets under management (AUM) of its different share classes. Fund age is based on the oldest share class. Other fund-level information is retrieved from the primary share class of the funds or in its absence the oldest share class. Funds with total net assets (TNA) lower than 1 million US dollars were excluded. In addition, we required funds to have at least 12 monthly return and TNA observations and also to have Morningstar sustainability ratings.

Table 2 shows the number of funds sold in the EU by domicile after the filtering process. The final dataset is composed of 7,208 equity funds, the majority of which are domiciled in Luxembourg, Ireland, and also France. The table further presents the distribution of funds according to sustainability signals, including the number of funds that possess an ESG-related expression in their names[8]. We observe that 2,429 funds are classified as Sustainable according to Morningstar, while 653 funds hold GNPO labels. A considerable number of funds exhibit Morningstar's LCD, as well as the Article 8 classification. GNPO-labeled funds are domiciled mainly in Luxembourg and France.

[8] Following previous studies (e.g., Nofsinger & Varma, 2014, 2023), we searched for words (in English and in local language) that suggest a sustainable oriented fund, such as ESG, Green, Climate, Sustainable, Socially responsible, Impact, Social, Environment, and SDG. The data on funds' names refers to December 2021.

[Table 2 around here]

3.2. Variables and summary statistics

Fund flows are computed as the net change in fund assets beyond asset appreciation. As in Sirri and Tufano (1998), we compute percent flows of fund *i* during month *t* as:

$$Flows_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}(1+r_{i,t})}{TNA_{i,t-1}} \quad (1)$$

where $TNA_{i,t}$ and $TNA_{i,t-1}$ are the total net assets of all outstanding shares (in the local currency) for fund *i* at the end of months *t* and *t*-1; $r_{i,t}$ is the raw return for fund *i* during month *t*, which we define as the discrete returns based on the net asset values of fund *i* at the end of months *t* and *t*-1. The returns are net of operating expenses, inclusive of any distributions, and denoted in local currency. This measure of fund flows assumes that all flows occur at the end of the month. To reduce the effect of outliers, we remove the observations of fund flows beyond the 99.5th percentile or below the 0.5th percentile[9].

Following Hartzmark and Sussman (2019) and Ceccarelli et al. (2023, 2024), we also compute normalized flows, corresponding to percentiles of the net flows' rankings within fund size deciles. First, each month funds are allocated to deciles based on fund size and then we rank funds based on their net flows and compute percentiles of the rankings. As argued by Ceccarelli et al. (2023), normalized flows mitigate the potential influence of fund size and outliers in the computation of monthly flows, particularly when there is substantial fund size heterogeneity, thereby using this specification of flows to check the soundness of results. Normalized flows offer an additional advantage in that they convey the competitive effect of the variable under investigation, by ranking the flows. This feature is particularly relevant given the highly competitive nature of the industry (Leippold & Rueegg, 2020).

Investors can resort to different labels to identify and select funds with sustainability features. To analyze the effect of sustainability signals on fund flows, we created several dummy variables corresponding to different sustainability labels available to investors. *GNPO Label* identifies funds with a GNPO label, Morningstar ESG ratings (*Globes*) and *LCD* refers to funds holding the Morningstar globes and the LCD label, respectively. We further consider *ESG Name* to identify funds containing ESG-related words in their name. Finally, we also add two dummy variables to capture funds' SFDR classification: *Article 8* and *Article 9*. Considering that Morningstar assigns a flag to funds with sustainable features, we also include a dummy *Sustainable* to identify these funds. It is important to note, however, that this flag is not treated as a label in the context of this research.

[9] Such criteria are also often applied in other studies on fund flows (Barber et al., 2005; Bollen, 2007).

Information on the dates when GNPO labels were awarded is not available for all funds. Out of the labeling schemes, we were only able to collect historical data on the dates of GNPO label attribution for five of the labeling schemes mentioned above: Toward Sustainability, ISR, FNG, LuxFLAG ESG, and Nordic Swan. Thus, from the above dataset we remove funds with labels sponsored by other entities (Ecolabel, Greenfin, LuxFLAG Climate Finance, and LuxFLAG Environment).

To explore whether the flows response to the awarding of a GNPO label is different for funds targeting more to institutional investors, we also create a dummy variable (*Institutional*) identifying institutional funds, which we define as those with more than 50% of assets stemming from institutional share classes, as in Ceccarelli et al. (2023).

Our analysis controls for a set of variables that previous studies (Ammann et al., 2019; Hartzmark & Sussman, 2019; Ceccarelli et al., 2024) have shown to be drivers of fund flows, namely fund past performance, risk, and some fund characteristics. We use funds' returns over the prior 12 months (*12-month returns*), and the Morningstar star rating (*Stars*) in the prior month to control for past performance, and the standard deviation of returns over the past 12 months (*12-month volatility*) to control for risk. Additionally, we control for the log of size in the prior month, the log of fund age, and fund fees.

Panel A of Table 3 reports the summary statistics of the variables for the overall dataset covering the period January 2019 to December 2021. Panel B reports the statistics of the funds awarded with GNPO labels from January 2019 to March 2021, which represent the treated sample and the period of our main analysis. This subsample is used to study the effect of the awarding of GNPO labels on fund flows. Looking at the overall dataset (Panel A), we observe that around 36% of funds are flagged as Sustainable, 54% hold Morningstar's LCD and 35% are self-classified as Article 8. Further, only a small percentage of funds hold a GNPO label (10%) or have an ESG-related name (8%), and very few (just 4%) are self-classified as Article 9 funds. As to the treated sample (Panel B), most of the funds that were awarded a GNPO label are also classified by Morningstar as Sustainable funds (around 92%), and the proportion of funds having the LCD or an ESG-related name is also higher (66% and 23%, respectively) compared to the overall dataset.

[Table 3 around here]

Table 4 reports the frequencies of GNPO-labeled funds holding other sustainability signals. As can be observed, a large proportion of funds awarded a GNPO label classify themselves as Article 9 funds (45%). Around one-fifth are flagged as Sustainable by Morningstar and have an ESG name. Only a small percentage of GNPO-labeled funds hold 1 or 2 globes. We also analyze the Pearson pairwise correlations between the sustainability labels. As shown in Table 5, the correlations are positive and

statistically significant, in particular between the GNPO, ESG name, and Article 9 labels. Furthermore, as expected, the Sustainable flag variable exhibits a significant correlation with sustainability labels[10].

[Table 4 around here]

[Table 5 around here]

4. Investors' sensitivity to multiple sustainability labels

Sustainability labels such as Morningstar globes and the LCD have been shown in the literature to strongly influence investors' mutual fund choices, consistent with preferences for salient sustainability signals (e.g., Hartzmark & Sussman, 2019; Ammann et al., 2019; Ceccarelli et al., 2024). However, within the European market, several additional sustainability labels convey such features to investors. Hence, our analysis starts assessing the importance of sustainability labels in shaping mutual fund investors' decision-making. Based on extant evidence regarding sustainable preferences, we hypothesize that funds possessing sustainability labels, such as GNPO labels, the LCD, top ESG Morningstar globes, Articles 8 or 9 of the SFDR, and those with ESG-related names, experience increased flows. For this purpose, we run a pooled regression of monthly fund flows or normalized flows ($Flows_{i,t}$), as follows:

$$Flows_{i,t} = \propto_{\mathbf{0}} + \beta sust\_signals_i + \theta X_{i,t-1} + FE + \in_{i,t} \qquad (2)$$

Where $sust\_signals_i = \{GNPO\ Label_i, Globes_{i,t-1}, LCD_i, ESG\ Name_i, Article\ 8_i, Article\ 9_i\}$ are a set of dummy variables that provide a signal for investors on the sustainability features of the fund, $GNPO\ Label_i$ is a dummy variable identifying funds that have been awarded a GNPO label, $Globes_{i,t-1}$ refer to dummy variables for Morningstar globes (1 to 5 globes, with 3 being considered the reference rating), LCD_i is a dummy variable for funds awarded the LCD tag by Morningstar, and $ESG\ Name_i$ is a dummy variable identifying funds with an ESG-related name. For the period April 2021 to December 2021, we add two dummy variables to identify funds with Articles 8 ($Article\ 8_i$) or 9 ($Article\ 9_i$) classification.

The regression includes a set of control variables ($X_{i,t-1}$) that are measured at the end of the previous month to control for reverse causality. As mentioned in the previous section, these variables include the log of aggregated size of the fund, the log of age, fees, star ratings, past returns, and volatility of past returns. Similar to the globes, the star ratings are represented by dummy variables (1 to 5 stars, with 3 stars being considered the reference rating). The regression also controls for category, family,

[10] Given that the sustainability labels are binary variables, we also considered Tetrachoric correlations, a special type of correlation used for binary variables, which confirms a high correlation between the different variables (see Table A1 in Supplementary Appendix).

and time fixed effects, to ensure that the result is not driven by a particular style category, the brand of a certain family or time trends. We cluster standard errors by fund as flows tend to show persistence.

The period of analysis is from January 2019 to December 2021, with the exception of the regression including SFDR classifications, in which we consider the period April 2021 to December 2021, as the SFDR was introduced in March 2021. Table 6 reports the regression results. Column (1) presents the estimates considering the set of variables identified in the flow-performance literature as determinants of fund flows and Morningstar globes. The results show that funds with 5 globes (top ESG-rated funds) experience higher flows, in line with Hartzmark and Sussman (2019). Consistent with previous findings, past returns are also an important driver of flows, as shown by the significance of the past 12-month returns. Moreover, past risk-adjusted performance, as measured by Morningstar star ratings, is also statistically significant: funds with 4 and 5 stars have inflows, whereas funds with 1 and 2 stars experience outflows relative to the baseline case of 3 stars. The results in Column (4), which report the regression estimates based on the same explanatory variables but using normalized flows as the dependent variable, are overall similar, but further highlight investors' preferences for funds with 4 globes along with their reluctance to invest in funds with 1 globe.

Column (2) presents the estimates when additional sustainability signals, apart from Morningstar globes (equation 2), are included. Funds with a GNPO label or an ESG name exhibit 0.749% and 0.849% higher monthly flows, respectively. Considering other sustainability signals, some are more strongly associated with fund flows than Morningstar globes, as the coefficient for the 5-globe variable loses statistical significance. Column (5) provides estimates using normalized flows as the dependent variable. The findings indicate that funds with GNPO labels, ESG-related names, and those awarded 5 globes attract higher flows. Specifically, funds with GNPO labels achieve flows 3 percentiles higher, while those with ESG names move up approximately 4 percentiles in flows.

Columns (3) and (6) present coefficient estimates for the shorter period from April 2021 to December 2021, incorporating variables that identify Articles 8 and 9 of the SFDR and using flows and normalized flows, respectively. The results in column (3) demonstrate that holding a GNPO label and an ESG-related name continues to positively affect flows. Additionally, Article 8 funds attract higher flows. However, the magnitude of the GNPO label's effect on fund flows is smaller during the April-December 2021 period compared to the longer period. In this context, the coefficient for the LCD label even turns negative, suggesting potential competitive effects among labels. Using normalized flows (column 6), the only sustainability signals with a positive and statistically significant impact (at least at the 5% level) on flows are the ESG name and the Article 8 classification. The effect of the ESG name results in 4 percentiles higher flows, reinforcing the influence of names on decision-making.

The results confirm investors' sustainable investment preferences, with GNPO labels and ESG names being the sustainability signals attracting higher fund flows. Moreover, we observe that after the

launch of the SFDR, certain sustainability signals seem to lose influence in driving investors' decisions, whereas funds classified under Article 8 or with an ESG-related name are significantly associated with higher fund flows. For robustness purposes, we provide in Tables A2 and A3 of the Supplementary Appendix other specifications, including the lag of flows to control for the autocorrelation of fund flows, as well as different fixed effects. The main conclusions are unchanged.

[Table 6 ard here]

5. Does the awarding of a GNPO label impact fund flows? A Diff-in-Diff approach

5.1. Baseline analysis

Previous studies document that the introduction of salient signals of sustainability, such as the Morningstar globes or the LCD, represents a shock that impacts fund flows (e.g., Hartzmark & Sussman, 2019; Ammann et al., 2019; Ceccarelli et al. 2024). Having demonstrated investors' preferences for funds awarded GNPO labels, we posit that the awarding of a GNPO label sends a signal that influences investment decisions, resulting in increased flows. To further explore investors' response to the signal conveyed by the awarding of a GNPO label, we employ a difference-in-difference (DID) regression approach. This framework makes use of the dates of the awarding of the GNPO label to analyze if funds awarded a GNPO label receive higher flows compared to funds that never received GNPO labels.

$$Flows_{i,t} = \propto_0 + \beta_1 GNPO\ Label_i + \beta_2 Post_{i,t} + \beta_3 GNPO\ Label_i \times Post_{i,t} + \theta X_{i,t-1} + FE + \in_{i,t} \quad (3)$$

The specification relies on two dummy variables: one that identifies funds that received a GNPO label during the period January 2019 to March 2021 (*GNPO Label*), and another that assumes the value of 1 for observations after the fund is awarded the label (*Post*). The coefficient of the variable of interest is the interaction term $GNPO\ Label_i \times Post_{i,t}$ (β_3). A positive and statistically significant coefficient indicates that the fund has more flows after receiving the GNPO label. We control for the variables included in the previous specification (Table 6) and also for the Morningstar globes. The regressions also incorporate various fixed effects: fund style category, fund family and time fixed effects, fund and time fixed effects, and fund family and category by time fixed funeffects.

To isolate the effect of awarding a GNPO label, we impose additional filters in the treated sample. We remove funds with multiple GNPO labels (i.e., repeated treatment over time) and funds that were awarded a label before 2019. We also remove funds that were labeled, decertified, and again re-labeled. After this filtering, we have 6,344 equity funds, 191 that were awarded with a GNPO label during the period January 2019 to March 2021 (that we denominate as treated sample, see Panel B of

Table 3), and 6,153 that never received any GNPO label. The ending period of March 2021 is intended to avoid overlapping with the introduction of the SFDR.

