Sustainability or Performance?
Ratings and Fund Managers' Incentives

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We explore how mutual fund managers and investors react when the tradeoff between a fund's sustainability and performance becomes salient. Following the introduction of Morningstar's sustainability ratings (the "globe" ratings), mutual funds increased their holdings of sustainable stocks to attract flows. Such sustainability-driven trades, however, underperformed, impairing the funds' overall performance. Consequently, a tradeoff between sustainability and performance emerged. In the new equilibrium, the globe ratings do not affect investor flows and funds no longer trade to improve their globe ratings.

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Transparency about asset managers' portfolios is often advocated as a means for allocating capital to sustainable investments;[1] yet, there is little evidence on how transparency affects the investment decisions of intermediaries that do not follow explicit sustainability objectives. Ultimately, asset managers' incentives will depend on how investors trade off sustainability and performance, which in turn is affected by investors' preferences and their attentiveness to different objectives. While investors in sustainable funds appear willing to give up some investment performance for higher sustainability (Riedl and Smeets, 2017; Barber, Morse, and Yasuda, 2021; Bauer, Ruof, and Smeets, 2021), to date, we know little about this tradeoff outside the sustainable finance industry.

Morningstar's introduction of the globe ratings, which rank the sustainability of mutual funds' portfolios, offers a unique opportunity to explore this critical issue. Morningstar rates mutual funds along a variety of dimensions and its ratings have been shown to affect flows (see, e.g., Del Guercio and Tkac, 2008; Ben-David, Li, Rossi, and Song, 2019; Heath, Macciocchi, Michaely, and Ringgenberg, 2023). The sustainability ratings are no exception. In the aftermath of their introduction in March 2016, these easy-to-process and attention-grabbing signals significantly increased flows to the funds that received the highest sustainability ratings; in contrast, the funds with the lowest sustainability ratings experienced outflows (Hartzmark and Sussman, 2019).[2] These results indicate that investors valued funds' sustainability as measured by the globe ratings *before* any tradeoff with performance became apparent.

[1] With this objective, in 2021, the European Union introduced the Sustainable Finance Disclosure Regulation (SFDR), which pertains to all asset managers, whether or not they have an express ESG or sustainability focus. The Securities and Exchange Commission is also ruling about disclosures to be made by investment funds that market themselves as sustainable (see https://www.ft.com/content/6fefdb2c-f72e-4e52-b95b-c0727aeb1a94).

[2] Ammann, Bauer, Fischer, and Müller (2019) and Ceccarelli, Ramelli, and Wagner (2020) also show that flows to funds with high sustainability ratings increase in the aftermath of the ratings' introduction.

We show that the introduction of the globe ratings created a tradeoff between a fund's aspirations to achieve (maintain) a better globe rating and its performance, and this tradeoff emerged because fund managers do not appear very skilled at trading the stocks that can improve their funds' globe ratings. In this context, we ask how the tradeoff between sustainability (in terms of a better globe rating) and performance is resolved. Given the poor performance of funds that attempt to improve or maintain their globe ratings, we study whether investors continue to pursue funds with higher globe ratings and whether fund managers continue to tilt their portfolios towards high ESG stocks.

This is a relevant question because managers compete for flows based not only on their portfolios' sustainability, but also on performance. Since managerial compensation depends on assets under management (Geczy et al., 2021; Ibert, Kaniel, Van Nieuwerburgh, and Vestman, 2018; Ma, Tang, and Gomez, 2019), fund managers' incentives to pursue different objectives depend on the relative weights that mutual fund investors in the aggregate put on performance versus sustainability.

Importantly, the exercise we perform is crucial for understanding the preferences of investors in mutual funds *without* an explicit sustainability objective. If a sufficiently large proportion of investors in such mutual funds cared about portfolio sustainability, we would expect that (changes in) the globe ratings would have an effect on flows, irrespective of the funds' performance. Consequently, fund managers, who have incentives to increase the size of their funds, would strive to improve their portfolios' sustainability scores to achieve better ratings than their peer funds or at least not to fall behind and be downgraded.

However, flows may initially respond to the globe ratings because fund investors interpret them as an indicator of future performance. Fund managers, like the econometrician, would not be

able to discern why the globe ratings are initially associated with flows. As a result, managers would tilt their portfolios to improve their sustainability scores and try to be upgraded (not to be downgraded). If, as we show, pursuing better globe ratings implies that fund managers compromise on performance, the globe ratings should become irrelevant under the scenario that investors cared about the globe ratings because they (erroneously) interpreted them as a signal of future performance. In this case, flows would stop responding to globe upgrades if the upgrades are associated with weak fund performance. In addition, fund managers that compromise on performance to try to achieve a better globe rating would experience outflows due to the funds' poor performance and no inflows due to the upgrade. Therefore, they would stop trading to improve their sustainability scores.

Consistent with the above conjecture, we show that after the introduction of the globe ratings, mutual funds, whose current holdings placed them close to the cutoffs for the top and bottom ratings, changed their investment strategies, aiming to improve the sustainability rankings of their portfolios and to be upgraded or avoid being downgraded. Specifically, such funds increased (decreased) their investments in stocks with high (low) sustainability scores immediately after the introduction of the globe ratings. However, the sustainability ratings affected the funds' portfolio allocation only in the short run. Notwithstanding the continued high interest in the globe ratings, as evidenced by Google trend searches, and the high frequency of globe rating upgrades and downgrades, within less than a year after the introduction of the ratings, funds close to being upgraded or downgraded stopped tilting their portfolios to achieve better globe ratings.

