Effectiveness of not-for-profit labels and commercial ratings in guiding fund flows to sustainable investments.

Mathilde Fox[a], Anh Nguyen[b] and Christel Dumas[c]*

[a]ICHEC Brussels Management School and LFIN, Uclouvain, Belgium, [b]ICHEC Brussels Management School and LFIN, Uclouvain, Belgium [c]ICHEC Brussels Management School, Brussels, Belgium.

Rue au bois 365a, B-1050 Brussels, Belgium. *christel.dumas@ichec.be. Orcid: 0000-0002-8121-2923

Effectiveness of not-for-profit labels and commercial ratings in guiding fund flows to sustainable investments.

Abstract

In light of the surge in sustainable funds and growing concerns about greenwashing amidst the criticism of private rating agencies, the use of labels has emerged as a potential solution to enhance market transparency and address agency problems. However, the effectiveness of these labels remains a subject requiring deeper understanding. This study draws on agency theory to analyse whether mutual funds that receive a not-for-profit label experience higher inflow, and how this differs for funds that already have a commercially issued sustainability rating. In a Difference-in-Difference setting, we estimate the effect of the introduction of the *Towards Sustainability* label on fund flows compared to a control population without the label, constructed with propensity score matching. Both groups comprise 18,585 observations each, representing approximately 400 funds. Our findings reveal that attaining a not-for-profit sustainability label has a positive marginal effect on funds flows, albeit exclusively for funds lacking commercial ratings. These results confirm investor preference for sustainable funds and demonstrate the comparable influence of public labels and private commercial ratings in addressing agency problems by augmenting transparency. Fund managers and financial service providers who give greater importance to labels in the investment decision-making process and fund construction have an opportunity to rebalance the distribution of power in a market dominated by commercial ratings.

Keywords - socially responsible investing, ESG labels, sustainability labels, agency problem

Introduction

The value of sustainability labelled products on the funds market and the number of sustainability labels is growing rapidly. By the end of 2021, a total of 2,119 funds had opted to label their combined € 1,337 billion assets under management based on 10 different European labels, with a quarter of these funds having multiple labels. Notably, these figures have exhibited a consistent upward trajectory, having doubled during the course of 2021 (Novethic, 2022).

The advent of these sustainability labels is commonly hailed for its capacity to furnish transparency, which is frequently positioned as a viable substitute for conventional environmental regulations. They have an important role to play in finance, where the combined high level of complexity and disintermediation challenge the efficient allocation of funds aligned with investors' – and civil society's – interests.

This study aims to contribute to the existing literature on the effectiveness of Environmental, Social, and Governance (ESG) transparency, by investigating whether the additional information brought by not-for-profit labels drives investor behaviour. This investigation holds particular significance in the context of sustainable finance, as the field has witnessed a proliferation of public and private initiatives striving to enhance transparency. New public and private non-profit labels are appearing, and regulation is changing fast with the introduction of the EU taxonomy on sustainable finance, whereas transparency was until now mostly provided by the rising requirements of commercial ratings (Dumas & Anastasiadis, 2021).

Our research examines the influence of a sustainable finance label on the net growth in funds' assets, beyond the reinvested returns (we refer to the net movement of all cash inflows and outflows of various financial assets as "fund flows", a robust measure in research on funds) in the Belgian fund industry. The *Towards Sustainability* label is particularly suitable for testing our hypothesis due to several reasons. Firstly, the introduction of a new label entails the introduction of novel market information, thereby enhancing transparency. Consequently, studying such a novel case provides valuable insights into the impact of labels on market transparency. Secondly, the *Towards Sustainability* label is issued by a not-for-profit industry association, which is significant in a market dominated by widely criticized commercial ratings. Finally, this label specifically emphasizes sustainability rather than being solely focused on environmental factors, thereby aligning it more effectively with societal challenges. By encompassing environmental, social, and governance factors, the label addresses the complexity inherent in investment decision-making. The *Towards Sustainability* label was introduced end of 2020 coinciding with the commencement of our study, enabling us to observe the effect on fund flows as they occurred. The label has already gained significant adoption, with over 500 billion euros of Assets under Management (AuM), and aspires to establish itself as the industry standard. Furthermore, two of the authors of this study participated as academic advisors in the label's development process, which provided valuable insights into the underlying mechanisms and facilitated the validation of results with industry practitioners. Our investigation encompasses approximately 400 labelled funds, distributed over 23,278 share classes, over the course of the inaugural year of the *Towards Sustainability* label.

Our results validate the investor preference for sustainable investments already identified in literature, as evidenced by the impact of the introduction of the Morningstar globes rating on mutual funds flows (Ammann et al. 2019). our study reveals that the inclusion of a not-for-profit label for funds with a commercial rating is superfluous, despite the criticisms surrounding such ratings he presence of the not-for-profit label does not generate any additional fund flows towards these funds, even in cases where the assessments provided by the label and the commercial rating are contradictory.

However, our results also shed light on the necessity of identifying new sustainable funds within the market. The provision of new information through the label prompts fund reallocation, indicating that investors place value on this supplementary information as it expands their range of investable funds. This finding suggests that the current universe of sustainable funds is insufficient, highlighting the critical role that not-for-profit organizations play in bringing transparency to segments of the market that are not covered by commercial ratings.

This article carries significant policy implications concerning the regulatory framework for sustainable investment and the allocation of funds toward socially beneficial economic endeavours. While commercial rating agencies offer transparency for a large portion of the funds, their coverage does not extend to the entire market. Therefore, public and private labels have a role to play in filling this transparency gap for the remaining segment. As a result, it is imperative that the cost associated with obtaining these labels remains affordable even for smaller funds, and the communication around these labels should specifically target funds not covered by the rating agencies.

Finance is gaining recognition as a key partner in the transition of the economy to effectively tackle contemporary environmental and social challenges. With a growing number of countries considering the adoption of sustainable finance labels to reign financial resources towards the transition of the economy, we provide a better understanding of the extent to which such non-profit labels can change investor behaviour. Finally, since labels will influence flows for funds not covered by commercial ratings, it is essential that these labels establish and regularly update stringent quality standards, aligning them with the rising requirements posed by sustainability challenges.