Results on the estimation of equation (3) are presented in Panel A of Table 7, where the columns show the coefficients of interest considering both flows and normalized flows and controlling for the different fixed effects. The results show that the interaction coefficient is positive and statistically significant for all the specifications of the model, indicating that after being awarded a GNPO label, funds attract more flows. The coefficient in column (1) indicates that average monthly flows increase by 1.240 percentage points following the label attribution. Subsequent columns incorporate category by time effects and fund fixed effects. The estimation with fund fixed effects controls for time-invariant confounding factors, resulting in a smaller yet still statistically significant coefficient. Columns (4) to (6) used normalized flows as the dependent variable. The coefficient in column (4) indicates that funds experienced an upward movement of 4.908 percentiles in flows after receiving a label. This value diminishes as category-by-time fixed effects and fund fixed effects are introduced, although it remains statistically significant. Overall, the estimates show that average monthly fund flows increase by 0.733 to 1.240 percent or move up 3.995 to 4.908 percentiles depending on the different fixed-effect controls. These estimates are comparable to the effects reported by Ceccarelli et al. (2024) and Hartzmark and Sussman (2019). Ceccarelli et al. (2024) find an average increase of around 0.36% for relative flows and 2.76 for normalized flows with the LCD, while Hartzmark and Sussman observe an increase of 0.33 percentage points in flows and a rise of 3.25 in normalized flows when funds are awarded 5 globes. We note that these studies use US funds for their empirical analysis, typically featuring larger fund size and resulting in lower relative values of flows. Additionally, EU investors exhibit stronger sustainable preferences (Gibson Brandon et al., 2022), which might also account for the higher coefficient observed in our analysis. Finally, our results may simply reflect the strong signaling impact of GNPO labels as costly and governmental sponsored labels.

To control for potential confounding effects from other fund characteristics that might amplify or reduce the effect of the awarding of a GNPO label, we form two matched samples using propensity score matching, as in Ammann et al. (2019), El Ghoul and Karoui (2021), and Mugerman et al. (2022). First, we match samples using fund features like size and star ratings. Secondly, we also control for confounding effects coming from peer labeling schemes by matching funds on the sustainable investment attribute and, additionally, size and fees.[11] Each treated fund (awarded a GNPO label) is

[11] To select the most relevant matching variables, we ran a logit model with the GNPO label as the dependent variable and the fund characteristics as explanatory variables. These results on the propensity to be treated are available in Table A4 of the Supplementary Appendix. Based on this analysis, fund size and star ratings appear as those exhibiting strong explanatory power when we consider only the main fund characteristics, while fund size, fees, and the Sustainable Investment attribute are the ones that appear as more important when we also add fund sustainability features.

matched to three control funds (without a GNPO label) based on the closest estimated propensity scores. Panels B and C of Table 7 present the results using these two matched control samples.

[Table 7 around here]

The results indicate that our initial findings remain robust when using matched control samples. The awarding of a GNPO label has a positive and statistically significant impact on fund flows, regardless of the method used for computing flows and the fixed effects controls. In Panel B of table 7, we observe that the coefficients of the interaction variable are even higher for the matched control sample, meaning that the effect of awarding a GNPO label is stronger when we match the treated funds with non-treated funds that are similar in terms of size and past performance. In addition, the effect of GNPO labels is also observed when we match funds for the sustainable investment attribute, size, and fees, as shown in Panel C.

Figure 2 illustrates the GNPO label effect around the month of label attribution (time 0). The graphs show cumulative flows of the treated sample compared to the two matched control samples. The graphs demonstrate that GNPO-labeled funds experience a steady increase in cumulative flows that becomes more pronounced post-awarding, suggesting a sustained positive impact of the GNPO label on cumulative fund flows. In contrast, the matched control sample shows a relatively flat trajectory in cumulative flows over the entire period, with significantly lower cumulative flows compared to the GNPO-labeled group.

[Figure 2 around here]

5.2. Heterogeneity of funds

Motivated by the evidence of increased flows to funds awarded with GNPO labels, we further investigate how heterogeneity in mutual funds affects investor responses. Specifically, we explore whether characteristics like past performance, size, and target investor profile influence investor reactions to the awarding of GNPO labels.

We start by investigating whether the flow response to GNPO labels varies according to fund past performance. An extensive literature has long recognized that investors chase past performance, allocating disproportionately larger flows to top performing funds (e.g., Chevalier & Ellison, 1997; Sirri & Tufano, 1998). Furthermore, studies show that investors rely on signals such Morninsgtar star ratings as proxy for past performance (Del Guercio & Tkac, 2008; Ben-David et al., 2022). Building on this, we question whether the GNPO flow effect is solely due to investors' preferences for sustainability or whether financial considerations remain influential in driving flows. To investigate how past performance influences the selection of funds with GNPO labels, we consider an additional dummy variable $Top\ stars$ identifying funds that are rated as five stars by Morninsgtar and add a triple

interaction between the $GNPO\ Label,\ Post,$ and $Top\ stars$ variables to the DID specification. If the coefficient of this interaction term is not statistically significant, this implies that the GNPO label appeals to genuinely non-pecuniary preferences. Conversely, if it is positive and significant, pecuniary preferences remain influential in investors' choice. The control variables are the same as in the previous analysis. The results, presented in columns (1) and (2) of Table 8, show a statistically significant coefficient of the triple interaction, indicating a stronger flow effect of the GNPO label for funds with five stars. Within funds receiving a GNPO label, investors prefer top-performing ones. Thus, while the results are consistent with investor's preferences for a salient sustainability label, they also suggest that pecuniary preferences still play a significant role. These results align with those of Ceccarelli et al. (2024), who observe that the flow effect of funds being labeled as LCD is stronger for those with higher stars.

[Table 8 around here]

We further investigate whether the effect of GNPO labels is stronger for funds more prone to information asymmetry, such as smaller funds. We anticipate that the release of a new sustainability signal likely exerts a larger influence on investors' perceptions due to the limited existing information available on smaller funds. To analyze whether the impact of awarding a GNPO label is influenced by fund size, we divide funds into deciles (with decile 1 encompassing the smallest funds and decile 10 the largest ones) and add a triple interaction term between the $GNPO\ Label,\ Post,$ and $Size\ decile$ variables to equation 3, where $Size\ decile$ is a variable identifying the fund size decile. Columns (3) and (4) of Table 8 show a negative and statistically significant coefficient for the triple interaction term, indicating that the flow impact of a GNPO label is higher for smaller funds compared to their larger counterparts, providing evidence of heterogeneous effects depending on fund size. Small funds awarded a GNPO label experience, on average, an increase of approximately 4% in flows compared to larger funds.

Finally, we investigate whether the flow response to GNPO labels varies depending on the target investor clientele of the fund. Mutual funds typically cater to diverse segments, particularly retail and institutional investors. Retail investors generally have less information and expertise compared to institutional investors. According to signaling theory, the greater the information asymmetry, the more impactful new sustainability signals become in shaping investment decisions. We expect that the attribution of a GNPO label could exert a higher influence on less-informed investors, such as retail investors. However, institutional investors might find additional assurance in GNPO label. Although institutional investors have the resources to conduct their own assessments, GNPO labels can still provide value by corroborating their internal research. The costly and third-party-endorsed nature of GNPO labels ensures their perception as high-quality signals, assisting institutional investors in

distinguishing credible schemes from misleading ones (Brito-Ramos et al., 2023). At the empirical level, studies such as Ammann et al. (2019) and Spaans et al. (2024) indicate that retail investors are more responsive to the arrival of new sustainability signals. On the other hand, Hartzmark and Sussman (2019) do not find a differential response of institutional and retail investors when funds receive the Morningstar globes. Similarly, Ceccarelli et al. (2024) observe minimal differences in the reactions of retail and institutional investors to the introduction of the LCD. However, they note that institutional investors exhibit distinct reactions to more detailed sustainability information, such as funds' carbon risk scores. To investigate whether the flow response to the awarding of a GNPO label is different for funds targeting more institutional investors, we add to equation (3) a triple interaction term between the $GNPO\ Label,\ Post,$ and $Institutional$ variables, where $Institutional$ is a dummy variable identifying funds targeting institutional investors.

Columns (5) and (6) of Table 8 present the results. The coefficients of the triple interaction variable are positive and statistically significant and maintain robustness to different fixed-effect controls. Funds awarded with a GNPO label that target institutional investors receive more than 1.3% flows, highlighting a distinct behavior between the institutional and retail segments in response to the awarding of a GNPO label. Institutional investors exhibit a more pronounced reaction to these labels compared to retail investors, consistent with the argument that institutional investors place more value in the sustainability information associated with GNPO labels, perceiving them as more credible.

5.3. Salience of GNPO labels over time

A compelling research question arises: does the flow effect associated with the awarding of a GNPO label persist over time, or is it temporary? Earlier studies highlight the significance of sustainability labels at their launch (Ammann et al., 2019; Hartzmark & Sussman, 2019; Ceccarelli et al., 2024). However, both Hartzmark and Sussman (2019) and Ceccarelli et al. (2024) suggest that, in equilibrium, the fund flow effect is not expected to persist without further changes in sustainability information. In addition, Gantchev et al. (2024) find evidence that labels like Morningstar globes lose their influence over time due to the trade-off between sustainability and performance. Overall, this motivates us to investigate whether the impact of labels is strongest upon introduction, prompting investors to adjust their portfolios during the initial hype, but eventually losing momentum and becoming short-lived.

To analyze the momentum of the GNPO label, we break down the $Post$ variable into two separate components. The first variable captures the immediate momentum following the initial awarding of the label, ranging from 1 to 3 ($Post_{1\text{-}3}$) or 6 ($Post_{1\text{-}6}$) months. The second variable aims to capture the remaining effect from months 4 ($Post_3$) or 7 ($Post_6$) onwards. Both variables are then interacted with the $GNPO\ label$ variable. Overall, the results presented in Table 9 highlight the momentum associated to awarding a GNPO label. The signs and significance of the double interaction

term show that the flow effect is more pronounced in the first six months following the attribution of the GNPO label than afterwards, highlighting the salience of signals around the time of their launch[12]. Over time, the impact of the GNPO label decreases. This finding aligns with the hypothesis that sustainability labels are most impactful when first introduced likely due to the heightened attention, but the influence diminishes over time, suggesting that while these labels serve as important signals initially, their long-term effect may wane as the market equilibrates.

[Table 9 around here]

5.4. A stacked DID test

Recent research highlights limitations in standard two-way fixed effects DID regressions applied to contexts of staggered treatment timing, particularly due to biases introduced by time-varying treatment effects (A. C. Baker et al., 2022). To address concerns regarding the validity of the DID design, we employ a stacked DID test as outlined by Cengiz et al. (2019). The approach is based on constructing separate samples (or stacks), each consisting of a particular treatment cohort (treated units sharing the same treatment event period) and all never-treated units. The stacks are then appended into one large dataset, which is used for the subsequent estimations of average treatment effects. This approach avoids comparisons between treated units and not-yet treated units, which may bias the average treatment effect estimates under heterogeneous treatment effects (Goodman-Bacon, 2021). Table 10 presents the results. The post period is set to the first six months after a fund is awarded a GNPO label. We use fund fixed effects and cluster standard errors by fund. The first result, which does not take into consideration our control variables, supports a significant positive effect of awarding a GNPO label on fund flows. The estimated size of the effect is 1% per month on average. The second model, including control variables, produces very similar results, confirming the robustness of the effect.

[Table 10 around here]

Having established the robustness of the main result to utilizing a stacked DID specification, we proceed by using this method to confirm the diminishing effect of awarding a GNPO label on fund flows described in Section 5.3. Figure 3 depicts the estimated average treatment effects from 4 quarters

[12] We further test the equality of the coefficients of two subsequent periods, with the results indicating that the coefficients of $Post_{1\text{-}6}$ are higher and statistically different from those of $Post_{6}$. The fact that the same conclusion cannot be reached with $Post_{1\text{-}3}$ and $Post_{3}$ suggests that the flow effect persists between 3 and 6 months.

before the treatment to 4 quarters after the treatment using the stacked DID approach. Monthly flows are aggregated into quarterly averages. Confidence intervals of 95% are plotted alongside the treatment effect estimates. The figure shows a positive impact of awarding a GNPO label on fund flows, which starts to fade away approximately two quarters after the event. Furthermore, this evidence is consistent with the results presented in Table 9, which indicate that the flow effect is strongest in the first 6 months.

[Figure 3 around here]

6. The impact of labels on funds with prior sustainability signals

6.1. The additional impact of a GNPO label

Labels aim to bridge the information gap between mutual funds and investors. Therefore, the impact of new sustainability signals may vary depending on investors' pre-existing information set and the perceived credibility of the new label. For funds that have previously not signaled any commitment to sustainability, the award of a GNPO label could serve as a strong initial endorsement, given the perceived credibility and rigorous standards associated with such institutions. Moreover, it can differentiate funds in an increasingly crowded marketplace. But do GNPO labels provide additional value for investors when funds already carry other sustainability signals? Extant literature identifies salient signals for investors, such as the Morningstar globes (Hartzmark & Sussman, 2019; Ammann et al. (2019), the LCD (Ceccarelli et al., 2024), and fund names (El Ghoul & Karoui, 2021; Cochardt et al., 2023). For a fund that already holds one or more of these sustainability signals, one can put forward several arguments supporting that the juxtaposition of a GNPO label alongside other labels could either amplify their importance, if perceived superior, or dilute it. On the one hand, the awarding of a GNPO label might be redundant, if other signals already provide investors information regarding a fund's sustainability practices, or if the GNPO label is perceived as redundant or less rigorous. On the other hand, based on signaling theory, the costly nature of GNPO labels implies that they serve as credible signals of high-quality sustainability standards (Brito-Ramos et al., 2023). If the signal conveyed by the GNPO label is salient and credible, it is likely to enhance the informativeness of funds' sustainability practices, potentially leading investors to upgrade their perception of GNPO-labeled funds.