To investigate why fund managers stopped trading to improve their portfolio ESG scores, we show that mutual funds that were attempting to achieve better sustainability ratings experienced poor performance in the high sustainability stocks they purchased, but not in the remaining portion

of their portfolios. In addition, these funds sold stocks with poor sustainability ratings that ended up performing well, creating profitable trading opportunities for other market participants. The poor performance experienced by funds that traded to a larger extent to increase their portfolios' sustainability is not explained by stock characteristics, such as value, size, or ESG rating, which may have been associated with negative shocks. Hence, these patterns are unlikely to be related to shifts in sustainability concerns stemming from changes in the US administration, but rather are due to the fact that fund managers did not follow their strategies, skills, and information in their attempts to obtain better globe ratings. In particular, our findings are consistent with the idea that ESG information is complex and only funds that are specialized in processing this kind of information can incorporate it successfully in their investment process and generate alpha (Cremers, Riley, and Zambrana, 2023).

Furthermore, we show that globe rating upgrades became associated with poor fund performance, and therefore, stopped having a positive effect on flows. As a result, the funds that were attempting to achieve better sustainability ratings ended up suffering net outflows because of their poor performance. Unsurprisingly, experiencing costs in terms of performance and no benefits in terms of sustainability-driven flows, asset managers stopped tilting their portfolios to achieve better globe ratings. Thus, given the preferences of the average US mutual fund investor, it does not appear that portfolio sustainability ratings can have long-lasting effects on the allocation of capital to more sustainable investments.

Our conclusions are unaffected, and even strengthened, by the fact that flows to funds with sustainable portfolios may be sticky, and hence, may not change after the initial allocation. We show that there is considerable turnover in the globe ratings during the whole sample period, but that only upgrades and downgrades of the star performance ratings are consistently associated with

fund flows, indicating that in the long term, the globe ratings failed to spur reallocation of capital to the funds with the most sustainable portfolios.

While different metrics to evaluate environmental and social performance are widely debated, and the globe ratings are no exception, our analysis shows that right after their introduction, the globe ratings affected fund flows and asset managers' portfolios and were initially perceived by market participants as a valid sustainability indicator. However, within less than a year after the ratings' introduction, fund flows stopped being affected by globe rating upgrades and downgrades, including those driven by Morningstar's subsequent changes in the criteria for assigning the ratings, which should have attracted considerable attention from market participants.

Taken together, our results present consistent evidence that investors in funds without an explicit sustainability objective put performance ahead of sustainability. Some mutual fund investors, and especially institutions that may have chosen high sustainability-rated funds to signal their own ESG credentials to clients, appear to have realized that globe rating upgrades were associated with poor performance and stopped pursuing them. Other investors with pro-social preferences, and in particular retail investors, may have also been inattentive to subsequent changes in the globe ratings. Thus, fund managers chose to pursue performance, which consistently leads to higher flows, and therefore, is better aligned with managers' compensation structure.

Our conclusion that in the long term the globe ratings became ineffective because of the tradeoff between sustainability and performance is in line with survey evidence that sustainability might have been viewed by some investors as positively predicting future performance (Amel-Zadeh and Serafeim, 2017), but is inconsistent with the idea that investors' nonpecuniary motives had a significant impact on flows (Hartzmark and Sussman, 2019).

This paper contributes to a growing literature that explores how sustainability affects investors' strategies and performance. Socially responsible investors are generally believed to put sustainability before performance (Riedl and Smeets, 2017; Barber, Morse, and Yasuda, 2021; Bauer, Ruof, and Smeets, 2021). Arguably for this reason, socially responsible mutual funds have been shown to have a lower flow-performance sensitivity (Bollen, 2007; Pastor and Vorsatz, 2020). However, there is no consensus on whether ESG investment is positively or negatively associated with performance, with a number of studies highlighting that sustainability improves performance and limits downside risk (see, e.g., Edmans, 2011; Lins, Servaes, and Tamayo, 2017; and Albuquerque, Koskinen, and Zhang, 2019), and others showing that these effects are only driven by temporary increases in demand (Pastor, Stambaugh, and Taylor, 2022).[3] For these reasons, even ESG funds are believed to have conflicting objectives (Li, Naaraayanan, and Sachdeva, 2023). It is, therefore, important to examine a context in which the tradeoff between sustainability and performance becomes salient, as we do in this paper, to understand how investors rank fund sustainability and performance. Considering investment products without an explicit sustainability focus, we show that too few US mutual fund investors value sustainability over performance, or pay sufficient attention to changes in funds' portfolio sustainability, to generate any long-term effects of the globe ratings on the allocation of capital.

Another strand of the mutual fund literature studies how investor flows respond to attention-grabbing and easy-to-process signals, such as external rankings of the funds' performance (see, e.g., Del Guercio and Tkac, 2008; Evans and Sun, 2021; Ben-David, Li, Rossi, and Song, 2019; Kim, 2021; Reuter and Zitzewitz, 2021) or of the sustainability of the funds'

[3] Confusion about the effects of ESG factors on financial performance is also frequently discussed in the press. See "ESG outperformance narrative 'is flawed', new research shows", *Financial Times*, May 3, 2021, available at https://www.ft.com/content/be140b1b-2249-4dd9-859c-3f8f12ce6036.

portfolios (Hartzmark and Sussman, 2019; Ammann, Bauer, Fischer, and Müller, 2019). Specifically, we build on the work of Hartzmark and Sussman (2019), who investigate the effects of the globe ratings on fund flows in a narrow time frame after the ratings' introduction, abstracting from general equilibrium implications. We explore how asset managers respond to the ratings and how their response is driven by flows and investors' preferences or attention to sustainability goals. In addition, while Hartzmark and Sussman (2019) conclude that both investors' expectations about the performance of funds with high sustainability ratings and nonpecuniary motives may have explained the effects of the globe ratings on flows, our results imply that nonpecuniary motives played a marginal role.