Literature review and hypotheses development

Agency problems in the asset management industry

The asset management industry fulfils various significant roles within society. Firstly, as an agent serving the interests of its principal: the providers of the funds it manages, necessitating a comprehensive comprehension of investor preferences. Secondly, through intermediation, providing a fair, risk-adjusted return by efficiently allocating capital to improve the economy and society (Hawley & Lukomnik, 2021). Additionally, the asset management industry serves as a potent catalyst for price discovery and contributes to the management of asymmetric information.

Within the asset management industry, one party is often an agent for another and may face agency problems, such as conflicts of interest. A financial manager thus has a fiduciary duty to serve the shareholders' interests. Many ethical issues in financial management involve the balancing of this duty with the interests of other groups. This industry serves as a classic example of agency problems

(Chevalier & Ellison, 1997) where numerous potential conflicts of interest arise between funds and their investors. Indeed, the information funds handle and how this information feeds outcomes aligned with their strategy, is not directly observable. The agency problem is further exacerbated in the context of long-term investment horizons, given the temporal gap between the investment decision and the potential payoff (Neal & Warren, 2015; Shah, 2014). Schoenmaker & Schramade (2019) plead for a heightened emphasis on long-term value creation within the industry, which is how it can build trust and truly perform the social purpose of finance. Accordingly, asset managers must develop products that meet transition preparedness requirements in a way that is credible and verifiable. However, this task is fraught with challenges, as the authors note "even professionals are confused by the current state of the field" (Schoenmaker & Schramade, 2019, p. 19).

Complexity and lack of transparency are two important shortcomings that hinder asset management's functions. The long chain of intermediaries involved between the dispersed providers of capital and the ultimate user of capital (possibly a company or project in the real economy) results in information loss and necessitates continuous monitoring of investment performance and impact by each party involved (Schoenmaker & Schramade, 2019). As the field of finance has grown increasingly complex and sophisticated, investors and their managers heavily rely on ratings to gather information, make sense of it and make investment decisions. Commercial sustainability ratings have thus become a key driver of investment decisions, besides the original credit ratings, providing much needed transparency on companies' performance and risk, but they can also lead to unintended consequences, such as a dependence on ratings commonly known as "rating addiction" (Cash, 2018).

While the shortcomings of the asset management industry could be addressed through improved transparency towards investors, it appears that the mechanisms to improve transparency – specifically commercial ratings – are not satisfying (Gyönyörová, Stachoň, & Stašek, 2021). These ratings suffer from a lack of transparency in their methodologies (Folger-Laronde, Pashang, Feor, & El Alfy, 2020), leading to divergent rating information (Berg, Kölbel, & Rigobon, 2019). Moreover, empirical evidence suggests a positive relationship between ESG disclosure and rating disagreement, where greater information results in more dispersed ratings due to the absence of standardised rules and norms for assessing firm outcomes (Christensen, Serafeim & Sikochi, 2021). While the literature highlights these contradictions, it has yet to determine the impact of such inconsistencies on investor decision-making.

International regulation such as Sustainable Finance Disclosure Regulation (SFRD[1]) attempts to address these issues, but the voluntary nature of the disclosure fails to fully alleviate the lack of trust and sources

---

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

of potential conflicts of interest due to the agency problem. Safeguarding the financial system from conflicts of interest can be achieved through regulation, but also with market mechanisms from within the system. The effectiveness of labels, one such safeguarding mechanism from within the system, is of utmost importance considering the already large amount of regulation addressing the financial system. Therefore, our study aims to investigate how investment decisions are influenced by conflicting information from commercial ratings and non-profit labels.

Within this specific context, sustainability labels and ratings serve as additional means to provide assurance regarding the sustainability of investments. While both ratings and labels both convey information on sustainability, they diverge in terms of who produces them. Sustainability ratings are typically generated by private, for-profit rating agencies, whereas labels are often sponsored by governments (Becker, Martin, & Walter, 2022), NGOS and not-for-profit industry associations for the latter (Brito-Ramos, Cortez & Silva, 2023). Furthermore, there exists a distinction in terms of the funding mechanisms associated with these two approaches. Users of information bear the cost of sustainability ratings, in contrast to the business model for credit ratings. Conversely, the issuers of securities typically bear the cost of sustainability labels (Avetisyan & Hockerts, 2017). As the terms "labels" and "ratings" are utilized somewhat interchangeably in the literature, we propose the following typology to differentiate between the two.

Table 1: Key Distinctive Characteristics of Sustainability Ratings and Labels

	ESG Rating	ESG Labels
Purpose	Commercial	Non-commercial
Object analysed	Individual positions (firms) and funds	Funds and financial products
Method	Proprietary	Public
Result	Score and ranking based on risk exposure	Alignment with a quality standard
Client	Requested by investor	Requested by the product issuer
Users	Institutional investors and organisations	All investors with focus on retail

The abundance of distinguishing characteristics associated with labels justifies a dedicated examination specific to this subject matter. It is unclear whether and how they differ in terms of the trust they gather, and the investment behaviours they induce, prompting the focus of this study. Both typically provide transparency as their main function. But they can also cater to sophisticated investors by providing them a tool to constrain and control their dispersed investments. Cash (2018) suggests that labels offer a solution to the agency problem encountered by widely invested

institutional investors, characterised by multiple layers of delegation. They control the actions of their 'agents' (those selling them the funds they distribute or invest in) by prohibiting their asset managers from investing in unlabelled underlying funds, thereby mitigating their risk, although they lack the information to quantify that risk themselves. Previous research on ESG reporting within the corporate domain suggests that multiple disclosures (such as a combination of SASB disclosures and Bloomberg's ESG scores for companies) provide different information, with the investors valuing the complementarity of these different ESG information sources (Eng, Fikru, & Vichitsarawong, 2022). A similar question arises within the sustainable fund industry, wherein labels might provide distinct information compared to ratings. However, this remains to be proven empirically, to ascertain how and where labels can indeed provide the much-needed trusted additional transparency to overcome agency problems.

The aforementioned development assumes that investors have preferences for various investment attributes. To substantiate this assertion, we rely on fund flows as an indication of investor preference, which we justify in the subsequent section.