In this section, we investigate how labels interact with existing ones by exploring the marginal impact of the awarding of a GNPO label when funds already hold other labels. We start by performing a DID regression analysis considering a triple interaction between the $Label$ and $Post$ variables and

each of the other labels. This term captures how the effect of the GNPO label (post-label variable) interacts with the presence of each existing sustainability label (one at a time). The results, presented in Table 11, show that receiving a GNPO label has a positive impact on fund flows, as shown by the positive and statistically significant coefficient of the double interaction variable. Furthermore, the coefficients of the triple interaction are also positive and statistically significant, indicating that the flow effect is stronger for funds holding top globes (4 or 5), holding the LCD, or holding an ESG name. Funds displaying top globes and the LCD experience an increase of flows of around 0.9 percent. Notably, the effect is stronger for funds with an ESG-related name, which benefit from an increase of around 3 percentage points in flows with the awarding of a GNPO label. In Table A5 of the Supplementary Appendix, we present robustness results considering normalized flows and matched control samples. Overall, the results are robust to these specifications.

[Table 11 around here]

We next explore whether the impact of a GNPO label varies depending on the set of prior sustainability signals held by the fund. Rather than investigating the effect of awarding a GNPO label when a fund holds one of the alternative labels in isolation, we categorize funds into three levels based on their sustainability credentials. Funds with low sustainability priors are characterized by a limited emphasis on sustainability. Accordingly, we assume that these funds hold three or fewer Morningstar globes, lack the LCD, and do not incorporate an ESG name. On the other extreme, we consider funds with high priors as those that manifest strong sustainability signals. They are distinguished by exhibiting at least two out of three of the following labels: four or five Morningstar globes, the LCD, and an ESG name. Funds with medium priors are funds that do not fit into the aforementioned categories and that hold just one sustainability signal. We then run a DID regression that considers triple interactions for the three levels of prior sustainability signals. The results, reported in Table 12, show that the coefficients of the triple interaction $GNPO\ Label_i \times Post_{i,t} \times Low\ /High\ /Medium\ priors$ are positive and statistically significant, indicating that awarding a GNPO label has a positive effect on fund flows, whatever the strength of prior sustainability signals funds hold. These findings are robust to using normalized flows and matched control samples, as presented in Table A6 of the Supplementary Appendix. If the flows observed after awarding a GNPO were only driven by sustainable preferences, we should not expect an increase in funds already signaling high sustainability credentials. The increase in flows in funds with high priors of sustainability thus suggests that investors perceive GNPO labels as an informative sustainability signal.

[Table 12 around here]

6.2. The additional impact of the SFDR

The SFDR classification scheme was introduced in March 2021, at a time when various other labeling schemes were already established. This subsection explores the impact of SFDR's implementation on fund flows within a crowded landscape of sustainability labels competing for investors' attention[13]. In our analysis, we treat existing signals as the initial beliefs or priors of investors, which then interact with new information introduced by the SFDR classification, specifically regarding whether a fund is categorized under Article 8 or Article 9. We employ a DID regression analysis that incorporates a triple interaction term among the Article 8(9) classification ($Article$), the period following the introduction of Article 8(9) ($Post\ Article$), and each of the pre-existing labels. A positive coefficient for this triple interaction would indicate that investors adjust their reactions based on the new information provided by the SFDR classification, even when they have prior information available. Controls and the fixed effects are similar to previous specifications and the analysis is conducted in the period July 2020 to December 2021. To isolate the effect of the SFDR label, we impose additional filters on the sample. For analyzing the effect of Article 8, we exclude all funds with Article 9 from the counterfactual, and vice-versa.

The findings, detailed in Table 13, indicate that funds already possessing a prior label witness a more pronounced growth in flows after being categorized under Article 8 or 9 of the SFDR, in comparison to funds lacking such a label. Specifically, for Article 8, the magnitude of the triple interaction coefficient is notably higher for funds with an ESG Name. For Article 9, the coefficient is more significant for funds that carry a GNPO label or an ESG name. Across both classifications, it is observed that the coefficient is smaller in the case of the LCD label. In Table A8 of the Supplementary Appendix, we present additional specifications for robustness analyses. The results are robust to using normalized flows. When using matched control samples, the triple interaction coefficients with the LCD and the top globes lose significance. Notably, the results indicate that whatever scenario is considered, funds holding GNPO labels and the ESG name experience increased flows when they are signaled with a regulation-based label.

[Table 13 around here]

[13] We have also analyzed the impact of the SFDR classification controlling for the globes, fund characteristics, and different fixed effects but results are not presented in the manuscript for the sake of space. The results of the DID regressions presented in table A7 of the Supplementary Appendix, confirm the flow effect after funds are classified as Articles 8 and 9. Our findings are comparable to those of Emiris et al. (2023), who find that funds experience increased flows of 1.2 percent after the SFDR came into force. Additionally, we also find that the flow effect is stronger for funds targeting to institutional investors.

We further investigate if the effect of funds being categorized under Articles 8 and 9 varies based on the pre-existing level of sustainability signals these funds already possess. Following the approach outlined in Section 6.1., we classify sustainability signals into three levels: low, medium, and high. Low priors correspond to funds holding three or fewer globes, lacking a GNPO label and the LCD, and not having an ESG name. High priors correspond to fund holding three out of the four labels: the GNPO label, 4 or 5 globes, the LCD and an ESG name. Medium priors comprise funds that are not included in the previous categories as they hold only one sustainability label. We then conduct a DID regression analysis that includes triple interactions for these three levels of prior sustainability signals. The outcomes are detailed in Table 14. The table reveals that funds classified under Article 8 or 9 see an increase in flows regardless of their pre-SDFR classification sustainability signals. Notably, the flow increase is more pronounced for Article 8 funds with high pre-existing sustainability signals and for Article 9 funds with low pre-existing signals.

These findings hold when analyzing normalized flows, supporting the robustness of our results. However, the statistical significance of these results diminishes when employing matched control samples. Specifically, for Article 8, a statistically significant increase in flows is only observed for funds with high sustainability signals, while for Article 9, the coefficients are not statistically significant. This reduction in significance may be attributed to the decreased number of observations resulting from the matching process. Thus the results, presented in Table A9 of the Supplementary Appendix, must be interpreted with caution.

[Table 14 around here]

7. Conclusions

Sustainability labels and certification of financial products aim to mitigate informational asymmetries, increase transparency, and facilitate investors' decision-making process when it comes to selecting sustainable funds. Currently, investors can choose from various sustainability labels, including ESG ratings from commercial data vendors, ESG-related designations in fund names, or the Article 8 and 9 classifications of the SFDR in the EU. Another distinctive feature of EU markets is the existence of labels sponsored by governments and non-profit organizations. However, the literature has not thoroughly examined the relevance of GNPO labels or how they compete with other sustainability signals. This paper fills this gap by investigating investors' reactions to GNPO labels in an environment where multiple labels coexist. Drawing on a dataset of equity funds sold in Europe, our initial findings confirm European investors' preferences for sustainable investments over the period January 2019 to December 2021, with GNPO labels standing out as salient signals. Next, using a difference-in-

difference approach, we find that funds receiving a GNPO label attract significantly higher flows compared to those that do not receive such label. This positive effect on flows is robust to alternative regressions considering several fixed effects, matched samples, and normalized flows. Our results further show that the flow response is heterogenous, as it is more pronounced for top-performing funds, small funds, and funds targeted to institutional investors. Notably, our findings suggest that the flow increase associated with a GNPO label is temporary, reflecting the momentum of sustainability signals. This aligns with the hypothesis that the salience of sustainability labels peaks upon their attribution, leading to initial portfolio adjustments, but subsequently diminishes as the novelty effect fades.

Another interesting finding is that the positive impact of a GNPO label is still observed when funds already exhibited some prior sustainability labels, suggesting a GNPO label may provide additional credibility valued by investors. Additionally, our investigation into Article 8 and 9 classifications highlights the influence of the SFDR on investor decision-making. Overall, investors respond strongly to new signals even if they already possess some information on funds' sustainability features. This could be due to the salience of new signals or their perceived credibility. However, our findings regarding the temporary effect of a GNPO label suggest investors react positively to the initial launch of new sustainability signals, but the effect is short-lived. Combined with the observed response to the introduction of the SFDR, the salience of information emerges as a plausible channel driving investor decision-making.

Our results have important implications for policy regulation, as labels represent an important instrument for the allocation of capital resources to investments that support the transition to a greener and sustainable economy. As such, the EU continues to actively promote transparency and disclosure on sustainability integration within mutual funds. This includes a potential review of the SFDR that could address a new sustainability product categorization system.[14] Regulatory bodies in other countries are also advancing sustainable finance regulations that will likely impact the landscape of sustainability labeling. For instance, the Financial Conduct Authority in the UK is implementing a new Sustainable Disclosure Regulation which includes measures such as a labeling regime for investment funds.[15] The issue is also at the forefront of discussions in the US, with the Securities and Exchange Commission considering a proposal that would require enhanced disclosures by investment companies regarding their ESG practices, potentially including a future categorization system.[16] Our findings are informative for shaping policy proposals to be issued for consultation in the near future.

[14] https://finance.ec.europa.eu/regulation-and-supervision/consultations/finance-2023-sfdr-implementation_en
[15]https://www.fca.org.uk/publications/policy-statements/ps23-16-sustainability-disclosure-requirements-investment-labels
[16] https://www.sec.gov/files/rules/proposed/2022/33-11068.pdf

References

Ammann, M., Bauer, C., Fischer, S., & Müller, P. (2019). The impact of the Morningstar Sustainability Rating on mutual fund flows. *European Financial Management*, *25*(3), 520-553.

Anderson, A., & Robinson, D. T. (2022). Financial literacy in the age of green investment. *Review of Finance*, *26*(6), 1551-1584.

Apostolakis, G., Kraanen, F., & van Dijk, G. (2016). Examining pension beneficiaries' willingness to pay for a socially responsible and impact investment portfolio: A case study in the Dutch healthcare sector. *Journal of Behavioral and Experimental Finance*, *11*, 27-43.

Atkinson, L., & Rosenthal, S. (2014). Signaling the green sell: The influence of eco-label source, argument specificity, and product involvement on consumer trust. *Journal of Advertising, 43*(1), 33–45.

Arbaa, O., & Varon, E. (2019). The performance and fund flows of name-change funds. *Journal of Behavioral and Experimental Finance, 22*, 7-13.

Baker, M., Egan, M. L., & Sarkar, S. K. (2022). *How Do Investors Value ESG?*. Working Paper National Bureau of Economic Research No. w30708. https://www.nber.org/papers/w30708

Baker, A. C., Larcker, D. F., & Wang, C. C. (2022). How much should we trust staggered difference-in-differences estimates?. *Journal of Financial Economics*, *144*(2), 370-395.

Barber, B. M., Odean, T., & Zheng, L. (2005). Out of sight, out of mind: The effects of expenses on mutual fund flows. *The Journal of Business*, *78*(6), 2095-2120.

Bauer, R., Ruof, T., & Smeets, P. (2021). Get real! Individuals prefer more sustainable investments. *The Review of Financial Studies*, *34*(8), 3976-4043.

Becker, MG, Martin, F, & Walter, A (2022). The power of ESG transparency: The effect of the new SFDR sustainability labels on mutual funds and individual investors. *Finance Research Letters*, 102708.

Ben-David, I., Li, J., Rossi, A., & Song, Y. (2022). What do mutual fund investors really care about? *The Review of Financial Studies*, *35*(4), 1723-1774.

Bollen, N. P. (2007). Mutual fund attributes and investor behavior. *Journal of Financial and Quantitative Analysis*, *42*(3), 683-708.

Brécard, D. (2014). Consumer confusion over the profusion of eco-labels: Lessons from a double differentiation model. *Resource and Energy Economics*, *37*, 64-84.

Brito-Ramos, S., Cortez, M. C., Silva, F. (2023). Do Sustainability Signals Diverge? An Analysis of Labeling Schemes for Socially Responsible Investments, *Business & Society*. Advance Online First.

Capotă, L. D., Giuzio, M., Kapadia, S., & Salakhova, D. (2022). Are ethical and green investment funds more resilient?. ECB Working Paper No. 2022/2747.

https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2747~1b6db3db8d.en.pdf

Ceccarelli, M., Glossner, S., & Homanen, M. (2023). Catering through transparency: Voluntary ESG disclosure by asset managers and fund flows. *Available at SSRN 4110596*.

Ceccarelli, M., Ramelli, S., & Wagner, A. F. (2024). Low-carbon mutual funds. *Review of Finance*, *28*(1), 45-74

Chevalier, J., & Ellison, G. (1997). Risk taking by mutual funds as a response to incentives. *Journal of Political Economy*, *105*(6), 1167-1200.

Cengiz, D., Dube, A., Lindner, A., & Zipperer, B. (2019). The effect of minimum wages on low-wage jobs. *The Quarterly Journal of Economics*, *134*(3), 1405-1454.

Cochardt, A., Heller, S., & Orlov, V. (2023). Do mutual funds greenwash? Evidence from Fund Name Changes. *SSRN Working Paper*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4401084

Cooper, M. J., Gulen, H., & Rau, P. R. (2005). Changing names with style: Mutual fund name changes and their effects on fund flows. *The Journal of Finance*, *60*(6), 2825-2858.

Crifo, P., Durand, R., & Gond, J. P. (2020). Le rôle des labels dans la finance verte: construction et régulation d'un marché des labels en France. *Revue d'Economie Financière*, *138*(2), 209-223.

Dekhili, S., & Achabou, M. A. (2014). Eco-labelling brand strategy: Independent certification versus self-declaration. *European Business Review*, *26*(4), 305-329.

Del Guercio, D., & Tkac, P. A. (2008). Star power: The effect of Morningstar ratings on mutual fund flow. *Journal of Financial and Quantitative Analysis*, *43*(4), 907-936.