Prior work has shown that fund managers' pursuit of better star ratings affects stock demand and prices (Han, Roussanov, and Ruan, 2021; Kim, 2021). We are silent on whether the poor performance that fund managers experience when attempting to increase the sustainability of their portfolios arises because their behavior causes demand pressure or because they do not follow their strategies, skills, and information and execute poor trades. Regardless of the reasons driving poor performance, we highlight the tensions arising when funds are rated along two different dimensions that may create opposing incentives for fund managers. We show that in the long run, only ratings on the dimension that is followed by a larger proportion of investors matter.

1. Morningstar's Sustainability Ratings

The objective of Morningstar's globe ratings is to rank the sustainability of mutual fund portfolios and to provide a way for investors to evaluate how a fund's investments meet environmental, social, and governance standards. The globe ratings and their methodology were publicly announced to mutual fund investors on March 1, 2016, when the sustainability ratings

were first revealed. Since then, funds' globe ratings have been prominently displayed on Morningstar's website, along with the star ratings, which rank funds within a Morningstar category based on their performance over the previous three-, five-, and ten-year periods (if available). The globe ratings were and continue to be the subject of numerous press releases by Morningstar and are therefore widely covered by the media.[4] The sustained interest attracted by the globe ratings is evident from the time series of Google trend searches for the term "globe rating", which as shown in Figure 1, if anything, have increased in frequency since the ratings were first introduced.

A fund's globe rating is based on the fund's portfolio sustainability score, which is also available to Morningstar users, albeit less prominently displayed than the globe rating. A fund's portfolio sustainability score is computed as a weighted average of the ESG scores of the securities in the fund's portfolio, with the fund's portfolio shares as weights. The ESG scores of the securities are the ESG ratings of the issuers, obtained from Sustainalytics. Morningstar rates only funds that hold at least 50% of their portfolios in securities with sustainability ratings.

A fund's globe rating is the percentile rank of its portfolio sustainability score relative to other mutual funds in the same Morningstar style category; thus, systematic differences in the ESG scores of the investment opportunities of funds with different specializations (e.g., growth vs. value) do not affect the initial version of the globe ratings we analyze in our main tests.[5] Only funds belonging to categories with at least ten funds are ranked.

Morningstar gives five globes and rates a fund as "High" sustainability if the fund is in the top 10% of funds in its category. A fund is given four globes and rated as "Above Average" if it is ranked between 10% and 32.5%; it is given three globes and rated "Average" if it is ranked

[4] See, e.g., https://www.morningstar.co.uk/uk/news/227541/morningstar-globes-top-rated-sustainable-funds-in-2022.aspx.

[5] This feature of the globe ratings changed in a subsequent revision of the methodology. We show in Table 12 that this change does not affect our findings.

between 32.5% and 67.5%; and it is given two globes and rated "Below Average" if it is ranked between 67.5% and 90%. Finally, a fund is given one globe and rated "Low" sustainability if it is ranked in the bottom 10% of its category.

Since the ESG scores of the securities typically change annually, the main determinant of the monthly changes in globe ratings is the fund's trading. Table 1 compares the frequency of globe rating upgrades and downgrades to that of the star ratings. Given that the star ratings depend on historical performance, it is unsurprising that the frequency of globe rating upgrades and downgrades is higher than that of the star ratings. A total of 277 (334) funds were upgraded (downgraded) to the top (bottom) rating in the first 18 months after the introduction of the globes.

Based on the evidence presented in Table 1, changes in the globe ratings should have an effect on flows, just as star rating upgrades and downgrades do (see, e.g., Del Guercio and Tkac, 2008; Evans and Sun, 2021; Ben-David, Li, Rossi, and Song, 2019; Kim, 2021; Reuter and Zitzewitz, 2021). As we show, this does not seem to be the case in the data, even as the globe ratings continue to be frequently changed and prominently publicized. Our paper provides an explanation for why the globe ratings do not appear to affect flows in the long term.

2. Data and Descriptive Statistics

We obtain data on mutual funds' equity holdings from Morningstar and mutual funds' characteristics from Morningstar Direct. Our sample includes all US-domiciled funds, which invest in US equity and end up having globe ratings. This restriction ensures that we can explore changes in mutual funds' portfolios and performance in a relatively homogeneous sample. Since we focus on funds that invest in US equity, our sample is somewhat smaller than that in Hartzmark and Sussman (2019), who include all US-domiciled funds. Importantly, we confirm that flows

increase (decrease) for funds with the top (bottom) globe rating in the aftermath of the ratings' introduction (Hartzmark and Sussman, 2019), indicating that before the tradeoff between sustainability and performance becomes apparent, mutual fund investors care about sustainability, and the globe ratings in particular.

As is common in the literature (Chevalier and Ellison, 1997), we include funds that have at least $10 million in assets under management. We also require funds to have information about their returns, age, expense ratio, TNA, and Morningstar category. Since in our tests we compare the effects of the sustainability and performance ratings on fund flows, we also require that funds have star ratings, which are assigned only to funds that are at least three years old.