Investor preference and fund flows

Extensive research in the field of fund flows has consistently demonstrated a positive correlation between fund flows and various performance indicators, while controlling for a variety of attributes such as fund size (Sirri & Tufano, 1998), or fees (Wang & Young, 2020). These studies conclude that fund flows reflect investor preferences depending on fund attributes. However, the complexity of the investors' decision may lead to suboptimal choices, primarily due to challenges in accesssing and processing relevant information. Enhanced information on an attribute might thus reorient fund flows and rectify decision-making biases. This additional information is typically provided from a third-party entity, as evidenced by the substantial impact of information intermediaries who provide free access to simple information (Ammann, Bauer, Fischer & Müller, 2019; Steen, Moussawi & Gjolberg, 2020).

Investor preference for sustainability is one such attribute that has been investigated. Hartzmark and Sussman (2019) show increased fund inflows in the context of for-profit sustainable rankings. The authors demonstrate that U.S. mutual fund investors collectively put a positive value on sustainability. They provide causal evidence that market-wide demand for funds varies as a function of the private sustainability ratings. Ammann et al. (2019) confirm this by examining the effect of the introduction of Morningstar's Sustainability Rating in March 2016 on mutual fund flows. They show that mutual funds with a high sustainability rating (4 or 5 globes) exhibit an abnormal increase in flows compared to those with a low sustainability score. Similarly, Ceccarelli et al. (2021) study the impact of the Morningstar new eco-label (launched in April 2018) for mutual funds, the Low Carbon Designation

(LCD), on fund flows. Spikes in the flows for green funds in Europe and in the US after the introduction of a label are evidence they add to increasing demand for climate-conscious investment products (Ceccarelli et al., 2021). Drawing on agency-theory predictions and the above empirical evidence, hypothesis H1 for the introduction of the *Towards Sustainability* label is as follows:

H1: Mutual funds that receive the label experience higher inflows than mutual funds that do not receive the label.

The availability of sustainability information through ratings and labels facilitates investors' decisions by mitigating information asymmetry due to various barriers and costly searches, as outlined by Gutsche & Zwergel (2020). In our study, we make a valuable contribution to the agency theory by showing the circumstances under which a label certification leads to investment decisions, in several declinations of hypothesis H2. A first condition verified is whether a label is most effective when there is a stronger lack of information, as suggested by agency theory's focus on transparency, with hypothesis 2a:

H2a: Mutual funds with no Morningstar ratings that receive the label experience higher inflows than mutual funds with no Morningstar rating that do not receive the label.

A second condition verified is whether a not-for-profit label is more effective than a for-profit label. The lack of trust in the rating sector and potential conflicts of interest due to their business model may lead investors to prefer not-for-profit ratings, particularly in situations where ratings contradict each other. A perceived threat of greenwashing from funds with low sustainability may also influence this trust. Thus, the hypotheses related to whether information from public initiatives is more valued than from private initiatives can be stated as follows:

H 2b: Mutual funds with **high** Morningstar ratings that receive the label experience higher inflows than mutual funds with **high** Morningstar ratings (4 or 5 globes) that do not receive the label.

H 2c: Mutual funds with **low** Morningstar ratings (1 to 3 globes) that receive the label experience higher inflows than mutual funds with **low** Morningstar ratings that do not receive the label.

Based on prior studies, we expect H1, H2a and H2c to be validated, while H2b would be rejected.

The introduction in 2016 of the Morningstar Sustainability Rating, ranking mutual funds' ESG profile, gave investors insight on the sustainability of many of their funds. The coverage is wide, corresponding to the most common funds requested by clients. It also facilitated academic research of investor preferences for sustainable funds by providing quantitative data (Steen et al., 2020). Funds are listed from best to worst on a scale of 5 to 1 based on their ranking within their category. A "high" score of 5 globes indicates that a fund is in the top 10 percentile within its fund category. Five years after the introduction of this rating, other private and public initiatives have emerged to facilitate the allocation of investors' funds following their preference for sustainability. Whether these new initiatives, such as

the *Towards Sustainability* label, provide useful additional information to the market, resulting in additional flows towards sustainable finance, beyond the ones facilitated by existing transparency mechanisms, remains to be investigated. Indeed, a measure of success of a sustainability label is not only its level of adoption, and the assets under management it represents, but its ability to reallocated funds to investments identified as sustainable by the label. Should there be evidence of such inflows, we could conclude that the label brings trusted additional transparency to overcome agency problems and align fund inflows with investors' preference for sustainable finance.

Specifically, this article asks whether the non-profit *Towards Sustainability* label brings additional trust and assurance to the confusing market of for-profit ratings, or if it is mostly important to provide additional coverage for sustainable investments not rated by commercial agencies.

Data and model

The Towards Sustainability label

The label offers us an excellent context for a data-driven analysis in a quasi-experimental setting. In response to a need for clearer signalling of sustainable investments, the Belgian asset management association Felbefin set up the *Towards Sustainability* label. The label is awarded and updated by a non-profit Central Labeling Agency (CLA), governed by a board composed of directors from the financial sector and independent members. It receives the recommendations of the Eligibility Board, composed of financial industry representatives and of independent experts (mostly academics) on awarding the *Towards Sustainability* label to individual products, based on the assessment reports received from the independent Verifier. An Advisory Board, composed of financial industry representatives and civil society representatives, defines the standard, and updates it regularly. All three board have independent chairs. Finally, the Quality Standard Verifier[2], which is not part of the CLA, certifies the alignment of funds' policies and processes with the label's requirements, providing independent external ESG audit.

The label imposes the exclusion of various activities regarded as unsustainable, at the company level, in each sector. Its focus is on eliminating significant harm, mostly at the start of the value chain. The intention is for the label to be within reach of everyone in the asset management industry, as evidenced by its name "Towards" Sustainability. It positions itself as a quality assurance for sustainable finance products, providing transparency and a guarantee to investors that a series of principles are respected. The content of the label is built around five key principles: (1) sustainability investment strategies; (2) avoiding harm by excluding unsustainable companies, (3) transparency on the processes, (4) information flows to clients and (5) supervision through internal verification processes. An update of

---

[2] Two of the authors belong the QS Verifier Partnership, as academic advisors.

the label took place in 2021, after its first two years of existence, although the data for this study falls under the first version of the label.

The adoption of the label was driven by demand from the largest Belgian fund distributors who submitted files for each of the financial products they wished to be labelled. These are notably the investors that already have access to sustainability data from multiple providers and ratings. The large asset managers active in Belgium also put pressure on the funds they distributed that were not developed in-house, requiring them to be labelled in order to continue distributing them. The label considers that it orders the market as it provides a minimum assurance and mitigates agency problems between widely invested institutional investors and their agents selling them the funds they distribute.

