



Ethical window dressing: SRI funds are as good as their word

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ABSTRACT

In this research, we tested the existence of ethical window dressing in the Socially Responsible Investment (SRI) domestic equity funds registered in the US market. For this purpose, we compared the environmental, social, and corporate governance (ESG) attributes of disclosed and undisclosed portfolios. We reject that the ESG portfolio image is significantly better in reporting months than in non-reporting months. Examining portfolio trading based on different proxies, we found residual signals of ethical window dressing. None of these signals correspond to easy-to-interpret information. Thus, SRI funds do not manipulate the disclosed ESG image to attract money flows.

1. Introduction

Sustainable investing considers environmental, social, and corporate governance (ESG) standards to obtain both long-term competitive financial returns and positive societal impact (US SIF: The Forum for Sustainable and Responsible Investment, 2020a). Socially Responsible Investment (SRI) mutual funds in the US investment industry have experienced an exponential increase during the last two decades (US SIF, 2020b). Sustainable investing assets comprise about 33% of total US assets under professional management in 2020 (\$17.1 trillion out of \$51.4 trillion), with SRI funds being the leading institution within the sustainable registered investment companies.

The literature finds mixed evidence when comparing the performance of SRI funds to their conventional counterparts. Moreover, SRI funds' investors are less sensitive to financial records than conventional investors. This asymmetric perception might have important consequences for management schemes of SRI funds. On the one hand, conventional fund managers could be tempted to manipulate their portfolios to oversell their skills by replacing losing holdings with winners just before portfolio disclosures. This window dressing was first identified by Haugen and Lakonishok (1988) and Lakonishok et al. (1991). The motivation would be the asymmetric relationship between flows and lagged performance (e.g., Chevalier and Ellison, 1997; Sirri and Tufano, 1998; Berk and Green, 2004) and the managers' perception that disclosed portfolios have a significant influence on calendar-based investments (e.g., Brown et al., 1996; Huang et al., 2007; Hu et al., 2011).¹

On the other hand, SRI fund managers could have other incentives and display a good ESG image because salient information on sustainability attracts money from investors who are more sensitive to ESG standards (e.g., Bollen, 2007; Riedl and Smeets, 2017; Ammann et al., 2019; Hartzmark and Sussman, 2019). These incentives could lead to different window dressing strategies in the SRI

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¹ Other window dressing signals to attract money flows are beyond a performance-based manipulation. Previous literature has analyzed the risk levels of disclosed portfolios in bond and money market funds (e.g., Musto, 1997, 1999; Morey and O'Neal, 2006; Ortiz et al., 2012) and portfolio pumping (e.g., Carhart et al., 2002; Agarwal et al., 2011; Hu et al., 2014).

fund industry, not with the aim of disclosing a better financial image but to display a more sustainable image. Although previous literature shows that investment styles of SRI funds and conventional funds are different (e.g., Bauer et al., 2005; Gregory and Whittaker, 2007), the mixed evidence of performance differences (e.g., Bauer et al., 2007; Gil-Bazo et al., 2010; Nofsinger and Varma, 2014; Revelli and Viviani, 2015; Hartzmark and Sussman, 2019) could cast doubt on the actual restrictions of the investment universe of SRI funds. This doubt highlights the concern for potential portfolio manipulation by SRI funds before portfolio disclosures to provide an improved ESG image to investors.

To the best of our knowledge, Kempf and Osthoff's (2008) study is the only research on window dressing in SRI funds. According to their ethical window dressing hypotheses, SRI funds have incentives to present better ESG portfolio scores at the end of the year than in mid-year dates to attract money flows. Kempf and Osthoff (2008) also argue that if SRI funds buy (sell) stocks with high (low) ESG ratings just before portfolio disclosures, the sensitivity of SRI funds' returns to an ethical benchmark should be higher before disclosure dates than in other periods.

Despite this valuable research, whether ethical window dressing occurs still lacks an appropriate answer due to some limitations. First, Kempf and Osthoff's (2008) study did not use private portfolio holdings to directly compare disclosed and undisclosed information, as strongly recommended by Musto (1999). Second, the use of semi-annual or quarterly portfolios could lead to biased conclusions because of intra-period round-trip trades (Elton et al., 2010). Finally, the use of sophisticated ESG scores assumes that investors are sensitive to these ratings, but there is robust evidence that exogenous shocks (Bialkowski and Starks, 2016) and high-visibility information (El Ghouli and Karoui, 2017) are more easily interpreted by investors.