Dikolli, S. S., Frank, M. M., Guo, Z. M., & Lynch, L. J. (2022). Walk the talk: ESG mutual fund voting on shareholder proposals. *Review of Accounting Studies*, *27*(3), 864-896

Dimson, E., Karakaş, O., & Li, X. (2015). Active ownership. *The Review of Financial Studies*, *28*(12), 3225-3268.

EFAMA. (2021). *Market Insights -the European ESG market at end Q1 2021 – introducing the SFDR*. https://www.efama.org/newsroom/news/european-esg-market-q1-2021-introducing-sfdr-market-insights-issue-7

El Ghoul, S., & Karoui, A. (2021). What's in a (green) name? The consequences of greening fund names on fund flows, turnover, and performance. *Finance Research Letters, 39*, 101620.

Emiris, M., Harris, J., & Koulischer, F. (2023). *The Effect of Environmental Preferences on Investor Responses to ESG Disclosure*. SSRN Working Paper https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4457989

Erdem, T., & Swait, J. (1998). Brand equity as a signaling phenomenon. *Journal of Consumer Psychology*, *7*(2), 131-157.

European Commission. (2024). *Summary report: public and targeted consultations on the implementation of the Sustainable Finance Disclosures Regulation (SFDR)*. https://finance.ec.europa.eu/document/download/0f2cfde1-12b0-4860-b548-0393ac5b592b_en?filename=2023-sfdr-implementation-summary-of-responses_en.pdf

Eurosif. (2022). *EU Sustainable Finance & SFDR: making the framework fit for purpose*. https://www.eurosif.org/news/eurosif-report-2022/

Evans, R. B., & Sun, Y. (2021). Models or stars: The role of asset pricing models and heuristics in investor risk adjustment. *The Review of Financial Studies*, *34*(1), 67-107.

Fang, D., Holmen, M., & Mavruk, T. (2021). Meeting new peers: The effects of Morningstar category reassignment on fund flows and star ratings. *International Review of Financial Analysis*, 101842.

Ferriani, F., & Natoli, F. (2021). ESG risks in times of Covid-19. *Applied Economics Letters*, *28*(18), 1537-1541.

Ferriani, F. (2023). The importance of labels for sustainable investments: SFDR versus Morningstar globes. *Applied Economics Letters*. Advance Online First. https://doi.org/10.1080/13504851.2023.2208326

Flammer, C., Toffel, M. W., & Viswanathan, K. (2021). Shareholder activism and firms' voluntary disclosure of climate change risks. *Strategic Management Journal*, *42*(10), 1850-1879.

Gantchev, N., Giannetti, M., & Li, R. (2024). Sustainability or performance? Ratings and fund managers' incentives. *Journal of Financial Economics*, *155*, 103831.

Gibbon, K., Derwall, J., Gerritsen, D., & Koedijk, K. (2023). *Renaming with purpose: Investor response and fund manager behaviour after fund ESG-renaming*. SSRN Working Paper-.https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4614978

Gibson Brandon, R., Glossner, S., Krueger, P., Matos, P., & Steffen, T. (2022). Do responsible investors invest responsibly?. *Review of Finance*, *26*(6), 1389-1432.

Giglio, S., Maggiori, M., Stroebel, J., Tan, Z., Utkus, S., & Xu, X. (2023). *Four facts about ESG beliefs and investor portfolios* (No. w31114). National Bureau of Economic Research. https://www.nber.org/papers/w31114

Goodman-Bacon, A. (2021). Difference-in-differences with variation in treatment timing. *Journal of Econometrics*, *225*(2), 254-277.

Gounopoulos, D., Wu, H., & Zhao, B. (2023*). Talk vs. Walk: Lessons from Silent Sustainable Investing of Mutual Funds*. SSRN Working Paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4602285

Gutsche, G., & Ziegler, A. (2019). Which private investors are willing to pay for sustainable investments? Empirical evidence from stated choice experiments. *Journal of Banking & Finance*, *102*, 193-214.

Gutsche, G., & Zwergel, B. (2020). Investment barriers and labeling schemes for socially responsible investments. *Schmalenbach Business Review*, *72*, 111–157.

Hartzmark, S. M., & Sussman, A. B. (2019). Do investors value sustainability? A natural experiment examining ranking and fund flows. *The Journal of Finance*, *74*(6), 2789-2837.

Heeb, F., Kölbel, J. F., Paetzold, F., & Zeisberger, S. (2023). Do investors care about impact?. *The Review of Financial Studies*. *36*(5), 1737-1787.

Huij, J., Laurs, D., Stork, P., & Zwinkels, R. C. (2023). Are Investors Paying to Be Green? Evidence from Mutual Funds. Working Paper. https://www.fcm.uni-hannover.de/fileadmin/fmt/Conference_on_Climate_and_Energy_Finance/Session_1A/Are_Investors_Paying_to_Be_Green_Evidence_from_Mutual_Funds.pdf

Kaniel, R., & Parham, R. (2017). WSJ Category Kings–The impact of media attention on consumer and mutual fund investment decisions. *Journal of Financial Economics*, *123*(2), 337-356.

Kim, H. D., Kim, T., Kim, Y., & Park, K. (2019). Do long-term institutional investors promote corporate social responsibility activities?. *Journal of Banking & Finance*, *101*, 256-269.

Krueger, P., Sautner, Z., and Starks, L. T. (2020). The importance of climate risks for institutional investors, *Review of Financial Studies* 33, 1067–1111

Leippold, M., & Rueegg, R. (2020). How rational and competitive is the market for mutual funds?. *Review of Finance*, *24*(3), 579-613.

Megaeva, K., Engelen, P. J., & Van Liedekerke, L. (2021). *A Comparative Study of European Sustainable Finance Labels*. SSRN Working Paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3790435

Mishra, D. P., Heide, J. B., & Cort, S. G. (1998). Information asymmetry and levels of agency relationships. *Journal of Marketing Research*, *35*(3), 277-295.

Mugerman, Y., Steinberg, N., & Wiener, Z. (2022). The exclamation mark of Cain: Risk salience and mutual fund flows. *Journal of Banking & Finance*, 134, 106332.

Nishi, H., Peabody, S. D., Sherrill, E., & Upton, K. (2024). *Shades of Green: The Effect of Sfdr Downgrades on Fund Flows and Sustainability Risk*. SSRN Working Paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4814593

Nofsinger, J., & Varma, A. (2014). Socially responsible funds and market crises. *Journal of Banking & Finance*, *48*, 180-193.

Nofsinger, J. R., & Varma, A. (2023). Keeping promises? Mutual funds' investment objectives and impact of carbon risk disclosures. *Journal of Business Ethics*, *183*, 493-516

Novethic. (2022, May). Overview of European sustainable finance labels. https://www.novethic.com/fileadmin//user_upload/tx_ausynovethicetudes/pdf_complets/Novethic_Panorama_des_Labels_2022_Mai_Etude_ENG.pdf

Pástor, Ľ., & Vorsatz, M. B. (2020). Mutual fund performance and flows during the COVID-19 crisis. *The Review of Asset Pricing Studies*, *10*(4), 791-833.

Reboredo, J. C., & Otero, L. A. (2021). Are investors aware of climate-related transition risks? Evidence from mutual fund flows. *Ecological Economics*, *189*, 107148.

Riedl, A., & Smeets, P. (2017). Why do investors hold socially responsible mutual funds?. *The Journal of Finance*, *72*(6), 2505-2550.

Rossi, M., Sansone, D., Van Soest, A., & Torricelli, C. (2019). Household preferences for socially responsible investments. *Journal of Banking & Finance*, *105*, 107-120.

Scherer, B., & Hasaj, M. (2023). Greenlabelling: How valuable is the SFDR Art 9 label?. *Journal of Asset Management*, *24*(7), 541-546.

Sirri, E. R., & Tufano, P. (1998). Costly search and mutual fund flows. *The Journal of Finance*, *53*(5), 1589-1622.

Spaans, L., Derwall, J., Huij, J., & Koedijk, K. (2024). *Sustainable Finance Disclosure Regulation: Voluntary Signaling or Mandatory Disclosure?*. SSRN Working Paper. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4722820

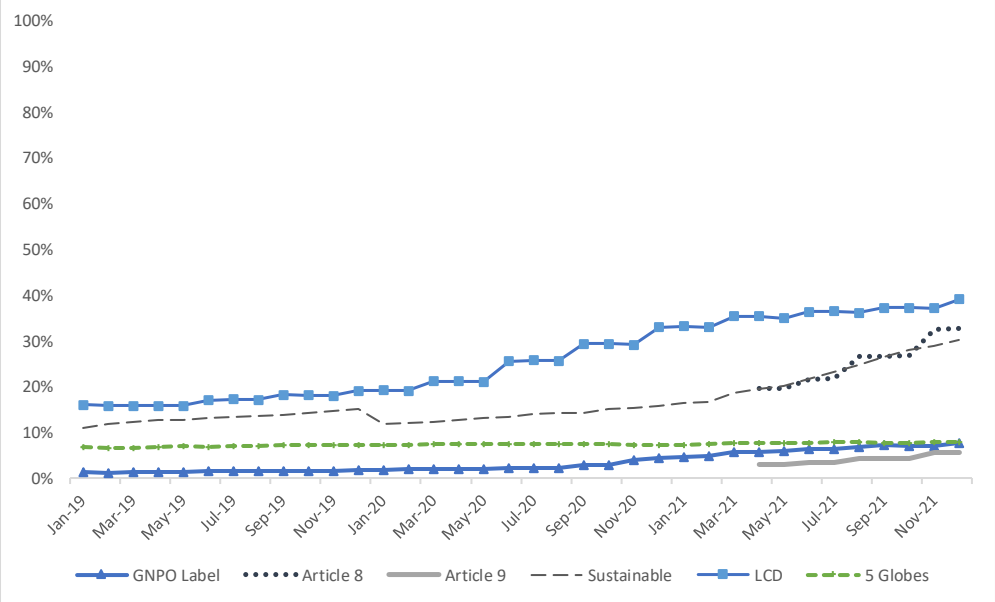
Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, *87*(3), 355-374.

Stroebel, J., & Wurgler, J. (2021). What do you think about climate finance?. *Journal of Financial Economics*, *142*(2), 487-498.

UNCTAD - United Nations Conference on Trade and Development. (2023). *World Investment Report 2023*. United Nations. https://unctad.org/system/files/official-document/wir2023_en.pdf

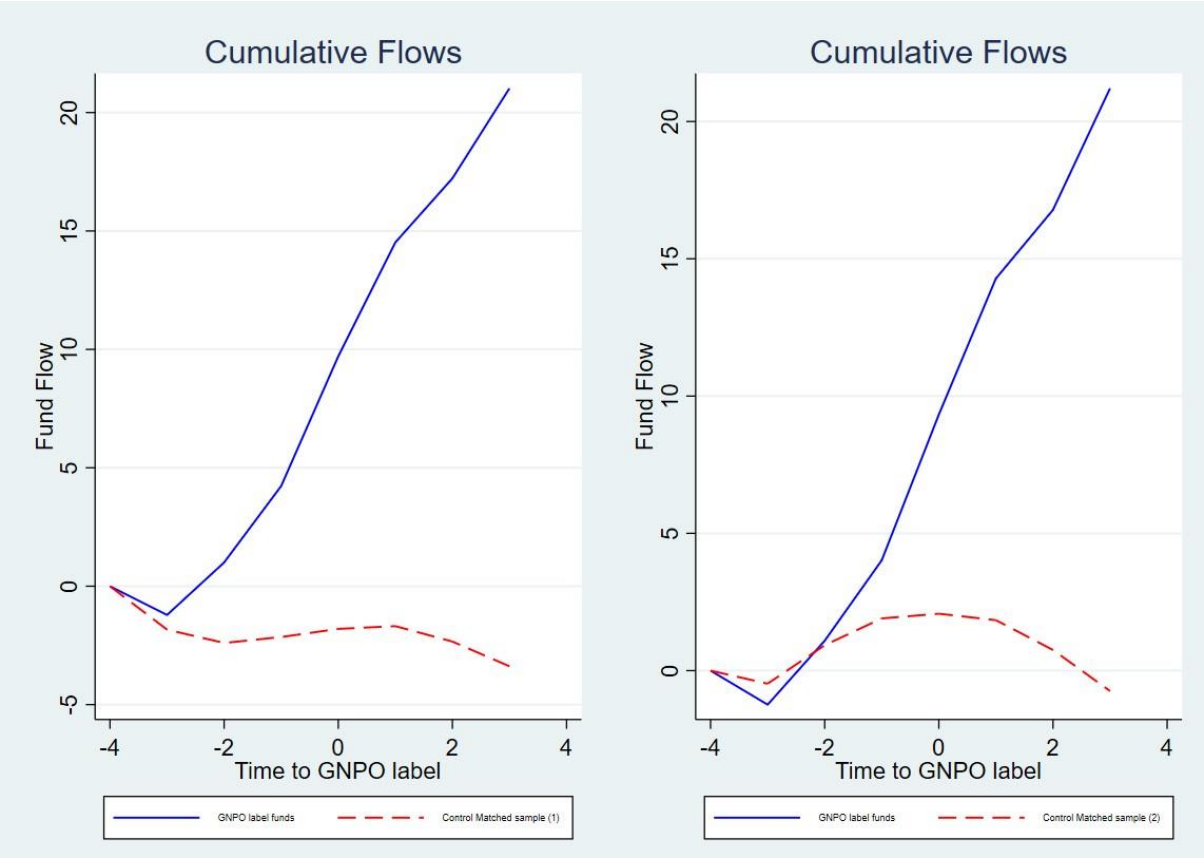
Figures and Tables

Figure 1: Percentage of funds with sustainable labels from all equity funds sold in Europe