The intention is for the label to be mainstream someday and cover the whole Belgian market, resulting rapidly in the broad adoption of the label by different actors in the sustainable finance market. After one year, the coverage of the *Towards Sustainability* label was 499 funds and financial products holding €238 billion in assets under management, making it the second most important label in terms of assets under management, behind the French SRI label covering €259 billion of assets, managed by 514 funds (Novethic, 2020).

Data and method

To assess the validity of our hypothesis, we conducted a comparative analysis between funds bearing the Belgian *Towards Sustainability* label and similar unlabelled funds. To derive an estimate of the effect of the label on fund flows, we applied a Difference-in-Differences (DiD) methodology, using monthly net funds flows (denoted as $FLOW_{i,t}$) as the independent variable and the binary variable (x_1 indicating the presence or absence of a label) as the main explanatory variable.

In Difference-in-Difference settings, certain groups are exposed to a treatment and others are not. This method uses panel data to estimate the marginal effect of a treatment (receiving the *Towards Sustainability* label) on an outcome (average monthly funds flows). To calculate this effect, we compared the changes in the funds flows that occurred over time in a treatment group of labelled funds and a control group of unlabelled funds selected to keep the same characteristics as the treated population. By employing the DiD approach, we can ascertain the marginal effect of being labelled on fund flows, considering various control groups for comparison.

In order to mitigate the potential bias stemming from substantial heterogeneity between the treatment and the control group, we employed propensity score matching (PSM) to construct our control population. PSM is a technique utilized to estimate the causal treatment effect by pairing elements of a

treatment group with elements of a control group based on a propensity score (PS). The PS defines the probability of being in the treatment group given the covariates.

PSM is a statistical technique employed in observational studies to estimate causal effects. Its application is broad and, as outlined by Rosenbaum and Rubin (1983), can include a matched sampling on the univariate propensity score, which is a generalisation of a discriminant matching, or a multivariate adjustment by subclassification on the propensity score where the same subclasses are used to estimate treatment effects for all outcome variables. PSM can be used through many matching methods, such as the "Nearest Neighbour" algorithm that matches a treated unit to a control unit that is closest in terms of a distance measure such as a probit model Given its widespread usage, we adopted this commonly employed approach for our study.

We computed the propensity score for each fund, giving the probability of a company to be the target of a labelled fund conditioned on a set of regressors, X. The PS is given by $Pro[Y = 1|X] = G'\ (x'\ b)$, where G(.) is the normal cumulative distribution function. We used a probit with outcome variable Y equal to Treated and independent (matching) variables X (Eq. 1).

To establish a comparable control group, we began by selecting all funds that had been labelled Towards Sustainability during the initial round of labelling. Subsequently, we constructed a control population comprising all funds available in the Belgian market. In order to ensure a perfect comparability between the two groups, we included variables having an effect on funds flows based on existing literature. (logarithm of fund size, age of the fund, risk as captured by standard deviation, alpha and return metrics, fees and Morningstar globes, listed in Table 2).

$$P(Y_i=1 | Size_i\ ;\ Age_i\ )$$
$$= \Phi(\beta_0 + \beta_1 Size_i + \beta_2 Age_i + \beta_3\ StandDev_i + \beta_4 Alpha_i + \beta_5\ Return_i + \beta_6\ Fees_i + \beta_7\ Globes_i + \epsilon_i)$$
$$where\ Y_i = Treated_i$$

(1)

Each treated fund monthly data was successfully matched with a fund from the control group resulting in a set of 37,164 observations (panel data). Our dataset is divided in two distinct periods: the pre-label period (t =0), encompassing 18400 observations; and the post-label period (t=1) comprising 18764 observations. Fund flow data was collected for the period spanning from December 2018 to November 2020, consisting of one year before and one year after the initial round of labelling.

Table 2: Treatment and control sample

	Treatment	Control

# Observations	18582	18582
Monthly Relative Net Fund Flows		
Min	-0,50497	-0,50517
Max	5,71314	5,66766
Mean	0,04441	0,02976
Median	0,00127	-0,00358
Matching Variables (Mean)		
Age	3,886	3,563
Log Fund size	19,53	19,49
Alpha	-0,1043	-0,16380
Mth. return	0,3517	0,3715
StandDev	12,43	12,91
Fees	0,7534	0,7735
Globes	0,469	0,52

The descriptive statistics reveal a strong alignment between the populations across all variables examined. Notably, there is an observable disparity in the average fund flows, with higher levels observed in the treated (labelled) population.

Monthly relative net flow was defined as the net growth in fund assets beyond reinvested returns. Following Sirri and Tufano (1998), we calculated it as (Eq.2).

$$\text{FLOW}_{i,t} = \frac{\text{TNA}_{i,t} - \text{TNA}_{i,t-1}(1 + R_{i,t})}{\text{TNA}_{i,t-1}}, \tag{2}$$

where $\text{TNA}_{i,t}$ are total net assets of fund i at the end of month t, and $R_{i,t}$ is the return of fund i during that month. This measure reflects the percentage growth of a fund's assets under management in excess of the growth that would have occurred if no new funds had flowed in, and all dividends had been reinvested. To mitigate the influence of extreme outliers, net flows were winsorized at the 1% and 99% levels.

Additionally, we added control variables in our DiD models that have been found to influence mutual fund flows. Specifically, We included data on various performance measures (1), return volatility (2) as a measure of risk, fund size (3), fund fees or expenses (4), and fund age (5). These characteristics have been identified as significant drivers of fund flows in existing literature on mutual fund flows. However, we ignored investment style and style deviation practices as the evidence of their effect on fund flows is currently inconclusive (Muñoz, Vargas, & Vicente, 2021)

Alpha and raw returns were selected as performance's measures for their strong predictive power for mutual fund flows (Ivković & Weisbenner, 2009; Sirri & Tufano, 1998). In line with Ammann et al. (2019), we employ the 1 period lagged 1-year index-based alpha calculated by Morningstar and the 1-

month raw return (Lag (Alpha,1 & Lag(Monthly return,1))). By incorporating these two performance measures, we account for short- and long-term performance effects.