Our study makes three distinct contributions to the research on ethical window dressing:

- 1 Following Musto (1999), we make straightforward comparisons between disclosed and undisclosed portfolios to identify ethical window dressing. Musto (1999) justifies this direct approach to overcome the limitations of window dressing evidence based on price anomalies and low-frequency disclosed information (e.g., He et al., 2004; Ng and Wang, 2004).
- 2 We compare easy-to-interpret and high-visibility ESG information instead of sophisticated ESG ratings, which could not be properly noticed by investors who are prone to sustainability.
- 3 We split the overall ESG assessment into environmental, social, and corporate governance dimensions, thereby identifying the sustainability factors more likely to be manipulated.

The paper is organized as follows. Section 2 presents the ethical window dressing hypotheses. Section 3 includes the data, methodology and empirical results. Finally, Section 4 concludes.

2. Ethical window dressing hypotheses

We hypothesize that SRI funds should disclose an improved ESG portfolio image to attract flows from investors who are sensitive to non-financial attributes. As the ESG image improves, investors who are less sensitive to financial performance have fewer opportunities to find better investment alternatives in terms of ESG attributes.

H₁. For SRI funds, ESG scores reported by disclosed portfolios are significantly higher than those of undisclosed portfolios.

H₁ is merely focused on the ESG score as the result of the investment decisions made by SRI funds. Our interest in investment decisions seeking to improve the disclosed ESG image leads to our second hypothesis.

H₂. SRI funds trade stocks with higher (lower) ESG scores more intensely to increase (decrease) the disclosed portfolio weights of these stocks.

Most sustainability-conscious investors do not compute ESG scores of the disclosed portfolios or check the investments made by SRI funds but rather simply look at easy-to-interpret and high-visibility information concerning sustainability. Further, the search for ethical window dressing should overcome the extended treatment of SRI funds as a group of conventional funds that fully conform to ESG standards. This overall approach lacks the heterogeneity and the consequences of different ESG strategies (Barnett and Salomon, 2006; Ceccarelli et al., 2020).

Therefore, the tests of *H₁* and *H₂* must also consider that:

- a) Ethical window dressing should be captured in easy-to-interpret and high-visibility information of ESG attributes.
- b) Ethical window dressing might differ in ESG dimensions given the varied concerns of sustainability-conscious investors.

3. Data, methods, and results

3.1. Data

Using Morningstar, we gathered monthly portfolio holdings, total net assets, and fiscal year-end month for all SRI domestic equity funds registered in the US market. Domestic equity funds are the largest investment category of the US mutual fund industry, with 40% of net assets at year-end 2019 (ICI: Investment Company Institute, 2021).

Table 1
Descriptive statistics.

	All	DISC	UNDISC	T1	T2	T3
# funds	70			37	43	68
# portfolios	5674	1896	3778	421	703	4550
Weight Controlled (Std. deviation)	97.10% (3.92%)	97.17% (3.93%)	97.07% (3.92%)	96.10% (5.58%)	95.56% (6.42%)	97.43% (3.06%)
Weight Controlled ESG (Std. deviation)	80.14% (21.11%)	80.07% (21.22%)	80.18% (21.05%)	58.75% (27.86%)	68.16% (24.92%)	83.97% (17.57%)

The sample consists of 70 SRI US domestic equity funds from January 2007 to June 2018. Disclosed portfolios (*DISC*) are quarterly portfolios publicly reported according to the fiscal year-end month of each fund, whereas undisclosed portfolios (*UNDISC*) are those monthly portfolios not publicly reported. *T1* comprises the pre-crisis period; *T2* defines the financial crisis period from January 2008 to June 2009; *T3* contains the post-crisis period. *Weight Controlled* shows the average portfolio weight correctly identified with ISIN code. *Weight Controlled ESG* shows the percentage of the former weight providing ESG scores.