Our main sample period ranges between July 2015 and September 2017 and includes 1,953 unique funds. We are unable to extend the sample before July 2015 because the availability of funds' portfolio sustainability scores is limited, preventing our analysis. However, we perform robustness tests on more recent periods (up to September 2020), which we introduce later in the paper.

The sample funds belong to the following Morningstar categories: US Fund Large Blend; US Fund Large Growth; US Fund Large Value; US Fund Mid-Cap Blend; US Fund Mid-Cap Growth; US Fund Mid-Cap Value; US Fund Small Blend; US Fund Small Growth; and US Fund Small Value. Importantly, very few funds in our sample have an explicit ESG focus. In particular, we search fund names for words that may indicate a sustainability mandate (e.g., ESG, sustainable, socially-responsible) and find that only 30 funds in our sample have this characteristic. Interestingly, nearly 40% of these ESG-focused funds have the top globe rating, while the rest are equally distributed among the other ratings, suggesting possible greenwashing, which we do not aim to analyze in this paper.

Table 2 summarizes the main variables, distinguishing between the period before and the period after the introduction of the globe ratings. Detailed variable definitions are in the Appendix. For each fund, we aggregate fund size (TNA) and flows across share classes and calculate the fund's mean expense ratio and returns. On average, the sample funds have around $2,500 million in assets under management and experience outflows equivalent to 0.4% (0.6%) of their TNA in the quarters preceding (following) the introduction of the globe ratings. Both characteristics indicate that the sample is very similar to that of Hartzmark and Sussman (2019). Other fund characteristics, such as expenses, equal to 1.1% of TNA, are comparable to those in other studies of US mutual funds specialized in US equity (see, e.g., Han, Roussanov, and Ruan, 2021). The sample funds are around 18 years old, which is somewhat older than the average US-domiciled mutual fund investing in US equity because we restrict the sample to funds that have at least three years of historical performance by requiring the availability of star ratings.

Consistent with the globe rating definition, the median fund has a rating of 3, while the top (bottom) decile is 5 (1). As noted earlier, the globe ratings change more often that the widely studied star ratings, which rank funds based on their historical performance.

Panel C of Table 2 also summarizes stock characteristics, which we obtain from Compustat and CRSP, and the stocks' effective ESG scores, which are provided by Sustainalytics. We use this information to evaluate the performance of different portions of the mutual funds' portfolios and to explore how funds trade in stocks with different characteristics. In most empirical tests, we use monthly fund information because all funds report flows and performance at the monthly frequency, except in the tests exploring funds' trading in different types of stocks, where we use quarterly information because approximately 30% of the funds report their positions only at the quarterly frequency.

3. The Introduction of the Sustainability Ratings and Funds' Demand for High ESG Stocks

We explore how the introduction of the sustainability ratings affects funds' trading behavior. Fund managers should have incentives to improve their funds' globe ratings if they expect better globe ratings to increase assets under management.

As shown for corporations that attempt to manipulate their credit ratings by changing their capital structure (Kisgen, 2006), these incentives should be particularly strong for funds close to the rating cutoffs because they are more likely than other funds to achieve a better rating, or equivalently, to avoid a downgrade. Thus, we expect such mutual funds, on average, to rebalance their portfolios towards stocks with high ESG ratings more than other funds.

To evaluate how the globe ratings affect fund managers' incentives, we construct a quarterly fund-stock-level panel and investigate the change in the position of fund *f* in stock *i* in quarter *t*, defined as:

$$Position\ Change(f,i,t) = \frac{Price(i,t-1)*[(NumShares(f,i,t)-NumShares(f,i,t-1)]}{TNA(f,t-1)}.$$

We normalize fund *f*'s change in the holdings of stock *i* by the fund's TNA at the beginning of the quarter and value the position using the beginning-of-quarter price of stock *i* ($Price(i,t-1)$).[6]

We consider funds whose portfolio sustainability scores in quarter *t-1* are within +/- 2.5% from the top and bottom globe ratings as those with the strongest incentives to purchase (sell) stocks with high (low) sustainability scores. We label them *Border Funds*. This definition of border funds is not only consistent with theory (Bordalo, Gennaioli, and Shleifer, 2013) and evidence

[6] As we show in Table IA.1, results are invariant if we use the end-of-quarter stock price to evaluate the change in position.

(Hartzmark, 2015) that ranking effects matter most for the best and the worst performers, but also takes into account that presumably managers of funds without an explicit sustainability focus care mostly about (not) being singled out for their very high (very poor) portfolio sustainability with a top (bottom) rating. In what follows, we test the plausibility of this assumption.

Mutual fund managers may have become aware of the globe ratings' planned introduction and methodology after August 2015, when Morningstar purchased (a large stake in) Sustainalytics, the company whose firm-level sustainability ratings are used to compute the fund portfolios' sustainability scores. Therefore, the investment policies of asset managers could have started to change during the second half of 2015, that is, before the official publication of the ratings.

In Table 3, we explore how funds' trading of stocks with high sustainability scores changes starting from the third quarter of 2015.[7] To investigate whether funds trade preemptively to improve their portfolio sustainability scores, we define a pre-globes period from the third quarter of 2015, when asset managers may have learned about the impending introduction of the globe ratings, to the first quarter of 2016. We also subdivide the post-globes period, following the official introduction of the globe ratings, into a first half – from the second quarter to the fourth quarter of 2016 – and a second half – from the first quarter to the third quarter of 2017.