To capture the aspect of risk, we introduce the 12-month lagged return volatility (STDEV) as an additional measure. This inclusion is motivated by previous findings indicating that funds exhibiting higher return volatility tend to attract fewer inflows (Sirri & Tufano, 1998).

While financial markets measure fund size by the fund's total net assets under management, we used logarithms of this variable to limit the skew of the distribution, due to the dispersion of fund size in our sample (Log Fund size).

Empirical evidence suggests that mutual fund investors exhibit a preference for funds characterized by lower expense ratios (Ivković and Weisbenner, 2009, Sirri and Tufano, 1998 which in turn gives rise to a negative relationship between fees and fund flows.-. Nevertheless, the literature on the turnover-flow relationship is sparse and lacks consensus. Due to the limited coverage ratio of funds' net expense ratio and its turnover ratio in our data, we used management fees from Bloomberg databases as our variable to reflect management fees.

We used fund age measured in days as a control variable to reflect the lower level of flows observed in older funds (Chevalier and Ellison, 1997) (Age).

The correlation matrix presented in Table 3 provides initial insights into the relationship between the control variables and funds flows. Most independent and control variables are significantly correlated with the dependent variable, supporting the proposition that these independent variables are important determinants of funds flows. Additionally, the correlation coefficients among the independent variables indicate that multicollinearity is not a substantial concern in our empirical models as none of these coefficients exceeds the threshold of 0.80.

Table 3: Correlation Matrix

	Fund Flows	Treatment	t	DID	Mthly Return	StandDev	Log Fund Size	Alpha	BL_MGT_FEE	Age	Globes
Fund Flows	1,0000										
	/										
Treatment	0,1943	1,0000									
	(-0,00017)	/									
t	-0,0105	-0,1150	1,0000								
	(0,00432)	(1,27e-109)	/								
DID	0,0042	0,5292	0,5344	1,0000							
	(0,4285)	(0,00)	(0,00)	/							
Monthly Return	0,0641	-0,0025	-0,0368	-0,0240	1,0000						
	(3,49e-49)	(0,6298)	(1,22e-12)	(3,87e-06)	/						
StandDev	-0,0068	-0,0300	0,3323	0,1878	0,0781	1,0000					
	(0,1894)	(7,19e-09)	(0,00)	(4,01e-292)	(3,77e-52)	/					
Log Fund Size	-0,0011	0,0149	0,0213	0,0533	0,0165	-0,0048	1,0000				
	(0,8270)	(0,004)	(4,11e-05)	(8,44e-25)	(0,00139)	(0,3551)	/				
Alpha	0,2114	0,0055	0,1358	0,0994	0,0787	0,1115	0,1088	1,0000			
	(4,59e-08)	(0,2880)	(1,21e-152)	(2,37e-82)	(3,044e-52)	(3,65e-16)	(1,93e-125)	/			
BL_MGT_FEE	-0,0012	-0,0136	-0,4239	-0,0329	0,0003	0,1408	0,0700	-0,0787	1,0000		
	(0,8232)	(0,0085)	(2,91e-16)	(2,27e-10)	(0,9606)	(6,88e-230)	(1,21e-65)	(2,62e-77)	/		
Age	-0,0261	0,0797	0,0899	0,0524	-0,0030	0,0103	0,1582	0,0188	0,1404	1,0000	
	(4,71e-14)	(2,18e-53)	(1,39e-67)	(4,99e-24)	(0,5594)	(0,0468)	(4,33e-88)	(0,0002)	(8,43e-163))	/	
Globes	0,00477	-0,05015	0,1683	0,09595	0,0289	0,3017	0,0693	0,11046	0,0417	-0,0965	1,0000
	(-0,3574)	(3,83e-22)	(0,422)	(9,72 e-77)	(2,35e-08)	(0,00)	(8,56e-41)	(3,16e-101)	(8,66e-16)	(1,51e-77)	/

In our study, we incorporate the so-called sustainability globes published by Morningstar on a 1-5 scale (5 indicating the highest sustainability performers) as a control variable in our initial model, to assess the validity our first hypothesis. To accomplish this, we constructed a binary variable (denoted as Globe) which takes a value of 1 for funds categorized as high or above average in terms of sustainability globe, and 0 otherwise. This categorical variable served to test hypotheses 2a, 2b and 2c. All the control variables were lagged by one month, except for the variable representing the age of the funds.

Monthly data on total net assets, total returns, inception dates, assets under management (at fund and share class levels), and Modern Portfolio Theory's alpha were collected from the Morningstar database. In addition to the Morningstar database, we supplemented our data collection with information from the Morningstar Direct database, specifically acquiring monthly Morningstar Star Globes and monthly standard deviations. To enhance the accuracy of management fee data, we incorporated data from Bloomberg. Subsequently, a thorough cleaning process was conducted to eliminate any missing observations from the database.

Several panel DiD were performed to assess the impact of the label on flows using pooled regressions. These regressions encompassed all asset classes for which adequate data was available, enabling the calculation of monthly flows. We treated the explanatory variable x_1 as a binary variable with values 0 (not labelled) or 1 (labelled) since we did not expect a linear effect (Eq. 3).

$$FLOW_{i,t} = \beta_0 + \beta_1 T + \beta_2 x_1 + \beta_3 (x_1.T) + \sum_{z=2}^{N} \beta_z x_z + \varepsilon_{i,t} \tag{3}$$

where FLOW is the monthly net flows of fund i at time t,

T is the time variable = 0 before the labelling date and 1 after.

X_1 is the binary explanatory variable = 0 control group and 1 for the treatment group

X_z are the control variables.

(X_1. T) address the marginal effect and will be renamed DiD later in the results tables

Results

An initial DiD panel regression of the monthly net flow *FLOW$_i$* on the binary variable (labelled or not) for the full dataset (treated and untreated population) confirms a positive and significant coefficient between the net flows and the labelling variable (treatment). However, the analysis does not provide evidence of a positive and statistically significant marginal effect, leading to the rejection of Hypothesis 1 (H1 rejected).