To construct a value-weighted ESG portfolio score, we matched the holdings of each portfolio with the ESG scores provided by Refinitiv Eikon.² This data provider clusters 500 ESG measures into 10 categories that reformulate three ESG pillars (*ESG Environmental*, *ESG Social*, and *ESG Corporate Governance*). The score of each pillar ranges from 0 to 100. The *ESG Score* measures the company's ESG performance based on these three pillars. Next, the *ESG Controversies Score* is calculated on 23 ESG controversial items. A company with no controversies receives a score of 100. Finally, the *ESG Combined Score* overlays the *ESG Score* with the *ESG Controversies Score* to provide a comprehensive evaluation of the company's sustainability. An *ESG Combined Score* lower than an *ESG Score* indicates the existence of sustainability controversies.³

We required that funds have at least two years of reported portfolios to avoid noisy flow responses to portfolio image (Chevalier and Ellison, 1997). Following El Ghoul and Karoui (2017), we required that at least 67% of the portfolio holdings match with ESG scores. Our final sample is free of survivorship bias and includes 5674 monthly portfolios from 70 SRI domestic equity funds. The sample period covers from January 2007 to June 2018. In this period, quarterly portfolios were publicly available (Forms N-CSR and N-CSRS) whereas monthly portfolios were still undisclosed.⁴

Table 1 shows the descriptive statistics for the full sample period and for three different sub-periods considering the recent financial crisis.

3.2. Methods and results

3.2.1. ESG scores: differences between disclosed and undisclosed portfolios

In order to test H_1 , we constructed a monthly ESG portfolio score for each fund:

$$ESG\ Score_{j,t} = \sum_{i=1}^{N_{j,t}} \omega_{i,j,t} \times ESG_{i,t} \quad (1)$$

where $\omega_{i,j,t}$ is the portfolio weight of stock i in fund j at the end of month t ; $N_{j,t}$ is the number of stocks held by fund j at the end of month t ; and $ESG_{i,t}$ is the *ESG Score* of stock i at the end of month t . Eq. (1) is also used to compute the monthly scores of *ESG Combined*, *ESG Controversies*, and the three ESG pillars (i.e., *environmental*, *social*, and *corporate governance*).

Next, we compared the equally weighted ESG scores of disclosed and undisclosed portfolios. The classification of disclosed or undisclosed portfolios is made for each fund according to its fiscal year-end month. Disclosed portfolios should show significantly higher scores than those of undisclosed portfolios if SRI funds engage in ethical window-dressing.

Table 2 (Panel A) clearly rejects H_1 . Table 2 (Panel B) shows similar findings when considering the ratings of the top 10 portfolio holdings as a subset of high-visibility stocks in the portfolio. Table 2 (Panel C) also reinforces these results when the sustainability dimension of a stock is easily interpreted as a constituent of a well-known ethical benchmark, such as the FTSE4Good US Select Index. Thus, Table 2 clearly rejects that the ESG portfolio image disclosed by SRI funds is significantly better than the undisclosed image. This rejection is robust for different ESG dimensions, time periods, and high-visibility and easy-to-interpret information. The rejection of H_1 also holds for individual tests of each SRI fund in our sample.⁵

² Details in <https://www.refinitiv.com/en/financial-data/company-data/esg-data>; (accessed 1 April 2022)

³ Details in https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf; (accessed 1 April 2022)

⁴ Under the Securities Act of 1933, the Securities Exchange Act of 1934, and the Investment Company Act of 1940, US mutual funds must disclose annual and semiannual portfolio reports (Forms N-CSR and N-CSRS, respectively). Effective May 10, 2004, the US SEC required additional reports as of the end of the first and the third fiscal quarters (Form N-Q). Further, rule 17 CFR 270.30b1-9 requires that funds must report information about their portfolios as of the last business day, or last calendar day, of the month (Form N-PORT). The compliance date for filing Form N-PORT was June 1, 2019 for large entities and March 1, 2020 for small entities. See details in <https://www.sec.gov/files/formn-port.pdf>

⁵ A residual and inconsistent number of SRI funds follow window dressing as defined in H_1 . This result is robust for clusters of funds based on Fama and French's (1993, 2015) three-factor and five-factor models. Results are available upon request.

Table 2
ESG scores: disclosed vs. undisclosed portfolios.