Since the globe ratings were not yet available at the end of 2015 and during the first quarter of 2016, we use funds' portfolio sustainability scores to compute the cutoffs for the globe ratings that would eventually be introduced. Throughout the analysis, we control for various stock characteristics, including market capitalization, stock returns, book-to-market ratio, etc., which could be correlated with a stock's ESG score. We also include interactions of fund and quarter

[7] Our sample starts in the third quarter of 2015 because the availability of funds' sustainability scores is limited before that time, which prevents the analysis.

fixed effects, which capture the propensity of different funds to trade in a given quarter, including changes in the funds' assets under management.[8]

Panel A investigates funds' purchases of stocks with different Sustainalytics effective ESG scores. Column 1 shows that on average, funds are not inclined to purchase stocks with high ESG scores, as captured by the negative and statistically significant coefficient on *ESG Score*. The funds that would eventually become *Border Funds* because of their portfolio sustainability scores are no different. Thus, there is no evidence that border funds tried to preemptively improve the sustainability of their portfolios. This is not entirely surprising: Engaging in a preemptive attempt to tilt the sustainability of fund portfolios in expectation of a higher globe rating (or to avoid being downgraded) requires considerable effort. Since the globes are based on a relative ranking, fund managers would need up-to-date information for all funds within the same category (a variable that is itself changing).

While on average fund managers avoided high ESG-rated stocks before the introduction of the globe ratings, possibly because they believed that their valuations were too high (Pastor, Stambaugh, and Taylor, 2022), managers' incentives changed after March 2016, when they started observing that the globe ratings actually mattered for flows and they could use reported percentile rankings and information about their closest rivals within their category as a predictor of future rankings. These funds engaged in trading to improve their portfolios' sustainability scores.

The positive coefficient on the interaction term *ESG Score* × *Border Funds* in column 2 indicates that *Border Funds* rebalanced their portfolios towards stocks with high ESG scores. In terms of economic magnitudes, a one-standard-deviation increase in a stock's ESG score is

[8] Following the introduction of the globe ratings, border funds experienced net flows similar to those of other funds. As seen in Table IA.2, there are also no statistically significant differences in other fund characteristics between border funds and other funds in the first half of the post-globes period.

associated with an increase in border funds' positions in the stock of 34% of the interquartile variation in our sample (calculated as 7.755*0.046/(0.618 - (- 0.430)). Notably, this behavior of *Border Funds* is observed only until the fourth quarter of 2016. As seen in column 3, the interaction term is not statistically significant in the second half of the post-globes period, indicating that these funds had on average the same trading behavior as other funds.

Since the globe ratings continue to be updated throughout the sample period, as shown in Table 1, it is unlikely that the lack of portfolio reallocation in the later part of the sample is due to the fact that funds had already achieved their desired sustainability ratings. Funds continue to be upgraded and downgraded, but the aspiration to achieve a better globe rating does not seem to affect their trading any longer. This evidence casts doubt on the presence of long-term effects of the globe ratings on fund managers' incentives. In the rest of the table, we scrutinize whether this finding is robust.

In the remaining columns of Panel A, we distinguish active funds and index funds, which we identify using the Morningstar flag for index funds. While active funds can strategically increase their holdings of stocks with high ESG scores, index funds must passively follow their benchmark indexes. Therefore, we should not observe that index funds whose portfolio ESG score is in a neighborhood of the cutoffs for the top and bottom globe ratings attempt to increase their holdings of stocks with high ESG scores. In columns 4-6, we find quantitatively stronger evidence that border funds that are active increase their holdings of stocks with high ESG scores in the first half of the post-globes period but not in the second half or in the pre-globes period. This supports the conclusion that active funds trade strategically to increase the sustainability scores of their portfolios immediately after the publication of the globe ratings, but that this tendency does not persist. In columns 7-9, we do not find any evidence that border funds that are index funds increase

their holdings of stocks with high ESG scores. This finding supports our interpretation that in the aftermath of the globe rating introduction, the trading behavior of active border funds is driven by strategic considerations.

Panel A considers as *Border Funds* only the funds within a narrow +/-2.5% neighborhood of the cutoffs for the top and bottom ratings. These funds should have particularly strong incentives to trade to improve or maintain their globe ratings because being categorized as low (high) sustainability is expected to be particularly consequential for flows. Not having an explicit sustainability mandate and not standing out in terms of their funds' sustainability, fund managers whose portfolio sustainability scores are close to the cutoffs for the intermediate globe ratings are likely not to care as much about obtaining a higher or lower globe rating.

To investigate this conjecture, in Panel B of Table 3, we broaden the definition of border funds. In columns 1-3, we define *Border Funds* as funds within +/-2.5% from the cutoffs of all globe ratings. We expect this broader definition of border funds to include fund managers with weaker incentives to purchase stocks with high ESG scores. As expected, we do not find evidence that such funds trade to improve their globe ratings.