Table 4: DiD estimation on full data set

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	7,85E-02	2,09E-02	3,764	0,000167	***
T	6,91E-03	4,23E-03	1,635	0,102013	
Treatment	1,56E-02	4,07E-03	3,826	0,000129	***
DID	5,15E-03	5,76E-03	0,895	0,370865	
Age	-2,12E-05	2,03E-06	-10,456	<2e-16	***
lag(StandDev)	-7,05E-04	1,97E-04	-3,585	0,000338	***
lag(Log Fund Size)	-1,01E-03	1,06E-03	-0,959	0,337	
lag(Alpha)	2,24E-03	2,71E-04	8,276	<2e-16	***
lag(Mth. Return)	1,16E-02	3,62E-04	31,950	<2e-16	***
lag(BL_MGT_FEE)	3,59E-04	1,99E-03	0,180	0,857	
Globes	-5,83E-04	3,03E-03	-0,192	0,847	

Note: *significance reported as * p < 0.1, ** p < 0.05, *** p < 0.01.*

Indeed, the coefficient for variable DiD (marginal change in fund flow) is found to be positive but not statistically significant. This implies that the presence of the label did not exert a discernible positive or negative marginal effect on fund flows when compared to non-labelled funds.

We ran robustness checks on our DiD models to verify that our results complied with specifications of the models in terms of endogeneity by analysing the fixed effect. A robustness check of the DiD analysis excluded the risk of violation of the parallel trend assumption, with the Bilinski and Hartfield (2020) non-inferiority approach. Building on the latter, we estimated the restricted model and its unrestricted version as follows:

$$F_{t,i} = a_0 + \sum_{k=T_0}^{D} \beta_k 1(k = t \bigcap T2_i = 1) + \alpha_i + \gamma_t + \varepsilon_{t,i} \tag{4}$$

$$F_{t,i} = a'_0 + \sum_{k=T_0}^{D} \beta'_k 1(k = t \bigcap T2_i = 1) + \theta T2_i t + \alpha_i + \gamma_t + \varepsilon'_{t,i} \tag{5}$$

Where $F_{t,i}$ is the monthly flow of fund i at month t, β_0 is the intercept, D_0 is the time at which the treatment starts, D is the number of months. T_i is the dummy related to the treatment, β_i is a fund fixed effect and β_t is a time-fixed effect. β and β' are then computed as :

$$\beta = \frac{1}{k}\sum_{i=1}^{k}\beta_i \, , \beta' = \frac{1}{k}\sum_{i=1}^{k}\beta'_i \tag{6}$$

Results confirmed that fund flows in the control group moved parallel to fund flows in the treatment group until the labelling event. This observation implies that the differential impact observed in the treatment group can indeed be attributed to the introduction of the labelling event.

Further results

To test hypotheses 2a, 2b and 2c and to deepen the interpretation of our first result, we broke down the analysis into sub-populations (high globes, low globes and no globes) to test whether this result depends on whether funds are already known as sustainable or not. This will allow us to determine if the marginal effect of the not-for-profit label on monthly flows is different for funds already signalled as sustainable by the commercial "black-box" ratings.

Upon analysing our data (in table 5), it becomes apparent that 58.57% of the funds bearing sustainability labels had already obtained a Morningstar rating. It is noteworthy that less than 50% of labelled funds were acknowledged by the market as having an above-average sustainability, measured by the number of Morningstar Globes.

Table 5: Sample size by high, low and no Globes subcategories

	Treatment High Globes	Treatment Low globes	Treatment No globes	Control High Globes	Control Low Globes	Control No Globes
# Observations	8715	2169	7698	9647	2730	6205
% of each pop.	46,90%	11,67%	41,43%	51,92%	14,69%	33,39%

Table 6 summarizes the panel data and includes descriptive statistics by sub-populations. We note that for each of the 3 sub-populations, average fund flows are slightly higher in the treatment/labelled sample.

Table 6: Descriptive statistics of high, low and no Globes sub populations

	Treatment High Globes	Treatment Low globes	Treatment No globes	Control High Globes	Control Low Globes	Control No Globes
# Observations	8715	2169	7698	9647	2730	6205
FLOW						
Min	-0,50322	-0,504975	-0,50452	-0,50517	-0,503472	-0,50321
Max	5,67579	4,951892	5,71314	5,638860	4,928431	5,66766
Mean	0,04623	0,03816	0,04411	0,03397	0,021446	0,02688
Median	0,00006	-0,005796	0,00338	-0,00334	-0,007167	-0,00295
Control Variables (Mean)						
StandDev	15,08615	19,17766	7,5179	15,1946	16,1757	7,9341
Mth. return	0,4771	0,2813	0,2295	0,4787	0,2608	0,2536
Alpha	0,3327	-0,372	-0,5237	0,5928	-1,181	-0,893
Log fund size	19,34	19,7	19,7	19,48	19,48	19,5
Age	3,493	4,292	4,217	3,558	3,545	3,58
Fees	0,7506	0,9536	0,7003	0,8343	0,8679	0,6374
Globes	1	0	NA	1	0	NA

A DiD estimation of the no globes sample demonstrates a positive and statistically significant coefficient for the DiD variable (**H2a validated** in Table 7). This finding provides empirical support for the proposition that labels can serve as a valuable mechanism within the market segment not encompassed by commercial ratings.

Table 7: DiD estimation for no globes data

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	1,04E-01	3,16E-02	3,276	0,001055	***
T	-7,17E-03	7,60E-03	-0,944	0,345317	
Treatment	1,33E-02	6,42E+03	2,073	0,038157	**
DID	2,57E-02	1,03E-02	2,503	0,012327	**
Age	-1,99E-05	3,34E-06	-5,970	2,42E-09	***
lag(StandDev)	-4,01E-04	4,73E-04	-0,849	0,396072	
lag(Log Fund Size)	-2,20E-03	1,62E-03	-1,353	0,176104	
lag(Alpha)	2,05E-03	5,51E-04	3,714	0,000205	***
lag(Monthly Return)	1,31E-02	9,82E-04	13,313	<2e-16	***
lag(BL_MGT_FEE)	-4,28E-03	3,59E-03	-1,191	0,233794	

*Note: significance reported as * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.*

A DiD estimation for high globes funds (Hypothesis 2b) only from treated and control populations yields distinct outcomes. Specifically, the results indicate that the DiD variable is no longer exhibits statistical significance. This implies that for funds that already possessed high Morningstar globes, the acquisition of the label did not exert any additional marginal impact on fund flows. Consequently, Hypothesis 2b, which posited such an impact, is rejected based on the evidence (**H2b rejected**).