Panel A: ESG Scores for the full portfolio						
	DISC	UNDISC	Difference	Diff T1	Diff T2	Diff T3
ESG	41.655	41.705	-0.050	0.279	0.058	-0.057
ESG Environmental	34.766	34.809	-0.043	0.255	0.081	0.046
ESG Social	43.431	43.484	-0.053	0.291	0.016	-0.053
ESG Corporate	44.177	44.226	-0.049	0.263	0.135	-0.069
ESG Combined	36.561	36.594	-0.033	0.251	0.042	0.037
ESG Controversy	57.490	57.475	0.015	0.276	0.115	0.008
Panel B: ESG Scores for the top 10 holdings						
	DISC	UNDISC	Difference	Diff T1	Diff T2	Diff T3
ESG	13.925	13.889	0.036	0.112	0.136	0.026
ESG Environmental	12.064	12.033	0.030	0.183	0.134	0.013
ESG Social	14.444	14.411	0.033	0.099	0.101	0.028
ESG Corporate	14.587	14.539	0.048	0.057	0.203	0.033
ESG Combined	11.482	11.435	0.047	0.062	0.117	0.044
ESG Controversy	15.648	15.563	0.084	-0.076	0.119	0.099
Panel C: Portfolio overlap with FTSE4Good US Select Index						
	DISC	UNDISC	Difference	Diff T1	Diff T2	Diff T3
FTSE4Good US Index	14.681	14.818	-0.137	0.076	0.137	-0.143

This table reports the ESG portfolio scores as computed in Eq. (1) for disclosed (DISC) and undisclosed (UNDISC) portfolios as defined in Table I for the full sample period. Panel A reports the Difference between the ESG scores of DISC minus UNDISC for the full portfolios. These differences are also reported for three different time sub-periods (Diff T1, Diff T2, Diff T3) as defined in Table 1. The *t*-statistic and the Mann-Whitney *z*-statistic test the significance of these differences for different ESG pillars and measures. Panel B reports similar information for the top 10 portfolio holdings. Panel C reports the average of the pairwise overlap (Elton et al., 2007) as the sum of the minimum fraction in each stock held by the funds and the FTSE4Good US Select Index. Panel C reports the Difference between the overlap scores of DISC minus UNDISC portfolios. These differences are also reported for three different time sub-periods (Diff T1, Diff T2, Diff T3) as defined in Table I. The *t*-statistic and the Mann-Whitney *z*-statistic test the significance of these overlap differences. *(†) Significant *t*-statistic (*z*-statistic) at 5%; **(††) Significant *t*-statistic (*z*-statistic) at 1%.

3.2.2. Trading intensity: differences between disclosed and undisclosed portfolios

In order to test *H*₂, our approach was based on trading proxies. We tested whether SRI funds increase (decrease) the portfolio weight of ethical (unethical) stocks more intensely in the reporting months than in other dates. We adapted the approach of Ng and Wang (2004) to quantify this trading intensity as follows:

$$Portfolio\ Weight\ Increase_{j,t} = \frac{Average^{ethical\ stocks} [\omega_{i,j,t} - \omega_{i,j,t-1}]^+}{Average [\omega_{i,j,t} - \omega_{i,j,t-1}]^+} \tag{2}$$

$$Portfolio\ Weight\ Decrease_{j,t} = \frac{Average^{unethical\ stocks} [\omega_{i,j,t} - \omega_{i,j,t-1}]^-}{Average [\omega_{i,j,t} - \omega_{i,j,t-1}]^-} \tag{3}$$

where $\omega_{i,j,t}$ ($\omega_{i,j,t-1}$) is the portfolio weight of stock *i* in fund *j* at the end of month *t* (*t*-1). The numerator of Eq. (2) (Eq. (3)) reflects the average positive (negative) change in the portfolio weight of ethical (unethical) stocks in month *t*, whereas the denominator contains the average positive (negative) change in the portfolio weight of all the stocks with positive (negative) changes in the portfolio weight in month *t*. A value higher than 1 means that the average increase (decrease) in the portfolio weight of ethical (unethical) stocks has been higher than the average increase (decrease) in the portfolio weights. According to our *H*₂, if SRI funds engage in ethical window dressing, both measures should reach significantly higher values in portfolio reporting months than in non-reporting months.