In columns 4-6, we extend the definition of *Border Funds* by considering a +/-5% neighborhood around the cutoffs for the bottom and top ratings. As they are not as close to being upgraded/downgraded, these funds are less likely to be able to improve their portfolio sustainability scores relative to their peers. Therefore, we expect this broader definition of border funds to include fund managers with weaker incentives to purchase stocks with high ESG scores. The parameter estimates in column 5 are indeed smaller in magnitude, compared to column 2 of Panel A. Importantly, as in Panel A, it still appears that the aspiration to improve the fund's globe rating or to avoid a downgrade affects border fund behavior only up to three quarters after the

ratings' introduction. In stark contrast, other funds appear to sell stocks with higher ESG ratings, possibly because the trading pressure generated by border funds created trading opportunities. Even though as shown in Table 1, the turnover in all globe ratings, and the bottom and top globe ratings in particular, continues to be high, we find no evidence of a differential effect in the trading of border funds in the last three quarters of the sample.

Since the managers of funds with sustainability scores close to the bottom and top ratings appear to have stronger incentives to improve the sustainability of their portfolios, in what follows, we consider as border funds only the funds whose portfolio sustainability scores are in a +/-2.5% neighborhood of the cutoffs for the bottom and top ratings.

So far, we have explored how the trading of border funds varies depending on the stock's continuous sustainability score. Funds that attempt to achieve better globe ratings should not only purchase stocks with high sustainability scores but also sell stocks with low sustainability scores. To distinguish between stock purchases and sales, in Panel C, we replace the continuous Sustainalytics *ESG Score* with indicators for *High/Low ESG* stocks, defined as those with ESG scores in the top/ bottom tercile of the Sustainalytics ESG scores. As seen in columns 2 and 5, managers of *Border Funds* purchase relatively more stocks with high ESG scores and sell more stocks with low ESG scores only in the first three quarters after the introduction of the globe ratings (up to the end of 2016). The effect is not only statistically, but also economically significant. For example, border funds reduce their positions in *Low ESG* stocks by 75.5% of the interquartile variation during the first half of our sample period (-0.791/(0.618 - (- 0.430)).

Interestingly, we observe that all funds exhibit a tendency to purchase stocks with high ESG scores in the last part of the sample period (columns 3 and 6 of Panel B), when differences between border funds and other funds are no longer statistically significant. This tendency appears

to be driven by the propensity to sell low ESG stocks (column 6 of Panel C). One possibility is that the sales of border funds may have driven down the returns of these stocks, and the funds that had purchased low ESG stocks on the cheap subsequently sell them after having realized the profits from their positions.

Overall, Table 3 shows that the introduction of the globe ratings initially influenced funds' portfolio allocations, but also raises the question why funds stopped pursuing better globe ratings only nine months after the ratings' publication. Since globe rating upgrades and downgrades continued to occur during the sample period, the lack of portfolio reallocation cannot be explained by the fact that funds had achieved their target rating. For this reason, to understand the tradeoffs managers face, in the next section, we explore the effects of ESG trading on fund performance.

4.Tradeoff between Sustainability and Performance

4.1 Abnormal ESG Trading

In this subsection, we consider the consequences of the funds' trading strategies on their portfolios' composition and ratings. Our ultimate goal is to test whether funds that tilted more their portfolios to improve their ESG scores and achieve a better globe rating (or avoid being downgraded) experienced worse performance.

We conjecture that funds' performance suffers if managers deviate from the funds' usual trading strategies and do not rely on their information and skills to select high ESG stocks to purchase and low ESG stocks to sell. To evaluate this conjecture, we define a fund to have *Abnormal ESG Trading* if it purchased a large amount of stocks with high sustainability scores and/or sold a large amount of stocks with low sustainability scores, relative to its overall turnover and in comparison to the fund's trading in the period prior to the introduction of the globe ratings.

Specifically, we construct *Abnormal ESG Trading* as a fund-month variable that we relate to the fund's monthly performance:[9]

$$Abnormal\ ESG\ Trading(f,t) = ESG\ Trading(f,t) - \frac{1}{24} \times \sum_{\tau=March2016-36}^{March2016-12} ESG\ Trading(f,\tau)$$

$$where\ ESG\ Trading(f,t) = \frac{\sum_{j=1}^{g} abs(NumShares(f,j,t) - NumShares(f,j,t-1)) \times Price(j,t-1)}{\sum_{i=1}^{n} abs(NumShares(f,i,t) - NumShares(f,i,t-1)) \times Price(i,t-1)},$$

i is any stock held by fund f and

$$j \in \{High\ ESG\ stocks | NumShares(f,j,t) - NumShares(f,j,t-1) > 0\}\ U\ \{Low\ ESG\ stocks | NumShares(f,j,t) - NumShares(f,j,t-1) < 0\}$$

That is, the numerator of $ESG\ Trading(f,t)$ captures fund f's purchases of high ESG stocks, valued using the stock price at *t-1*, plus the fund's sales of low ESG stocks, also valued using the stock price at *t-1*. High (Low) ESG stocks are defined as stocks in the top (bottom) tercile of the Sustainalytics effective ESG score. The denominator is the absolute value of the total trading of the fund (i.e., the change in the number of shares in *any* traded stock *i*, multiplied by the price of stock *i* at *t-1*). To capture deviations from the fund's usual trading strategy, we subtract the average ESG trading in the two years prior to the introduction of the globe ratings, excluding the 12 months closest to the introduction when the fund's behavior may have started to change.[10]

[9] Whenever possible, we use funds' monthly portfolio holdings, which are available for roughly two thirds of the funds in our data. For the remaining funds, we use quarterly holdings to construct their ESG trading.

[10] In this way, we make sure that we compare a fund's trading after the introduction of the globe ratings to that in a period before the globe ratings were published.