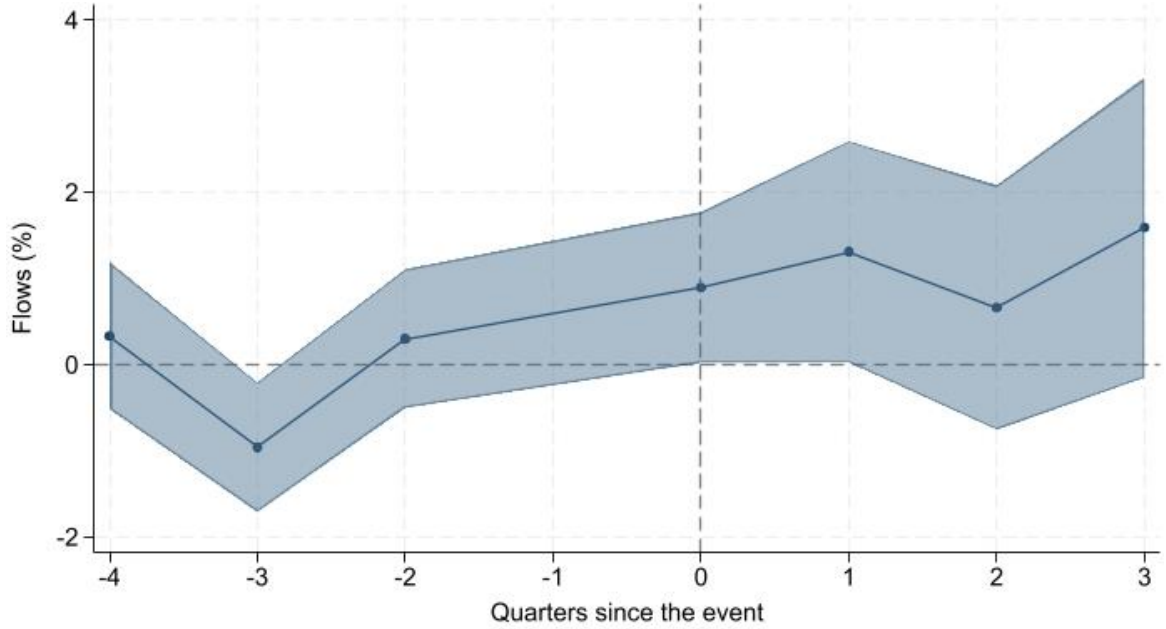
This figure reports the percentage of equity funds holding sustainability labels over the period January 2019 to December 2021 considering the entire dataset of equity funds that are registered for sale in EU countries. GNPO Label refers to funds holding a label sponsored by a government or non-private organization. LCD identifies funds holding the Morningstar Low Carbon Designation, and 5 Globes refers to funds awarded with the top Morningstar sustainability rating (5 globes). Article 8 and 9 identify funds that after March 2021 used the SFDR to disclose their level of sustainability. Sustainable corresponds to funds classified as having Sustainable intentions or as Socially Responsible Fund/Socially Conscious fund by Morningstar.

Figure 2: Median flows and cumulative flows for GNPO labels and matched control sample



This figure depicts the cumulative flows for funds with GNPO labels compared to matched control samples. The matched control sample in the left graph is based on fund size and stars, while the one on the right graph is based on fund size, fees, and the sustainable investment attribute. The horizontal axis represents time relative to the awarding of the GNPO label (time = 0).

Figure 3: Average treatment effect estimates



This figure shows the average treatment effect estimates, based on quarterly average flows, and their 95% confidence intervals, according to the stacked DID method. The x-axis represents the number of quarters that have passed since the labeling event (treatment). For example, q=0 contains the event month and the two months following the event. The y-axis represents the average treatment effect on monthly fund flows, averaged at the quarterly level.

Table 1: Labeling schemes for investment funds in the European Union

Labels		Introduction date	Sponsor
Panel A - GNPO labels			
ESG	French ISR	January 2016	Ministry of Economic and Finance (French Government)
	Belgian Towards Sustainability	February 2019	Febelfin (the Belgian financial sector federation)
	FNG	2015	Forum Nachhaltige Geldanlagen (FNG), the German Forum for Responsible Investment
	Austrian Ecolabel	1990/2004 for financial products	Austrian Ministry for Sustainable Development and Tourism
	Luxflag ESG	May 2014	Luxembourg Labeling Agency (LuxFLAG)
	Nordic Swan	1989/ June 2017 for financial products	Nordic Council of Ministers
Green	French Greenfin	December 2015	Ministry of Transition Ecological and Solidarity (French Government)
	Luxflag Climate Finance	September 2016	Luxembourg Labeling Agency (LuxFLAG)
	Luxflag Environment	June 2011	Luxembourg Labeling Agency (LuxFLAG)
Panel B – Labels awarded by Morningstar			
	Morningstar Globes	March 2016	Morningstar
	Morningstar LCD	April 2018	Morningstar
Panel C – Self-assigned labels of sustainability			
	Article 8/Article 9	March 2021	Sustainable Financial Disclosure Regulation

This table presents the main sustainability labels of mutual funds in EU countries. The introduction date and the nature of the sponsor are also reported.

Table 2: Number of funds in the dataset by domicile

Domicile	Total		Identified as Sustainable by Morningstar	GNPO Label	LCD	ESG Name	5 Globes	Article 8	Article 9
	Freq.	Percent							
Austria	229	3.18	59	25	124	20	22	55	1
Belgium	149	2.07	45	24	56	20	22	49	8
Denmark	300	4.16	130	34	183	19	20	146	14
Estonia	6	0.08	0	0	1	0	2	0	0
Finland	209	2.90	101	8	102	12	28	81	5
France	917	12.72	423	205	493	61	138	293	58
Germany	359	4.98	86	22	197	32	38	72	3
Ireland	953	13.22	216	33	450	74	88	227	21
Italy	104	1.44	24	0	35	7	7	26	1
Luxembourg	2856	39.62	906	284	1445	272	233	935	144
Netherlands	136	1.89	82	2	63	40	18	61	26
Norway	54	0.75	24	0	29	1	5	32	2
Portugal	41	0.57	10	0	14	3	6	13	1
Slovenia	19	0.26	0	0	9	0	0	0	0
Spain	363	5.04	71	1	155	6	19	52	0
Sweden	317	4.40	223	13	218	6	46	253	20
Switzerland	16	0.22	4	0	9	2	1	4	0
United Kingdom	175	2.43	22	2	99	18	31	7	1
United States	5	0.07	3	0	3	0	1	0	0
Total	7208	100	2429	653	3685	593	725	2303	305

This table reports the number and percentage of equity funds in the final dataset by domicile. It also reports the number of funds holding a GNPO label, classified as Sustainable by Morningstar, holding the Morningstar LCD, with ESG related words in its name, with the top Morningstar sustainability rating (5 Globes), and classified as Article 8 or Article 9 of the SFDR. The number of funds with 5 Globes and with a ESG name refer to December 2021.

Table 3: Descriptive statistics

VARIABLES	Obs	Mean	Std. Dev.	Min	Max
Panel A - All sample Jan 2019-Dec2021					
Flows	199,346	-0.17	6.28	-22.17	41.58
Normalized Flows	199,346	49.96	28.91	0.00	100.00
Fund size (million US$)	199,336	617	7,918	1	1,919,000
Fund age (in years)	199,346	15.45	9.40	1.08	87.61
12-month returns (%)	199,346	12.30	19.50	-60.60	173.70
12-month volatility (%)	199,346	5.30	1.90	0.40	20.40
Stars	198,586	3.14	1.12	1.00	5.00
Fees (%)	199,346	1.40	0.62	0.05	4.19
Institutional	199,346	0.34	0.47	0.00	1.00
Sustainable	199,346	0.36	0.48	0.00	1.00
Globes	199,346	3.17	1.09	1.00	5.00
LCD	199,346	0.54	0.50	0.00	1.00
GNPO Label	199,346	0.10	0.30	0.00	1.00
ESG Name	199,346	0.08	0.27	0.00	1.00
Article 8	199,346	0.35	0.48	0.00	1.00
Article 9	199,346	0.04	0.20	0.00	1.00
Panel B - GNPO-labeled funds (Treated sample) Jan 2019-March 2021					
Flows	4,586	0.73	6.74	-22.17	41.58
Normalized Flows	4,586	54.82	28.70	0.00	100.00
Fund size (million US$)	4,586	613	2,161	1	123,700
Fund age (in years)	4,586	15.62	8.10	1.10	37.46
12-month returns (%)	4,586	5.70	13.10	-34.60	83.20
12-month volatility (%)	4,586	5.40	1.80	1.10	14.30
Stars	4,578	3.33	1.08	1.00	5.00
Fees (%)	4,586	1.38	0.53	0.12	3.95
Institutional	4,586	0.34	0.47	0.00	1.00
Sustainable	4,586	0.92	0.27	0.00	1.00
Globes	4,586	3.58	1.08	1.00	5.00
LCD	4,586	0.66	0.47	0.00	1.00
GNPO Label	4,586	1.00	0.00	1.00	1.00
ESG Name	4,586	0.23	0.42	0.00	1.00

This table reports descriptive statistics of fund characteristics. Panel A shows the characteristics for the all sample comprising equity funds available for sale in EU countries considering the period January 2019 to December 2021. Panel B presents the characteristics for the treated sample composed of equity funds that were awarded a GNPO label during the period January 2019 to March 2021. All variables are computed at the fund level. Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$, Normalized Flows correspond to percentiles of the net flows' rankings within fund size deciles. LCD, GNPO Label, ESG Name, Article 8 and Article 9 are dummies taking the value 1 if the fund was awarded the LCD, a GNPO label, its name contains ESG-related designations, is classified as SFDR Article 8 or 9, respectively, and zero otherwise. Globes corresponds to Morningstar sustainability ratings (with a scale 1 to 5 globes). Sustainable is a dummy variable identifying funds flagged as Sustainable by Morningstar. Fund size refers to TNA in million USD and Fund age is in years. Fees are measured by Morningstar ongoing charge variable. Past returns is measured by previous 12-month returns and volatility by the standard deviation of returns in previous 12 months (12-month volatility. Stars refer to Morningstar performance ratings (with a scale 1 to 5 stars). Institutional is a dummy variable identifying institutional funds, which we define as those with more than 50% of assets stemming from institutional share classes.

Table 4: GNPO labels and other sustainability signals

GNPO	Sustainable	LCD	1 Globe	2 Globes	3 Globes	4 Globes	5 Globes	Article 8	Article 9	ESG Name
No	25,096	62,987	14,091	36,553	70,276	48,852	21,467	12,241	947	13,290
Yes	6,461	4,335	155	859	1,860	2,728	2,505	1,825	765	2,874
Total	31,557	67,322	14,246	37,412	72,136	51,580	23,972	14,066	1,712	16,164
%	20%	6%	1%	2%	3%	5%	10%	13%	45%	18%

This table reports the frequencies of GNPO-labeled funds across other sustainability signals considering the period January 2019 to December 2021.

Table 5: Pairwise Correlation between the sustainability labels

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) GNPO Label	1.000						
(2) LCD	0.052*	1.000					
(3) Sustainable	0.240*	0.133*	1.000				
(4) ESG Name	0.138*	0.069*	0.338*	1.000			
(5) Article 8	0.116*	0.124*	0.496*	0.156*	1.000		
(6) Article 9	0.173*	0.081*	0.222*	0.265*	-0.055*	1.000	
(7) Globes	0.078*	0.243*	0.176*	0.121*	0.139*	0.094*	1.000

This table reports Pearson pairwise correlations between the different variables measuring sustainability features considering the period January 2019 to December 2021.

Table 6: Fund flows and sustainability signals

VARIABLES	Flows			Normalized Flows		
	2019-2021	2019-2021	April-Dec 2021	2019-2021	2019-2021	April-Dec 2021
	(1)	(2)	(3)	(4)	(5)	(6)
GNPO Label		0.749***	0.382***		3.209***	1.506*
		(0.099)	(0.139)		(0.567)	(0.872)
LCD		0.038	-0.194**		0.129	-0.671
		(0.056)	(0.083)		(0.344)	(0.540)
ESG Name		0.849***	0.439***		4.183***	3.906***
		(0.110)	(0.147)		(0.604)	(0.900)
Article 8			0.337***			1.924***
			(0.075)			(0.561)
Article 9			0.307*			1.499
			(0.182)			(1.176)
1 Globe	0.023	0.054	0.233	-0.957*	-0.816	0.751
	(0.096)	(0.096)	(0.142)	(0.531)	(0.532)	(0.918)
2 Globes	0.031	0.049	-0.018	0.002	0.083	0.111
	(0.056)	(0.056)	(0.082)	(0.310)	(0.312)	(0.554)
4 Globes	0.076	-0.006	-0.020	0.968***	0.588**	0.648
	(0.049)	(0.048)	(0.078)	(0.276)	(0.274)	(0.497)
5 Globes	0.244***	0.056	-0.021	1.992***	1.128***	0.384
	(0.075)	(0.074)	(0.106)	(0.407)	(0.403)	(0.667)
12-month volatility	0.019	0.021	-0.031	-0.007	0.001	-0.560***
	(0.019)	(0.019)	(0.032)	(0.099)	(0.099)	(0.211)
12-month return	0.042***	0.042***	0.024***	0.239***	0.239***	0.162***
	(0.002)	(0.002)	(0.003)	(0.010)	(0.010)	(0.015)
Log size	0.078***	0.057***	-0.064***	-0.888***	-0.980***	-0.877***
	(0.019)	(0.019)	(0.023)	(0.097)	(0.097)	(0.151)
Log age	-0.438***	-0.403***	-0.326***	-3.244***	-3.078***	-3.771***
	(0.039)	(0.039)	(0.048)	(0.234)	(0.233)	(0.344)
Fees	-0.067	-0.066	0.033	-2.384***	-2.369***	-2.486***
	(0.045)	(0.044)	(0.056)	(0.285)	(0.285)	(0.459)
1 Star	-0.573***	-0.561***	-0.605***	-4.712***	-4.662***	-4.270***
	(0.079)	(0.079)	(0.116)	(0.445)	(0.445)	(0.760)
2 Stars	-0.329***	-0.329***	-0.495***	-2.847***	-2.853***	-3.512***
	(0.047)	(0.047)	(0.074)	(0.262)	(0.262)	(0.465)
4 Stars	0.389***	0.361***	0.306***	2.698***	2.567***	2.380***
	(0.046)	(0.046)	(0.074)	(0.251)	(0.250)	(0.457)
5 Stars	1.397***	1.335***	1.001***	8.421***	8.140***	6.820***
	(0.073)	(0.072)	(0.101)	(0.380)	(0.377)	(0.644)
Constant	-1.290***	-1.106***	1.065**	74.051***	74.818***	74.842***
	(0.388)	(0.388)	(0.493)	(1.954)	(1.956)	(3.086)
Observations	198,388	198,388	50,550	198,388	198,388	50,542
R-squared	0.065	0.067	0.038	0.104	0.107	0.125
Category & Family & Time FE	YES	YES	YES	YES	YES	YES