We followed several approaches to identify the subset of stocks included in the numerator of Eqs. (2) and (3) as ethical or unethical stocks, respectively. First, we compared the trading intensity of the stocks reporting ESG scores (ESGinfo_YES) versus those stocks without ESG scores (ESGinfo_NO). Second, we compared the trading intensity of the stocks being constituents of the FTSE4Good US Select index (FTSE4GoodUS_YES) versus those stocks out of this ethical benchmark (FTSE4GoodUS_NO). The third approach compared the trading of stocks without ESG controversies (ESGControv_NO) versus those stocks with ESG controversies (ESGControv_YES). Finally, we compared the trading of the stocks with the best ESG scores (BestESG) versus those stocks with the worst ESG records (WorstESG). This fourth approach considered the three ESG pillars and all of the ESG measures to obtain evidence across different sustainability standards.⁶

Consistent with the aforementioned approaches, if SRI fund engage in ethical window dressing, they should increase (decrease) the portfolio weight of stocks more intensely with a good (poor) ESG image in the reporting months.

Overall, Table 3 (Panel A) reports higher values of the trading measures in disclosed portfolios than in undisclosed portfolios for the

⁶ Each month, we ranked the values of the ESG scores of the stocks allocated in each portfolio to calculate the increase (decrease) of the portfolio weight of the stocks held by the fund which are ranked in the top (bottom) ESG decile. When performing the top 10 holdings analyses, we considered the two stocks with the best (worst) ESG scores.

Table 3
ESG scores: Trading intensity measures.

Panel A: Full portfolio						
	DISC	UNDISC	Difference	Diff T1	Diff T2	Diff T3
Δ_ESGinfo_YES	0.994	0.990	0.004	0.006	-0.005	0.005
∇_ESGinfo_NO	1.192	1.200	-0.008	0.010	-0.012	-0.008
Δ_FTSE4GoodUS_YES	1.037	0.996	0.041*	-0.094	0.060	0.049*
∇_FTSE4GoodUS_NO	1.021	1.015	0.007	0.010	0.021†	0.004
Δ_ESGControv_NO	0.960	0.950	0.010	-0.009	0.010	0.006
∇_ESGControv_YES	1.155	1.150	0.005	0.026	-0.088	0.014
Δ_BestESGScore	1.118	1.077	0.042	0.022	0.101	0.034
∇_WorstESGScore	0.973	0.947	0.026	0.002	0.146	0.012
Δ_BestESGCombined	1.052	0.994	0.058*	0.062	0.080	0.053*
∇_WorstESGCombined	0.986	0.973	0.013	0.016	0.192*†	-0.012
Δ_BestESGControv	0.941	0.932	0.009	-0.071	-0.020	0.019
∇_WorstESGControv	1.234	1.216	0.018	0.170	0.150	0.032
Δ_BestPillarENV	1.097	1.065	0.032	-0.136	0.076	0.039
∇_WorstPillarENV	0.877	0.845	0.032	-0.190*†	0.086	0.040
Δ_BestPillarSOC	1.132	1.099	0.033	0.049	0.019	0.034
∇_WorstPillarSOC	0.953	0.929	0.024	-0.023	0.106	0.016
Δ_BestPillarGOV	1.081	1.051	0.031	0.125	0.035	0.022
∇_WorstPillarGOV	0.981	0.949	0.032	0.054	0.091	0.020
Panel B: Top 10 holdings						
	DISC	UNDISC	Difference	Diff T1	Diff T2	Diff T3
Δ_ESGinfo_YES	0.974	0.968	0.006	0.048	-0.006	0.005
∇_ESGinfo_NO	0.291	0.298	-0.007	0.001	-0.055	-0.003
Δ_FTSE4GoodUS_YES	0.821	0.824	-0.003	-0.117	0.010	0.006
∇_FTSE4GoodUS_NO	0.871	0.859	0.012	-0.014	0.030	0.011
Δ_ESGControv_NO	0.870	0.879	-0.008	-0.029	-0.058	0.001
∇_ESGControv_YES	0.681	0.686	-0.005	-0.128	0.013	0.001
Δ_BestESGScore	0.993	0.968	0.025	0.090	0.020	0.021
∇_WorstESGScore	1.015	1.016	0.001	-0.076	-0.052	0.015
Δ_BestESGCombined	0.963	0.961	0.002	-0.010	-0.001	0.002
∇_WorstESGCombined	1.061	1.047	0.013	-0.012	-0.022	0.021
Δ_BestESGControv	0.908	0.922	-0.014	0.104	0.055	0.031
∇_WorstESGControv	1.045	1.055	-0.010	-0.086	-0.050	0.001
Δ_BestPillarENV	0.966	0.945	0.020	0.024	0.033	0.018
∇_WorstPillarENV	0.986	1.017	-0.031	-0.148	-0.022	-0.026
Δ_BestPillarSOC	0.980	0.964	0.016	0.092	0.029	0.008
∇_WorstPillarSOC	1.037	0.999	0.038	-0.058	0.038	0.046
Δ_BestPillarGOV	0.986	0.961	0.025	-0.112	0.079	0.027
∇_WorstPillarGOV	1.025	1.017	0.009	0.031	-0.010	0.010