Consistent with the evidence in Table 3, mutual funds' ESG trading is larger in the first nine months after the introduction of the globe ratings (0.127 vs. 0.117, respectively). Importantly, Figure 2 shows that in the first three quarters after the introduction of the globe ratings, the average abnormal ESG trading of border funds (as defined in Table 3, Panel A) is 0.152, compared to 0.124 for other funds. This difference is statistically significant, with a *t*-statistic of 7.27. In the second half, we do not see statistically different trading between the two groups; moreover, the abnormal ESG trading of all funds decreases.

We validate our ESG trading proxy using actual globe rating changes. Table 4 shows that funds that tilt their portfolios towards stocks with high sustainability ratings are more likely to experience a globe rating upgrade and less likely to experience a downgrade. All specifications in Table 4 and the following tables, in which we explore the effects of *Abnormal ESG Trading*, control for the funds' portfolio turnover as well as the turnover in ESG stocks, alleviating the concern that funds with abnormally high ESG trading simply trade more stocks with high ESG scores. Specifically, the variable *Abnormal ESG Turnover* controls for any trading in high and low ESG stocks, including sales of high ESG stocks and purchases of low ESG stocks that would result in a decrease of the funds' portfolio ESG scores.

The estimates confirm that our proxy captures the extent to which funds trade to improve their sustainability ratings. The effect is not only statistically, but also economically significant: An interquartile change in *Abnormal ESG Trading* (0.202 – 0.027 = 0.175) is associated with a 1.94% (=0.111*0.175) higher probability of a globe rating upgrade, which is equivalent to a 21.7% increase, compared to the average probability of a globe rating upgrade of 8.96%. While this effect may appear small, it is important to consider that all funds have incentives to trade to improve their portfolio sustainability scores to be upgraded or avoid being downgraded. The actual outcome

depends on factors that are not entirely under managerial control, such as stock prices affecting the portfolio shares and peer funds' actions. The mechanism resembles that of career concern models in which managers exert suboptimally high effort (Holmstrom, 1982), even though this has small effects on their reputation and compensation because all managers that they are competing with are also exerting suboptimally high effort.

Overall, these findings validate our interpretation that some funds tilt their portfolios towards stocks with high ESG scores to improve their globe ratings in the aftermath of the globe rating introduction. We can thus explore how pursuing a strategy that aims to improve a fund's sustainability rating affects the fund's performance.

4.2 ESG Trading and Fund Performance

We test how a fund's performance depends on its abnormal ESG trading. We relate the abnormal ESG trading of all funds in our sample to various measures of performance because any fund may have incentives to improve or maintain its portfolio sustainability score and globe rating, even though these incentives are particularly strong for border funds that are closest to the cutoffs and have a higher probability of succeeding in being upgraded or not being downgraded. In addition, not all border funds would have the same incentives, and hence, the dichotomous variable *Border Funds* is too noisy to demonstrate the mechanism we aim to study.[11] Thus, we recognize that *Abnormal ESG Trading* is more likely to capture that funds, and to a larger extent border funds, are not following their information and skills when trading to improve their portfolio ESG scores and provide evidence on how ESG trading affects fund performance.

[11] Econometrically, the variable *Border Funds* is too weak as an instrument for ESG trading.

Table 5 shows that the funds that attempt to improve their sustainability ratings suffer worse performance. In Panel A, we measure performance using the fund's portfolio monthly return in excess of the risk-free rate at *t+1* and control for fund characteristics, including the fund's past flows and TNA, both computed over the previous month, which capture any effects of changes in size on performance.[12] It appears that ESG trading, that is, abnormal purchases of high ESG stocks and sales of low ESG stocks relative to the fund's usual trading strategy, are negatively related to the fund's performance and that this negative effect emerges only in the first nine months after the introduction of the globe ratings, that is, when some funds actively tried to achieve better globe ratings. Interestingly, in columns 1 and 2, *Abnormal ESG Turnover* is also negatively related to fund performance, indicating that the higher ESG turnover of mutual funds during the period immediately following the introduction of the globe ratings was largely driven by the funds' purchases of high ESG stocks and sales of low ESG stocks. However, the sign of *Abnormal ESG Turnover* changes in the second half of the sample, when funds stopped trading to improve their globe ratings, but apparently some funds with ESG expertise and information benefited from trading high and low ESG stocks.

Panel B provides more direct evidence on our conjecture that *Abnormal ESG Trading* is negatively associated with fund performance in the aftermath of the introduction of the globe ratings because fund managers had incentives to improve their portfolio sustainability scores without following their skills and information when picking stocks. As discussed before, these incentives should be disproportionately stronger for border funds that are closer to the cutoffs, and ceteris paribus, have a higher likelihood of being upgraded or not downgraded. We define the indicator *Border Funds* as equal to one for the funds with portfolio sustainability scores within +/-

[12] As shown in Figure 3, funds with high ESG trading shrink, indicating that these funds do not underperform because of negative scale effects (Berk and Green, 2004).

2.5% from the cutoffs for the top and bottom ratings. Consistent with our conjecture, funds with stronger incentives to tilt their portfolios towards stocks with high ESG scores and to deviate from their usual trading strategy tend to underperform to a larger extent. That is, on average, a one-standard-deviation increase in *Abnormal ESG Trading* is associated with a -0.75% annualized return (=0.135*-0.465*12). However, for border funds, a one-standard-deviation increase in *Abnormal ESG Trading* results in a -2.55% annualized return (=0.135*(-0.34-1.234)*12). Since for border funds, *Abnormal ESG Trading* better captures the incentives to deviate from the normal strategy in order to pursue a higher portfolio sustainability score, this evidence indicates that not following a fund's information and skills is indeed very costly for its performance.