Table 8: DiD estimation for high globes data

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	7,95E-02	3,21E-02	2,473	0,01339	**
T	1,48E-02	5,94E-03	2,496	0,01258	**
Treatment	1,74E-02	6,21E-03	2,800	0,00511	***
DID	-7,00E-03	8,15E-03	-0,858	0,39068	
Age	-2,27E-05	3,02E-06	-7,518	5,82E-14	***
lag(StandDev)	-1,00E+00	2,71E-04	-3,685	0,00023	***
lag(Log Fund Size)	-1,04E-03	1,64E-03	-0,634	0,52584	
lag(Alpha)	2,85E-03	3,74E-04	7,629	2,49E-14	***
lag(Monthly Return)	1,12E-02	4,55E+04	24,625	<2e-16	***
lag(BL_MGT_FEE)	3,91E-03	2,75E-03	1,419	0,156	

Note: significance reported as * p < 0.1, ** p < 0.05, *** p < 0.01.

In cases where the market already has information from commercial ratings indicating good sustainability of a fund, the additional information brought by a non-profit label confirming this sustainability performance does not serve as additional reassurance resulting in additional flows. It is important to note that these investments are not the ones primarily suspected of greenwashing and do not face significant trust deficits. Consequently, we conducted the same analysis focussing on low sustainability funds, where the lack of trust may indeed pose a pertinent concern.

A DiD estimation testing hypothesis 2c reveals that the acquisition of the label does not yield a positive and statistically significant marginal effect on flows for funds with a low globe Morningstar either (**H2c rejected**). This finding implies that when a fund was not previously recognised by the Morningstar rating as sustainable (low globe), the new, contradictory, information brought by the label indicating the sustainability of the fund does not result in extra flows. The information provided by not-for-profit labels does not supersede information provided by commercial ratings.

Table 9 : Result DiD Model on low globes data

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	1,62E-02	5,94E-02	0,273	0,785067	
T	2,00E-03	9,93E-03	0,202	0,840175	
Treatment	1,41E-02	1,09E-02	1,294	0,195759	
DID	1,39E-02	1,49E-02	0,936	0,349625	
Age	-1,78E-05	5,03E-06	-3,541	4,02E-04	***
lag(StandDev)	-1,44E-04	4,87E-04	-0,296	0,767427	
lag(Log Fund Size)	1,53E-03	2,99E-03	0,511	0,609578	
lag(Alpha)	8,60E-03	5,75E-04	1,494	1,35E-01	
lag(Monthly Return)	1,15E-02	6,84E-04	16,802	<2e-16	***
lag(BL_MGT_FEE)	-2,85E-03	4,85E-03	-0,587	0,55719	

Note: significance reported as * p < 0.1, ** p < 0.05, *** p < 0.01.

To summarize, our findings indicate that the label exerts a positive marginal effect on fund flows which were not yet rated (H2a). However, the label did not have a positive marginal effect on flows of funds already rated by Morningstar, irrespective of their quality (high or low globe) (H2b and H2c).

Discussion and Conclusion

This study investigates the added value of not-for-profit labels in a market predominantly governed by commercial rating agencies, particularly in terms of augmenting transparency and assurance. While previous studies have primarily concentrated on ratings provided by private commercial companies to identify the desirability of sustainable investments, there exists a dearth of studies examining the influence of public or private not-for-profit labels on fund flows.

The findings of this research demonstrate that obtaining a sustainability label exerts a positive marginal effect on fund flows of funds that have not yet received a rating. However, a label does not have a positive marginal effect on flows of funds already rated by Morningstar, irrespective of their quality (high or low globe). These results affirm the existence of investor preferences for sustainable investments, as previously identified in the literature (Ammann et al. 2019; Becker, Martin & Walter, 2022). However, they do not provide evidence to support a preference for not-for-profit labels over commercial ratings.

Our findings indicate that the provision of additional transparency through labels, in cases where the label merely confirms existing information (as observed with high globe funds), does not yield any discernible impact. Consequently, we deduce that there is no perceived added value in offering supplementary transparency in such instances. Specifically, we note the absence of any marginal increase in fund flows for funds already endowed with high Morningstar Globes. This clarifies the role of governments, NGOs and not-for-profit industry associations behind these labels in mitigating the agency problems of the asset management industry. It is when not-for-profit associations treat unrated funds (no globes), not covered by commercial ratings, that they have a positive effect on fund flows.

Since a label contradicting existing information (the case of low globe funds) has no marginal effect, we conclude there is no evidence that investors perceive not-for-profit labels as more valuable or more trustworthy than commercial ratings. In other words, the provision of enhanced confidence in commercial ratings does not appear to confer any perceived added value. Investors incorporate all available information that signals sustainability, irrespective of the organisation responsible for its publication. While investors are indeed seeking more sustainable funds, conflicting information does

not alter the decisions they have made based on private commercial ratings, despite the extensive criticism directed towards these ratings. This phenomenon highlights the profound influence that rating data exerts on financial markets. Despite the various criticisms directed at commercial ratings (Avetisyan & Hockerts, 2017), they remain the dominant force driving fund flow in financial markets. Our observations demonstrate that the common phenomenon of rating disagreement or divergent sustainability signals (Berg, Kölbel & Rigobon, 2019, Brito-Ramos, Cortez & Silva, 2023) does not paralyse investors in their decision-making.

While agency theory is a well-established perspective, our study contributes to its refinement by introducing a segmentation approach that recognizes the influence of not-for-profit agents on fund flows. This segmentation provides a nuanced understanding of the various actors involved and their impact within the context of sustainability assessments. Our findings underscore the importance of having a sustainability assessment for all funds, even those for which an assessment may not be commercially justified. It is evident that further research endeavours should focus on refining these segments by differentiating between retail and institutional investors. Such an exploration would enable a deeper understanding of how these results may vary based on the varying levels of investor sophistication.

Our results show that new positive information on sustainability is integrated in the investment decisions if there was no prior rating. But our study does not allow us to determine whether this integration occurs by conviction for sustainability or for marketing purpose. To overcome this limit, complementary studies could interview investors to understand their motivations and the targets that the label helped them reach. Further studies could also use this result to assess information efficiency of financial markets for sustainability, evidencing a certain maturity of these markets. To validate this proposition, we would have to study whether investors also integrate negative information on sustainability, once enough data is available on the removal of a label for a fund.