This table reports the results from pooled regressions of monthly fund flows on sustainability signals and lagged fund characteristics (Equation 2). Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$, Normalized Flows correspond to percentiles of the net flows' rankings within fund size deciles. GNPO Label, LCD, ESG Name, Article 8 and Article 9 are dummies taking the value 1 if the fund was awarded a GNPO label, the LCD, the fund name contains ESG-related designations, is classified as SFDR Article 8 or 9, respectively, and zero otherwise. Globes corresponds to Morningstar sustainability ratings (with a scale of 1 to 5 globes). Dummy variables are considered for 4 of the ratings, with 3 as the reference rating. Past returns is measured by previous 12-month returns and volatility is measured by the standard deviation of returns in the previous 12 months (12-month volatility). Stars refer to Morningstar performance ratings (with a scale of 1 to 5 stars). As with Globes, 4 dummy variables are included, with 3 as the reference rating. Size is measured as the logarithm of TNA in USD and age as the logarithm of fund age. Fees are measured by Morningstar ongoing charge variable. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 7: The effect of the awarding GNPO labels on fund flows

VARIABLES	Flows			Normalized Flows		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - Treated and control sample						
GNPO Label x Post	1.240***	1.148***	0.733*	4.908***	4.623***	3.995***
	(0.319)	(0.314)	(0.384)	(1.422)	(1.420)	(1.454)
Observations	138,048	137,867	137,981	138,048	137,867	137,981
R-squared	0.072	0.117	0.149	0.114	0.158	0.233
Controls	YES	YES	YES	YES	YES	YES
Category & Family & Time FE	YES			YES		
Family & Category * Time FE		YES			YES	
Fund & Time FE			YES			YES
Panel B - Treated and matched control sample based on fund size and star ratings						
GNPO Label x Post	1.899***	1.787***	0.957**	7.329***	6.337***	4.339***
	(0.453)	(0.467)	(0.415)	(1.947)	(2.029)	(1.514)
Observations	15,894	15,200	15,894	15,894	15,200	15,894
R-squared	0.103	0.198	0.143	0.179	0.275	0.244
Controls	YES	YES	YES	YES	YES	YES
Category & Family & Time FE	YES			YES		
Family & Category * Time FE		YES			YES	
Fund & Time FE			YES			YES
Panel C - Treated and matched control sample based on sustainable investment attribute, fund size and fees						
GNPO Label x Post	1.470***	1.547***	0.956**	4.720**	4.586**	3.665**
	(0.467)	(0.516)	(0.429)	(2.100)	(2.318)	(1.590)
Observations	12,814	12,267	12,814	12,814	12,267	12,814
R-squared	0.096	0.213	0.131	0.195	0.301	0.253
Controls	YES	YES	YES	YES	YES	YES
Category & Family & Time FE	YES			YES		
Family & Category * Time FE		YES			YES	
Fund & Time FE			YES			YES

This table reports results of DID regressions of monthly fund flows from January 2019 to March 2021 on GNPO Label and its interaction with a Post dummy variable that is equal to 1 for the months following the awarding of the GNPO label (Equation 3). Panel A presents the results for the treated and control samples. Panel B presents the estimation considering a matched control sample based on fund size and Morningstar star ratings. Panel C presents the estimation considering a matched control sample based on the Sustainable Investment attribute, fund size and fees. Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$. Normalized Flows corresponds to percentiles of the net flows' rankings within fund size deciles. All regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 8: Fund heterogeneity and the GNPO label flow effect

VARIABLES	Flows					
	(1)	(2)	(3)	(4)	(5)	(6)
GNPO Label x Post x Top stars	1.548**	1.555**				
	(0.677)	(0.712)				
GNPO Label x Post x Size decile			-4.365***	-4.226***		
			(1.170)	(1.132)		
GNPO Label x Post x Institutional					1.457**	1.332**
					(0.638)	(0.633)
Observations	138,052	137,871	138,042	137,861	138,048	137,867
R-squared	0.072	0.117	0.072	0.117	0.072	0.117
Controls	YES	YES	YES	YES	YES	YES
Category & Family & Time FE	YES		YES		YES	
Family & Category * Time FE		YES		YES		YES

This table reports the results of DID regressions of monthly fund flows from January 2019 to March 2021 analyzing the differential effect of the awarding of a GNPO label considering fund past performance, measured by Morningstar star ratings (Column 1), fund size decile (Column 2), and funds targeting to institutional investors. Post is a dummy variable equal to 1 for the months following the awarding of the GNPO label, Top stars is a dummy equal to 1 for funds holding 5 stars, and Institutional is a dummy variable equal to 1 for funds with more than 50% of assets stemming from institutional share classes. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 9: The effect of the awarding GNPO labels over time

VARIABLES	Flows			
	(1)	(2)	(3)	(4)
GNPO Label x $Post_{1-3}$	0.719*	0.511		
	(0.370)	(0.365)		
GNPO Label x $Post_{1-6}$			0.914**	0.737*
			(0.421)	(0.413)
GNPO Label x $Post_{3}$	0.382	0.339		
	(0.387)	(0.380)		
GNPO Label x $Post_{6}$			-0.245	-0.218
			(0.315)	(0.319)
GNPO Label	0.721***	0.740***	0.717***	0.736***
	(0.177)	(0.174)	(0.177)	(0.174)
Observations	138,052	137,871	138,052	137,871
R-squared	0.072	0.117	0.072	0.117
Controls	YES	YES	YES	YES
Category & Family & Time FE	YES		YES	
Family & Category * Time FE		YES		YES

This table reports results of DID regressions of monthly fund flows from January 2019 to March 2021 on GNPO Label and its interaction with two sets of dummy variables: one capturing the immediate momentum following the initial awarding of the label, ranging from 1 to 3 ($Post_{1-3}$) or 6 ($Post_{1-6}$) months, and another one measuring the remaining effect from months 4 (Post3) or 7 (Post6) onwards. Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$. All regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 10: The effect of the awarding of GNPO labels – a stacked DID test

VARIABLES	FLOWS	
	(1)	(2)
GNPO Label x Post	1.006***	0.891**
	(0.376)	(0.368)
Observations	2,672,142	2,672,142
R-squared	0.145	0.149
Controls	NO	YES
Fund FE	YES	YES

This table reports results of stacked DID regressions that include never-treated funds as the control group from January 2019 to March 2021. The post period is set to the first six months after a fund is awarded a GNPO label. Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$. Regression (2) controls for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 11: The effect of the awarding of GNPO labels to funds holding other sustainability labels (single label effects)

VARIABLES	Flows					
	LCD		Globes		ESG Name	
	(1)	(2)	(3)	(4)	(5)	(6)
GNPO Label x Post	2.198***	2.017***				
	(0.524)	(0.517)				
GNPO Label x Post x LCD	0.949**	0.870**				
	(0.378)	(0.374)				
GNPO Label x Post			1.799***	1.737***		
			(0.420)	(0.316)		
GNPO Label x Post x Top Globes			0.955**	0.862***		
			(0.381)	(0.249)		
GNPO Label x Post					0.825***	0.796***
					(0.297)	(0.294)
GNPO Label x Post x ESG Name					3.015***	2.711***
					(0.988)	(0.988)
Observations	138,048	137,867	138,048	137,867	138,048	137,867
R-squared	0.073	0.117	0.072	0.117	0.073	0.117
Controls	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES		YES		YES	
Family & Category * Time FE		YES		YES		YES

This table reports the results of DID regressions of monthly fund flows from January 2019 to March 2021 on the variable GNPO Label interacted with a Post variable and each of the other sustainability labels: the LCD, Top Globes and ESG Name. Post is a dummy variable equal to 1 for the months following the awarding of the GNPO label. LCD is a dummy variable taking the value of 1 if the fund holds the LCD, Top Globes is a dummy variable taking the value of 1 if the fund holds 4 or 5 globes. ESG Name is a dummy taking the value of 1 if the fund name contains ESG-related designations. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 12: The effect of the awarding of GNPO labels based on prior sustainability levels

VARIABLES	Flows					
	Low priors		High priors		Medium priors	
	(1)	(2)	(3)	(4)	(5)	(6)
GNPO Label x Post	1.186***	1.103***				
	(0.354)	(0.345)				
GNPO Label x Post x Low priors	1.410**	1.279**				
	(0.560)	(0.606)				
GNPO Label x Post			1.740***	1.686***		
			(0.395)	(0.405)		
GNPO Label x Post x High priors			1.104**	0.949**		
			(0.436)	(0.422)		
GNPO Label x Post					0.996***	0.879**
					(0.368)	(0.360)
GNPO Label x Post x Medium priors					1.772***	1.764***
					(0.494)	(0.499)
Observations	138,048	137,867	138,048	137,867	138,048	137,867
R-squared	0.072	0.117	0.073	0.117	0.072	0.117
Controls	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES		YES		YES	
Family & Category * Time FE		YES		YES		YES

This table reports the results of DID regressions of monthly fund flows from January 2019 to March 2021 on the variable GNPO Label interacted with a Post variable and a variable measuring prior sustainability levels. Post is a dummy variable equal to 1 for the months following the awarding of the GNPO label. Low priors is a dummy variable taking the value of 1 if the fund holds three or fewer globes, does not hold the LCD and does not have an ESG name. High priors is a dummy taking the value of 1 if the fund holds two out of the three labels: 4 or 5 globes, the LCD and an ESG name. Medium priors is a dummy taking the value of 1 if the fund holds only one of the other sustainability labels. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 13: The effect of the SFDR classification for funds holding other sustainability labels (Single label effects)

VARIABLES	Flows							
	GNPO Label		LCD		Globes		ESG Name	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A - Article 8 SFDR								
Article 8 x Post	0.616***	0.634***						
	(0.101)	(0.102)						
Article 8 x Post x GNPO Label	0.868***	0.872***						
	(0.193)	(0.194)						
Article 8 x Post			0.807***	0.888***				
			(0.141)	(0.143)				
Article 8 x Post x LCD			0.569***	0.542***				
			(0.121)	(0.124)				
Article 8 x Post					0.572***	0.593***		
					(0.114)	(0.117)		
Article 8 x Post x Top Globes					0.724***	0.751***		
					(0.122)	(0.123)		
Article 8 x Post							0.530***	0.556***
							(0.102)	(0.103)
Article 8 x Post x ESG Name							1.142***	1.123***
							(0.203)	(0.205)
Observations	92,396	92,273	92,396	92,273	92,396	92,273	92,396	92,273
R-squared	0.071	0.098	0.070	0.098	0.070	0.098	0.071	0.099
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES		YES		YES		YES	
Family & Category * Time FE		YES		YES		YES		YES
Panel B - Article 9 SFDR								
Article 9 x Post	0.704**	0.868**						
	(0.341)	(0.348)						
Article 9 x Post x GNPO Label	1.281***	1.506***						
	(0.339)	(0.336)						
Article 9 x Post			1.256**	1.678***				
			(0.577)	(0.543)				
Article 9 x Post x LCD			0.854***	0.995***				
			(0.282)	(0.280)				
Article 9 x Post					0.955**	1.079**		
					(0.422)	(0.422)		
Article 9 x Post x Top Globes					1.034***	1.285***		
					(0.290)	(0.286)		
Article 9 x Post							0.941***	1.053***
							(0.336)	(0.342)
Article 9 x Post x ESG Name							1.249***	1.515***
							(0.367)	(0.360)
Observations	61,429	61,280	61,429	61,280	61,429	61,280	61,429	61,280
R-squared	0.075	0.112	0.075	0.112	0.075	0.112	0.075	0.113
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES		YES		YES		YES	
Family & Category * Time FE		YES		YES		YES		YES

This table reports results of DID regressions of monthly fund flows from July 2020 to December 2021 on SFDR classification as Articles 8 or 9 interacted with a Post variable and each of the other sustainability labels: the GNPO label, the LCD, Top Globes and ESG Name. Post is a dummy variable equal to 1 for the months following the SFDR label. GNPO Label is a dummy variable taking the value of 1 if the fund was awarded a GNPO label. LCD is a dummy variable taking the value of 1 if the fund holds the LCD, Top Globes is a dummy variable taking the value of 1 if the fund holds 4 or 5 globes. ESG Name is a dummy taking the value of 1 if the fund name contains ESG-related designations. Panel A presents the results for Article 8 and Panel B for Article 9. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table 14: The effect of the SFDR classification considering prior sustainability levels