This table reports the trading intensity measures in disclosed (*DISC*) and undisclosed (*UNDISC*) portfolios for the full sample period. Panel A reports the *Difference* between these trading proxies of *DISC* minus *UNDISC* for increasing (Δ) and decreasing (∇) portfolio weights as defined in Eq. (2) and Eq. (3), respectively. These differences are also reported for three different time sub-periods (*Diff T1*, *Diff T2*, *Diff T3*) as defined in Table 1. The *t*-statistic and the Mann-Whitney *z*-statistic test the significance of these differences for the full portfolio, for different ESG pillars and measures, and for certain ESG characteristics of the stocks included in the numerator of Eqs. (2) and (3). Panel B reports similar information for the top 10 portfolio holdings. *(†) Significant *t*-statistic (*z*-statistic) at 5%; ***(†) Significant *t*-statistic (*z*-statistic) at 1%.

full sample period. This finding could be consistent with a trading effort of SRI funds to improve the disclosed ESG image, but most of these differences are not significant. More concretely, we only detected certain evidence of ethical window dressing for the constituents of the FTSE4Good US Select index and the *ESG Combined* measures.⁷ Furthermore, when we focus on high-visible top 10 holdings, Table 3 (Panel B) rejects any significant evidence of ethical window dressing. This result is robust for different periods and ESG attributes. This rejection of H_2 also holds for individual tests of each SRI fund.⁸

4. Conclusions

Straightforward comparisons between disclosed and undisclosed information reveal that the ESG image of quarterly disclosed portfolios is not significantly different from that of undisclosed monthly portfolios. This finding is consistent for Environmental, Social and Corporate Governance attributes as well as for the role of ESG controversies. This evidence is also robust for high-visibility and

⁷ Table III (Panel A) also reports a negative and significant difference in the decrease of the portfolio weights of the stocks with the worst *ESG Environmental* scores. This result is contrary to hypothesis H_2 . However, it occurs before the financial crisis (*T1*) when much fewer SRI funds were registered and the sustainable portfolio image could not be as relevant as it currently is.

⁸ A residual and inconsistent number of SRI funds follow window dressing as defined in H_2 . This result is robust for clusters of funds based on Fama and French's (1993, 2015) three-factor and five-factor models. Results are available upon request.

easy-to-interpret information such as top 10 portfolio holdings and constituents of the broadly used FTSE4Good US Select benchmark. All these results also hold for individual tests of each SRI fund. Thus, the first part of our empirical analysis clearly rejects that the ESG portfolio image is significantly better in reporting than in non-reporting months.

Focusing on trading measures, our findings show the efforts of SRI funds to improve the quarterly disclosed ESG image; however, most of these measures are not significant. This scarce evidence of ethical window dressing is only found for the constituents of the FTSE4Good US Select index and the ESG portfolio image overlaid with controversies. However, the lack of any evidence in high-visibility and easy-to-interpret information calls into question whether SRI funds manipulate the disclosed ESG image to attract money flows from investors. These results are robust for different periods and ESG attributes as well as for individual tests of SRI funds.

In summary, our study rejects the existence of ethical window dressing in the SRI domestic equity funds registered in the US market. Therefore, quarterly disclosed portfolios are an accurate source to identify ESG attributes of SRI funds. An increase in the frequency of portfolio reporting is not necessary to prevent ethical window dressing.

Future research should analyse other investment categories and mutual fund markets where sustainable investing is an outstanding trend. Comparing different markets would provide definitive evidence of ethical window dressing and its potential implications. Further research should also consider other signals of sustainability, especially easy-to-interpret and high-visibility information rather than sophisticated ESG scores hardly identified by investors. This issue would be particularly important in markets where non-sophisticated investors play a crucial role.

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CRedit authorship contribution statement

Fernando Muñoz: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft. **Cristina Ortiz:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft. **Luis Vicente:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing.

Declaration of Competing Interests

None.

Data Availability Statement

: Requests for data availability will be considered by the authors.

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