Our analysis yields several management implications. We confirm the importance of having a good rating to attract investors (Amman et al., 2019). Fund managers will find it valuable to recognize that labels have the same effects as ratings, despite their inherent differences (Table 1). This insight empowers smaller fund managers, as they can drive the request for a label, whereas they don't drive the request to be rated by commercial agencies. As a not-for-profit industry-led initiative, the labelling process includes dialogue with the applicants and an intention to help the market learn and improve. Asset managers who are not covered by rating agencies may voluntarily opt to undergo this labelling process. Upon receiving the label, they will be rewarded with increased positive fund flows, akin to the benefits associated with ratings, while also gaining valuable insights. Managers may consider combining the label with the use of ad hoc internal ratings based on rating agencies' raw data, which

fund managers increasingly develop as they become more knowledgeable in sustainability. Indeed, our results underscore a lock-in of rating data and methodologies in the sustainable fund market. Both fund managers and investors have become highly dependent on ratings, which have shaped the market dynamics. y affording greater importance to labels in the investment decision-making process, it may be possible to rebalance this distribution of power. Managers overseeing funds of funds can contribute to this rebalancing effort by incorporating label requirements for all underlying funds within their portfolios. This approach can help counter the dominance of commercial ratings in the market, thereby fostering a more balanced landscape.

Financial service providers will recognize the potential for alternative actors, beyond traditional rating agencies, to enhance transparency regarding the sustainability of financial products, including non-profit entities. This study of a label shows similar efficacy as for ratings, in terms of fund flows. By introducing diversity among actors, particularly in light of the growing consolidation within the rating sector, it becomes possible to address the European Commission's apprehensions regarding the allocation of capital towards sustainable initiatives.

Finally, our study is a call to labelling agencies to face up to their responsibilities to offer a high-quality label in terms of sustainability, as it highlighted the power of a sustainable-labelling scheme to attract capital flows towards the transition to a sustainable economy. The imperative of maintaining quality should prompt labelling agencies to conduct regular reviews of their standards, ensuring that they remain aligned with the escalating demands posed by sustainability challenges. The *Towards Sustainability* label demonstrates an understanding of this need by incorporating provisions for regular updates. Given that fund managers now have a justifiable rationale for investing time and resources into labelling their funds, considering the marginal increase in fund flows associated with such labels, labelling agencies can reasonably anticipate a surge in label applications from funds that fall outside the coverage of commercial ratings.

References

Avetisyan, E., & Hockerts, K. (2017). The consolidation of the ESG rating industry as an enactment of institutional retrogression. Business Strategy and the Environment, 26(3), 316-330.

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),

Berg, F., Koelbel, J. F., & Rigobon, R. (2019). Aggregate confusion: The divergence of ESG ratings. MIT Sloan School of Management.

Becker, M. G., 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, 47, 102708.

Cash, D. (2018). Sustainable finance ratings as the latest symptom of 'rating addiction'. Journal of Sustainable Finance & Investment, 8(3), 242-258.

Ceccarelli, Marco, Stefano Ramelli, and Alexander F. Wagner. "Low-carbon mutual funds." Swiss Finance Institute Research Paper 19-13 (2021).

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

Christensen, D. M., Serafeim, G., & Sikochi, S. (2021). Why is corporate virtue in the eye of the beholder? The case of ESG ratings. The Accounting Review, https://doi. org/10.2308/TAR-2019-0506.

D'Hollander, D., & Marx, A. (2014). Strengthening private certification systems through public regulation: The case of sustainable public procurement. Sustainability Accounting, Management and Policy Journal.

Dumas, C., & Anastasiadis, S. (2021). Mécanismes calculatifs et discursifs dans les notations ESG. Revue française de gestion, 300(7), 101-113.

Eng, L. L., Fikru, M., & Vichitsarawong, T. (2022). Comparing the informativeness of sustainability disclosures versus ESG disclosure ratings. Sustainability Accounting, Management and Policy Journal, 13(2), 494-518.

European Commission. (2018). High-Level Expert Group (HLEG) on Sustainable Finance.

Ferriani, F., & Natoli, F. (2020). ESG risks in times of COVID-19. Applied Economics Letters, 1–5.

Folger-Laronde, Z., Pashang, S., Feor, L., & ElAlfy, A. (2020). ESG ratings and financial performance of exchange-traded funds during the COVID-19 pandemic. Journal of Sustainable Finance & Investment, 1-7.

Gutsche, G., & Zwergel, B. (2020). Investment Barriers and Labeling Schemes for Socially Responsible Investments. Schmalenbach Business Review, 1–47.

Gyönyörová, L., Stachoň, M., & Stašek, D. (2021). ESG ratings: relevant information or misleading clue? Evidence from the S&P Global 1200. Journal of Sustainable Finance & Investment, 1-35.

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.

Ivković, Z., & Weisbenner, S. (2009). Individual investor mutual fund flows. Journal of Financial Economics, 92(2), 223-237.

Lukomnik, J., & Hawley, J. P. (2021). Moving Beyond Modern Portfolio Theory: Investing that Matters. Routledge.

Neal, D., & Warren, G. (2015). Long-Term Investing as an Agency Problem. CIFR Paper, (063).

Novethic. (2020). Market Data Sustainable Labels Europe at 30 Sept 2020. Novethic.

Muñoz, F., Vargas, M., & Vicente, R. (2021). Style-changing behaviour in the socially responsible mutual fund industry: consequences on financial and sustainable performance. Sustainability Accounting, Management and Policy Journal.

Schoenmaker, D., & Schramade, W. (2019). Investing for long-term value creation. Journal of Sustainable Finance & Investment, 9(4), 356-377.

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

Shah, S. (2014). The principal-agent problem in finance. *CFA Institute Research Foundation L2014-1*.

Steen, M., Moussawi, J. T., & Gjolberg, O. (2020). Is there a relationship between Morningstar's ESG ratings and mutual fund performance?. Journal of Sustainable Finance & Investment, 10(4), 349-370.

Ramos, Sofia Brito and Ceu Cortez, Maria and Silva, Florinda, Do Sustainability Signals Diverge? An Analysis of Labeling Schemes for Socially Responsible Investments (February 22, 2023). ESSEC Business School Research Paper No. Forthcoming.

Wang, A. Y., & Young, M. (2020). Terrorist attacks and investor risk preference: Evidence from mutual fund flows. Journal of Financial Economics.