VARIABLES	Flows					
	Low priors		High priors		Medium Priors	
	(1)	(2)	(5)	(6)	(3)	(4)
Panel A - Article 8						
Article 8 x Post	0.633***	0.632***				
	(0.105)	(0.107)				
Article 8 x Post x Low priors	0.821***	0.894***				
	(0.180)	(0.181)				
Article 8 x Post			0.601***	0.629***		
			(0.100)	(0.102)		
Article 8 x Post x High priors			0.964***	0.924***		
			(0.205)	(0.207)		
Article 8 x Post					0.744***	0.765***
					(0.142)	(0.143)
Article 8 x Post x Medium priors					0.460***	0.469***
					(0.123)	(0.126)
Observations	92,396	92,273	92,396	92,273	92,396	92,273
R-squared	0.070	0.098	0.070	0.098	0.070	0.098
Controls	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES		YES		YES	
Family & Category * Time FE		YES		YES		YES
Panel B - Article 9						
Article 9 x Post	0.892***	1.096***				
	(0.271)	(0.267)				
Article 9 x Post x Low priors	2.600**	2.799**				
	(1.277)	(1.310)				
Article 9 x Post			0.989***	1.146***		
			(0.360)	(0.363)		
Article 9 x Post x High priors			1.100***	1.330***		
			(0.325)	(0.321)		
Article 9 x Post					1.027***	1.258***
					(0.343)	(0.341)
Article 9 x Post x Medium priors					0.617*	0.766**
					(0.358)	(0.356)
Observations	61,429	61,280	61,429	61,280	61,429	61,280
R-squared	0.075	0.112	0.075	0.112	0.075	0.112
Controls	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES		YES		YES	
Family & Category * Time FE		YES		YES		YES

This table reports results of DID regressions of monthly fund flows from July 2020 to December 2021 on SFDR classification as Article 8 or 9 interacted with a Post variable and a variable measuring prior sustainability levels. Post is a dummy variable equal to 1 for the months following the SFDR label. Low priors is a dummy variable taking the value of 1 if the fund holds three or fewer globes, does not hold a GNPO label, the LCD and does not have an ESG name. High priors is a dummy taking the value of 1 if the fund holds three out of the four labels: the GNPO label, 4 or 5 globes, the LCD and an ESG name. Medium priors is a dummy taking the value of 1 if the fund holds only one of the other sustainability labels. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Appendixes

Appendix 1

Variable Definition

Variables	Description	Source
Fund flows	Monthly net change (in the local currency) in fund assets beyond asset appreciation, computed as $Flows_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}(1+r_{i,t})}{TNA_{i,t-1}}$	Authors
Normalized fund flows	Percentiles of the net flows' rankings within fund size deciles. Each month funds are allocated to deciles based on fund size and we rank funds based on their net flows and compute percentiles of the rankings.	Authors
GNPO Label	A dummy variable that indicates if the fund holds a Government or Non-Profit Organization sponsored label, 0 otherwise.	Authors
Post (GNPO)	A dummy variable identifying the period after the awarding of a GNPO Label	Authors
$Post_{1\text{-}3}$ (GNPO)	A dummy variable identifying the period 1 to 3 months after the awarding of a GNPO Label	Authors
$Post_{1\text{-}6}$ (GNPO)	A dummy variable identifying the period 1 to 6 months after the awarding of a GNPO Label	Authors
$Post_{3}$ (GNPO)	A dummy variable identifying the period after 3 months of the awarding of a GNPO Label	Authors
$Post_{6}$ (GNPO)	A dummy variable identifying the period after 6 months of the awarding of a GNPO Label	Authors
Sustainable	A dummy variable that indicates if the fund is flagged as having sustainable intentions by Morningstar	Morningstar
LCD	A dummy variable indicating if the fund is awarded Morningstar LCD, zero otherwise. 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.	Morningstar
ESG NAME	A dummy variable indicating if the fund has ESG jargon in the name, zero otherwise. We consider the following words: ESG, Sustainable, Social, Environment, Socially Responsible, Climate, Impact, and Green, and SDG.	Morningstar
Morningstar Globes (MSR)	Morningstar sustainability ratings ranging from 1 to 5 globes based on ESG risks. A fund exposed to high (low) ESG risks relative to its Morningstar global category will receive 1 globe (5 globes).	Morningstar
TOP MSR	A dummy variable indicating if the fund has MSR equal to 4 or 5 globes, zero otherwise.	Morningstar
Article 8/ Article 9 SFDR	Dummy variables indicating if the fund is classified as Article 8 (Article 9), zero otherwise. Article 8 funds are those that promote environmental or social characteristics but do not have them as the overarching objective, and Article 9 funds are those having sustainable goals as their objective.	Morningstar
Post (Article 8/ Article 9)	A dummy variable identifying the period after the classification as Article 8 (Article 9).	Authors
Institutional	A dummy variable identifying institutional funds, zero otherwise. Funds considered to targeting Institutional investors are those with more than 50% of assets stemming from institutional share classes.	Authors
12-month returns	Fund returns (in local currency) over the prior 12 months	Morningstar
Stars	Fund's Morningstar star rating in the prior month	Morningstar
Top stars	A dummy variable indicating if the fund holds 5 star ratings, zero otherwise.	Morningstar
12-month volatility	Standard deviation of returns over the past 12 months	Morningstar
Fund size	Fund size is measured by the log of aggregate Net Asset Value (measured in million USD dollars).	Morningstar

Fund size decile	Funds are divided into deciles based on their size, with decile 1 encompassing the smallest funds and decile 10 the largest ones	Morningstar
Fund age	Fund age is measured by the log of the years since fund inception date until March 2021 (or December 2021).	Morningstar
Fund fees	Fund fees refer to management fees, the costs shareholders paid for management and administrative services.	Morningstar
Low priors (GNPO)	A dummy variable identifying funds holding three or fewer Morningstar globes, lacking the LCD, and not incorporating an ESG name	Authors
High priors (GNPO)	A dummy variable identifying funds holding two out of three of the following labels: four or five Morningstar globes, the LCD, and an ESG name	Authors
Medium priors (GNPO)	A dummy variable identifying funds if the fund holds only one sustainability label.	Authors
Low priors (Article 8/9)	A dummy variable identifying funds holding three or fewer Morningstar globes, lacking the GNPO label, the LCD, and not incorporating an ESG name	Authors
High priors (Article 8/9)	A dummy variable identifying funds holding three out of four of the following labels: four or five Morningstar globes, the GNPO label, the LCD, and an ESG name	Authors
Medium priors (Article 8/9)	A dummy variable identifying funds if the fund holds only one sustainability label.	Authors

Supplementary Appendixes

Table A1 – Tetrachoric Correlation

	GNPO Label	LCD	Sustainable	ESG Name	Article 8	Article 9
GNPO Label	1.0000					
LCD	0.1622*	1.0000				
Sustainable	0.6900*	0.2172*	1.0000			
ESG Name	0.4007*	0.1775*	0.7866*	1.0000		
Article 8	0.3338*	0.2005*	0.7158*	0.3704*	1.0000	
Article 9	0.5060*	0.2930*	0.7909*	0.6307*	-0.2203*	1.0000

This table shows the tetrachoric correlation coefficients among the variables GNPO Label, LCD, Sustainable, ESG Name, Article 8, and Article 9. Each cell in the lower triangle of the matrix represents the estimated correlation. GNPO Label, LCD, ESG Name, Article 8 and Article 9 are dummies taking the value 1 if the fund was awarded a GNPO label, the LCD, the fund name contains ESG-related designations, is classified as SFDR Article 8 or 9, respectively, and zero otherwise.

Table A2 – Fund flows and sustainability signals: robustness with country and fund family and category by time FE

VARIABLES	Flows			
	2019-2021		April-Dec 2021	
	(1)	(2)	(3)	(4)
GNPO Label	0.604***	0.738***	0.382***	0.343**
	(0.091)	(0.099)	(0.139)	(0.147)
LCD	0.019	0.030	-0.194**	-0.195**
	(0.055)	(0.057)	(0.083)	(0.086)
ESG Name	0.686***	0.843***	0.439***	0.701***
	(0.104)	(0.110)	(0.147)	(0.158)
Article 8			0.337***	0.444***
			(0.075)	(0.090)
Article 9			0.307*	0.193
			(0.182)	(0.211)
1 Globe	0.028	0.065	0.233	0.327**
	(0.096)	(0.097)	(0.142)	(0.151)
1 Globe	0.045	0.037	-0.018	-0.008
	(0.055)	(0.056)	(0.082)	(0.086)
2 Globes	-0.015	-0.004	-0.020	0.005
	(0.050)	(0.049)	(0.078)	(0.080)
4 Globes	0.075	0.068	-0.021	0.019
	(0.075)	(0.074)	(0.106)	(0.109)
5 Globes	0.026	-0.007	-0.031	-0.080**
	(0.018)	(0.024)	(0.032)	(0.039)
12-month volatility	0.043***	0.061***	0.024***	0.029***
	(0.002)	(0.003)	(0.003)	(0.003)
12-month return	0.068***	0.042**	-0.064***	-0.098***
	(0.016)	(0.019)	(0.023)	(0.027)
Log size	-0.356***	-0.394***	-0.326***	-0.349***
	(0.035)	(0.039)	(0.048)	(0.053)
Log age	0.043	-0.101**	0.033	-0.044
	(0.038)	(0.045)	(0.056)	(0.071)
Fees	-0.621***	-0.441***	-0.605***	-0.456***
	(0.079)	(0.080)	(0.116)	(0.120)
1 Star	-0.341***	-0.290***	-0.495***	-0.450***
	(0.047)	(0.047)	(0.074)	(0.077)
2 Stars	0.376***	0.311***	0.306***	0.304***
	(0.047)	(0.047)	(0.074)	(0.077)
4 Stars	1.382***	1.229***	1.001***	0.943***
	(0.073)	(0.072)	(0.101)	(0.108)
5 Stars	-1.584***	-0.870**	1.065**	1.788***
	(0.336)	(0.393)	(0.493)	(0.566)
Observations	198,414	198,166	50,550	50,493
R-squared	0.053	0.108	0.038	0.094
Family & Category * Time FE		YES		YES
Category & Country & Time FE	YES		YES	

This table reports the results from pooled regressions of monthly fund flows on sustainability signals and lagged fund characteristics (Equation 2). Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$, Normalized Flows correspond to percentiles of the net flows' rankings within fund size deciles. GNPO Label, LCD, ESG Name, Article 8 and Article 9 are dummies taking the value 1 if the fund was awarded a GNPO label, the LCD, the fund name contains ESG-related designations, is classified as SFDR Article 8 or 9, respectively, and zero otherwise. Globes corresponds to Morningstar sustainability ratings (with a scale of 1 to 5 globes). Dummy variables are considered for 4 of the ratings, with 3 as the reference rating. Past returns is measured by previous 12-month returns and volatility is measured by the standard deviation of returns in the previous 12 months (12-month volatility). Stars refer to Morningstar performance ratings (with a scale of 1 to 5 stars). As with Globes, 4 dummy variables are included, with 3 as the reference rating. Size is measured as the logarithm of TNA in USD and age as the logarithm of fund age. Fees are measured by Morningstar ongoing charge variable. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table A3 – Fund flows and sustainability signals: robustness analysis with lagged flows

VARIABLES	Flows			
	2019-2021		April-Dec 2021	
	(1)	(2)	(3)	(4)
GNPO Label	0.665***	0.655***	0.313**	0.310**
	(0.087)	(0.087)	(0.129)	(0.130)
LCD	0.039	0.030	-0.161**	-0.153**
	(0.049)	(0.050)	(0.075)	(0.076)
ESG Name	0.734***	0.730***	0.619***	0.618***
	(0.096)	(0.096)	(0.139)	(0.140)
Article 8			0.410***	0.406***
			(0.080)	(0.080)
Article 9			0.159	0.147
			(0.177)	(0.178)
1 Globe	0.035	0.042	0.312**	0.285**
	(0.084)	(0.086)	(0.133)	(0.134)
2 Globes	0.040	0.027	0.019	0.002
	(0.049)	(0.049)	(0.076)	(0.076)
4 Globes	-0.019	-0.012	-0.006	-0.000
	(0.043)	(0.044)	(0.070)	(0.071)
5 Globes	0.041	0.050	0.002	0.010
	(0.065)	(0.065)	(0.096)	(0.096)
Flows t-1	0.133***	0.132***	0.123***	0.124***
	(0.005)	(0.005)	(0.009)	(0.009)
12-month volatility	0.022	-0.003	-0.026	-0.072**
	(0.016)	(0.021)	(0.031)	(0.035)
12-month return	0.036***	0.053***	0.016***	0.024***
	(0.002)	(0.003)	(0.002)	(0.003)
Log size	0.044***	0.029*	-0.090***	-0.089***
	(0.017)	(0.016)	(0.023)	(0.023)
Log age	-0.342***	-0.334***	-0.302***	-0.300***
	(0.034)	(0.035)	(0.048)	(0.048)
Fees	-0.052	-0.080**	-0.024	-0.039
	(0.039)	(0.040)	(0.062)	(0.063)
1 Star	-0.487***	-0.379***	-0.441***	-0.412***
	(0.070)	(0.071)	(0.107)	(0.108)
2 Stars	-0.295***	-0.260***	-0.416***	-0.401***
	(0.043)	(0.043)	(0.070)	(0.070)
4 Stars	0.304***	0.260***	0.265***	0.251***
	(0.042)	(0.042)	(0.069)	(0.069)
5 Stars	1.146***	1.054***	0.856***	0.829***
	(0.063)	(0.063)	(0.095)	(0.096)
Constant	-0.909***	-0.680**	1.758***	1.655***
	(0.345)	(0.346)	(0.475)	(0.481)
Observations	193,795	193,570	50,039	49,989
R-squared	0.084	0.125	0.086	0.108
Family & Category & Time FE	YES		YES	
Family & Category * Time FE		YES		YES

This table reports the results from pooled regressions of monthly fund flows on sustainability signals and lagged fund characteristics (Equation 2). Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$, Normalized Flows correspond to percentiles of the net flows' rankings within fund size deciles. GNPO Label, LCD, ESG Name, Article 8 and Article 9 are dummies taking the value 1 if the fund was awarded a GNPO label, the LCD, the fund name contains ESG-related designations, is classified as SFDR Article 8 or 9, respectively, and zero otherwise. Globes corresponds to Morningstar sustainability ratings (with a scale of 1 to 5 globes). Dummy variables are considered for 4 of the ratings, with 3 as the reference rating. Past returns is measured by previous 12-month returns and volatility is measured by the standard deviation of returns in the previous 12 months (12-month volatility). Stars refer to Morningstar performance ratings (with a scale of 1 to 5 stars). As with Globes, 4 dummy variables are included, with 3 as the reference rating. Size is measured as the logarithm of TNA in USD and age as the logarithm of fund age. Fees are measured by Morningstar ongoing charge variable. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table A4 – Results of logit regressions where the dependent is the probability of being a GNPO-labeled fund

VARIABLES	GNPO Label	
	Propensity to be treated	Propensity to be treated
	(1)	(2)
Log size	0.175***	0.131***
	(0.010)	(0.011)
Log age	0.041*	0.072***
	(0.023)	(0.023)
Stars	0.120***	0.035**
	(0.014)	(0.015)
Fees	0.061**	0.430***
	(0.027)	(0.029)
Globes		0.172***
		(0.016)
ESG Name		0.634***
		(0.040)
LCD		0.124***
		(0.034)
Sustainable		3.115***
		(0.056)
Constant	-7.264***	-9.543***
	(0.195)	(0.226)
Observations	138,074	138,074

The table presents the logistic regression results where the dependent is the probability of being a GNPO-labeled fund. The predictors or independent variables included in the model are listed in the first column. The subsequent columns provide the estimated coefficients for each specification of the logistic model A positive coefficient indicates that as the predictor increases, the log-odds of the outcome variable (propensity to be treated) also increases. The numbers in parentheses are the standard errors of the coefficients. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table A5 – The effect of the awarding of GNPO labels to funds holding other sustainability labels (single label effects): robustness tests

VARIABLES	Normalized Flows			Flows					
				Matched sample 1			Matched sample 2		
	LCD	Globes	ESG Name	LCD	Globes	ESG Name	LCD	Globes	ESG Name
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GNPO Label x Post	8.828***			2.791***			2.435***		
	(1.917)			(0.610)			(0.687)		
GNPO Label x Post x LCD	3.621**			1.293**			1.422**		
	(1.743)			(0.553)			(0.575)		
GNPO Label x Post		6.375***			2.612***			1.943***	
		(2.136)			(0.538)			(0.546)	
GNPO Label x Post x Top Globes		4.919***			1.597***			0.977*	
		(1.686)			(0.524)			(0.534)	
GNPO Label x Post			3.127**			1.467***			0.877*
			(1.585)			(0.444)			(0.476)
GNPO Label x Post x ESG Name			12.467***			3.634***			3.217***
Observations	138,048	138,048	138,048	15,894	15,894	15,894	12,814	12,814	12,814
R-squared	0.114	0.114	0.114	0.104	0.104	0.105	0.097	0.096	0.097
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

This table reports results of difference-in-difference regressions of monthly fund flows from January 2019 to March 2021 on GNPO Label interacted with a Post variable and each of the other sustainability labels: the LCD, Top Globes and ESG Name. Post is a dummy variable equal to 1 for the months following the awarding of the GNPO label. LCD is a dummy variable taking the value of 1 if the fund holds the LCD, Top Globes is a dummy variable taking the value of 1 if the fund holds 4 or 5 globes. ESG Name is a dummy taking the value of 1 if the fund name contains ESG-related designations. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. On matched sample 1 treated and control samples are matched on fund size and star ratings. On matched sample 2 treated and control samples are matched on sustainable investment attribute, fund size and fees. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table A6 – The effect of the awarding of GNPO labels based on prior sustainability levels: robustness tests

	Normalized Flows			Flows					
				Matched sample 1			Matched sample 2		
VARIABLES	Low priors	High priors	Medium priors	Low priors	High priors	Medium priors	Low priors	High priors	Medium priors
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GNPO Label x Post	4.577***			1.954***			1.466***		
	(1.530)			(0.503)			(0.517)		
GNPO Label x Post x Low priors	6.998**			2.678***			1.106		
	(3.012)			(0.712)			(0.734)		
GNPO Label x Post		5.998***			2.530***			1.884***	
		(1.974)			(0.502)			(0.536)	
GNPO Label x Post x High priors		5.189***			1.804***			1.376**	
		(1.876)			(0.639)			(0.658)	
GNPO Label x Post			4.601***			1.592***			1.187**
			(1.634)			(0.509)			(0.517)
GNPO Label x Post x Medium priors			5.087**			2.252***			2.039***
			(2.315)			(0.594)			(0.618)
Observations	138,048	138,048	138,048	15,894	15,894	15,894	12,814	12,814	12,814
R-squared	0.114	0.114	0.114	0.104	0.104	0.104	0.096	0.096	0.096
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

This table reports results of difference-in-difference regressions of monthly fund flows from January 2019 to March 2021 on GNPO Label interacted with a Post variable and a variable measuring prior sustainability levels. Post is a dummy variable equal to 1 for the months following the awarding of the GNPO label. Low priors is a dummy variable taking the value of 1 if the fund holds three or fewer globes, does not hold the LCD and does not have an ESG name. High priors is a dummy taking the value of 1 if the fund holds two out of the three labels: 4 or 5 globes, the LCD and an ESG name. Medium priors is a dummy taking the value of 1 if the fund holds only one of the other sustainability labels. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. On matched sample 1 treated and control samples are matched on fund size and star ratings. On matched sample 2 treated and control samples are matched on sustainable investment attribute, fund size and fees. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table A7 – The flow effect of the SFDR classification

VARIABLES	Flows			
	(1)	(2)	(3)	(4)
Panel A - Article 8 SFDR				
Article 8	0.628***	0.617***		
	(0.090)	(0.091)		
Article 8 x Post	0.659***	0.674***	0.556***	0.572***
	(0.097)	(0.098)	(0.110)	(0.113)
Article 8 x Post x Institutional			0.818***	0.805***
			(0.147)	(0.147)
Observations	92,396	92,273	89,783	89,660
R-squared	0.070	0.097	0.070	0.098
Controls	YES	YES	YES	YES
Family & Category & Time FE	YES		YES	
Family & Category * Time FE		YES		YES
Panel B - Article 9 SFDR				
Article 9	1.310***	1.160***		
	(0.308)	(0.314)		
Article 9 x Post	0.971***	1.175***	0.514	0.725**
	(0.273)	(0.272)	(0.335)	(0.341)
Article 9 x Post x Institutional			1.220***	1.442***
			(0.384)	(0.379)
Observations	61,429	61,280	59,652	59,503
R-squared	0.075	0.112	0.074	0.112
Controls	YES	YES	YES	YES
Family & Category & Time FE	YES		YES	
Family & Category * Time FE		YES		YES

This table reports the results of difference-in-difference regressions of monthly fund flows from July 2020 to December 2021 on SFDR classification as Articles 8 or 9 and its interaction with a Post dummy variable (columns 1 and 2) and on SFDR classification as Articles 8 or 9, and its interactions with a Post variable and an Institutional variable (columns 3 and 4). Post is a dummy variable equal to 1 for the months following the SFDR label and Institutional is a dummy variable equal to 1 for funds with more than 50% of assets stemming from institutional share classes Panel A presents the results for Article 8 and Panel B for Article 9. Flows are computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + r_{i,t}))/TNA_{i,t-1}$. All regressions control for lagged fund characteristics, namely the log of the aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings, and the globes. Robust standard errors in parentheses clustered at the fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table A8 – The effect of the SFDR classification for funds holding other sustainability labels (single label effects): robustness tests

VARIABLES	Normalized Flows				Flows							
					Matched sample 1				Matched sample 2			
	GNPO Label	LCD	Globes	ESG Name	GNPO Label	LCD	Globes	ESG Name	GNPO Label	LCD	Globes	ESG Name
Panel A - Article 8												
Article 8 x Post	2.709***				0.618***				0.487**			
	(0.609)				(0.107)				(0.203)			
Article 8 x Post x GNPO Label	4.082***				0.912***				0.952***			
	(1.127)				(0.202)				(0.279)			
Article 8 x Post		3.202***				0.766***				0.622**		
		(0.814)				(0.149)				(0.274)		
Article 8 x Post x LCD		2.768***				0.555***				0.433		
		(0.753)				(0.133)				(0.264)		
Article 8 x Post			2.029***				0.568***				0.431*	
			(0.700)				(0.122)				(0.228)	
Article 8 x Post x Top Globes			4.136***				0.741***				0.719***	
			(0.727)				(0.130)				(0.238)	
Article 8 x Post				2.385***				0.534***				0.406*
				(0.620)				(0.109)				(0.209)
Article 8 x Post x ESG Name				5.616***				1.205***				1.098***
				(1.154)				(0.209)				(0.294)
Observations	92,396	92,396	92,396	92,396	74,384	74,384	74,384	74,384	30,244	30,244	30,244	30,244
R-squared	0.113	0.113	0.113	0.114	0.076	0.075	0.075	0.076	0.093	0.091	0.090	0.092
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Family & Caegory & Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel B - Article 9												
Article 9 x Post	6.373***				0.250				0.309			
	(1.980)				(0.521)				(0.582)			
Article 9 x Post x GNPO Label	5.917***				1.242***				1.897***			
	(1.837)				(0.474)				(0.576)			
Article 9 x Post		8.279***				1.179*				1.383*		
		(2.735)				(0.695)				(0.786)		
Article 9 x Post x LCD		5.167***				0.462				0.636		
		(1.630)				(0.443)				(0.601)		
Article 9 x Post			5.729**				0.986*				0.768	
			(2.324)				(0.503)				(0.593)	
Article 9 x Post x Top Globes			6.407***				1.007**				0.696	
			(1.599)				(0.452)				(0.480)	
Article 9 x Post				5.344***				0.736				0.773
				(1.887)				(0.455)				(0.548)
Article 9 x Post x ESG Name				7.910***				0.987*				1.346**
				(1.934)				(0.531)				(0.560)
Observations	61,429	61,429	61,429	61,429	12,143	12,143	12,143	12,143	8,511	8,511	8,511	8,511
R-squared	0.121	0.121	0.121	0.122	0.143	0.142	0.142	0.142	0.144	0.141	0.142	0.142
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Family & Caegory & Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

This table reports results of difference-in-difference regressions of monthly fund flows from July 2020 to December 2021 on SFDR classification as Articles 8 or 9 interacted with a Post variable and each of the other sustainability labels: the GNPO label, the LCD, Top Globes and ESG Name. Post is a dummy variable equal to 1 for the months following the SFDR label. GNPO Label is a dummy variable taking the value of 1 if the fund was awarded a GNPO label. LCD is a dummy variable taking the value of 1 if the fund holds the LCD, Top Globes is a dummy variable taking the value of 1 if the fund holds 4 or 5 globes. ESG Name is a dummy taking the value of 1 if the fund name contains ESG-related designations. Panel A presents the results for Article 8 and Panel B for Article 9. On matched sample 1 treated and control samples are matched on fund size and star ratings. On matched sample 2 treated and control samples are matched on sustainable investment attribute, fund size and fees. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.

Table A9 – The effect of the SFDR classification considering prior sustainability levels: robustness tests

VARIABLES	Normalized Flows			Flows					
				Matched sample 1			Matched sample 2		
	Low priors	Medium priors	High priors	Low priors	Medium priors	High priors	Low priors	Medium priors	High priors
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A - Article 8 SFDR									
Article 8 x Post	3.025***			0.376			1.089**		
	(0.639)			(0.372)			(0.539)		
Article 8 x Post x Low priors	3.133***			-0.202			0.012		
	(1.015)			(0.516)			(0.692)		
Article 8 x Post		3.263***			0.035			1.160*	
		(0.836)			(0.427)			(0.638)	
Article 8 x Post x Medium priors		1.996***			-0.463			0.912	
		(0.752)			(0.442)			(0.586)	
Article 8 x Post			2.582***			-0.322			0.802
			(0.607)			(0.341)			(0.498)
Article 8 x Post x High priors			5.101***			1.057*			2.045***
			(1.196)			(0.577)			(0.745)
Observations	92,396	92,396	92,396	9,862	9,862	9,862	7,759	7,759	7,759
R-squared	0.113	0.113	0.113	0.111	0.111	0.112	0.116	0.116	0.117
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel B - Article 9 SFDR									
Article 9 x Post	5.559***			2.228**			-1.782*		
	(1.543)			(1.042)			(0.907)		
Article 9 x Post x Low priors	11.057**			3.539			0.427		
	(4.736)			(4.920)			(5.976)		
Article 9 x Post		6.264***			1.474			-1.536	
		(1.752)			(1.408)			(1.421)	
Article 9 x Post x Medium priors		4.866**			2.210***			-1.440	
		(2.208)			(0.847)			(1.195)	
Article 9 x Post			6.132***			2.415*			-0.742
			(2.002)			(1.362)			(1.383)
Article 9 x Post x High priors			6.611***			1.830			-1.233
			(1.775)			(1.392)			(1.195)
Observations	61,429	61,429	61,429	5,774	5,774	5,774	2,676	2,676	2,676
R-squared	0.121	0.121	0.121	0.138	0.136	0.136	0.155	0.153	0.155
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Family & Category & Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

This table reports results of difference-in-difference regressions of monthly fund flows from July 2020 to December 2021 on SFDR classification as Article 8 or 9 interacted with a Post variable and a variable measuring prior sustainability levels. Post is a dummy variable equal to 1 for the months following the SFDR label. Low priors is a dummy variable taking the value of 1 if the fund holds three or fewer globes, does not hold a GNPO label, the LCD and does not have an ESG name. High priors is a dummy taking the value of 1 if the fund holds three out of the four labels: the GNPO label, 4 or 5 globes, the LCD and an ESG name. Medium priors is a dummy taking the value of 1 if the fund holds only one of the other sustainability labels. On matched sample 1 treated and control samples are matched on fund size and star ratings. On matched sample 2 treated and control samples are matched on sustainable investment attribute, fund size and fees. The regressions control for lagged fund characteristics, namely the log of aggregated size of the fund, the log of age, fees, past returns, volatility of past returns, star ratings and the globes. Robust standard errors in parentheses clustered at fund level. ***, **, and * denote statistically significance at the 1%, 5% and 10% level, respectively.