While the results in Panels A and B are obtained including fund fixed effects, in Panel C, we explore the robustness of our findings to different measures of fund performance, which capture the funds' different exposures to systematic risk factors, include time fixed effects, and test for statistical differences in the effect of ESG trading in the first and the second part of the sample after the introduction of the globe ratings.

In column 1, we continue to use a fund's excess returns as a measure of performance. In column 2, we compute the fund's monthly abnormal return as the weighted average of the monthly abnormal returns of the fund's stockholdings at the beginning of the month. To control for the risk of different stocks, we use the risk-adjustment method proposed by Daniel et al. (1997), denoted as "DGTW". Specifically, we subtract the return of the characteristic-based benchmarks obtained by sorting stocks according to size quintiles, book-to-market quintiles, and prior return quintiles from the return of each individual stock. In column 3, we measure the fund's abnormal performance by its alpha, estimated from a Fama and French (1993) three-factor model, augmented by Carhart's (1997) momentum factor. In all specifications, we find that funds that engage in more

ESG trading underperform other funds in the first part of the sample. Specifically, an interquartile change in ESG trading is associated with a 1.13% (=(-1.932+1.392)*0.175*12)) lower annualized excess return, a 0.55% lower DGTW-adjusted return, and a 0.28% lower Fama-French four-factor-adjusted return.

These findings assuage concerns that the negative association between ESG trading and performance is due to the fact that the stocks with high (low) ESG ratings differ along other characteristics driving their performance. The results are also consistent with evidence in Hartzmark and Sussman (2019) that if anything, globe 5 funds underperformed globe 1 funds. However, we show that the differences in performance are associated with the funds' ESG trading, even if we control for their bottom and top globe ratings (see Panel A). Thus, our results provide an explanation for why the underperformance of top-rated funds may have emerged. Funds that strived to be upgraded (or not to be downgraded) experienced poor performance in trading stocks with high and low ESG scores. Put differently, the association between ESG trading and poor performance during the period in which fund managers appear to have attempted to achieve a better globe rating suggests that managers may not have performed much analysis for their ESG-driven trades or lacked expertise and information to select which high (low) ESG stocks to trade; instead, they may have just focused on the objective of obtaining a better globe rating.

It is possible, however, that managers with higher ESG trading have lower skills and underperform in all trades. Being unable to achieve superior performance, these managers could instead focus on sustainability. To identify the drivers of the performance of funds with high ESG trading, we investigate which subsets of stocks in a fund's portfolio drive the poor performance we observe in the first half of the sample after the introduction of the globe ratings. Specifically, if the underperformance is driven by the manager's trades aiming to improve the fund's portfolio

sustainability score ranking, we would expect the underperformance to arise primarily from trades of stocks with high and low ESG scores, rather than from stocks without ESG scores.

We thus partition each manager's portfolio into several sub-portfolios of stocks; that is, high ESG stocks purchased, low ESG stocks sold, other stocks purchased, other stocks sold, high ESG stocks with unchanged positions, and low ESG stocks with unchanged positions. We decompose a fund's performance by considering the average abnormal performance of the stocks in each of these sub-portfolios. To estimate a stock's abnormal performance and control for its risk exposure, we continue to use the risk-adjustment method proposed by Daniel et al. (1997).

Table 6 indicates that funds that do more ESG trading underperform because of the stocks with high ESG scores they buy and the stocks with low ESG scores they sell. In column 1, the dependent variable is the average abnormal return at $t+1$ of the high ESG stocks that fund f purchased in month t. The negative and statistically significant coefficient on the interaction between *Abnormal ESG Trading* and *First Half* clearly shows that these high ESG stocks experience lower returns relative to their benchmarks. Specifically, an interquartile increase in ESG trading is associated with a 1.10% lower annualized return from the high ESG stocks that funds purchase.

Similarly, in column 2, the dependent variable is the average performance of the stocks with low ESG scores that a fund sells. These low ESG stocks appear to subsequently outperform their benchmarks, as seen from the positive and statistically significant coefficient on the interaction between *Abnormal ESG Trading* and *First Half*. The effect is not only statistically significant, but also economically large: An average level of ESG trading is associated with an annualized loss from the sales of low ESG stocks of 0.39%.

Thus, the performance of funds that intentionally attempt to improve their globe ratings suffers because they sell low ESG stocks that end up performing well and purchase high ESG stocks that subsequently perform poorly. As seen in columns 3 and 4, we do not observe similar patterns for the stocks with average sustainability ratings or without sustainability ratings that these funds trade. These trades are more likely to have been driven by the funds' information and usual trading strategies because these stocks have limited or no impact on the funds' portfolio sustainability scores, and consequently, on changes in the globe ratings. These findings suggest that the funds' underperformance is directly related to their ESG trades rather than driven by poor managerial skills.

Another possible concern is that stocks with high and low ESG scores are affected by unexpected shocks, such as the unanticipated outcome of the US presidential election in the last quarter of 2016, which could have driven the poor performance of the funds trading in these stocks. If this were the case, we would expect to observe that these funds underperformed also in the portfolio of stocks with high ESG scores that they held and for which they did not vary their positions between the current and previous months. In column 5, we do not find any evidence that a fund's ESG trading is associated with underperformance in the high ESG stocks in which the fund did not change positions, suggesting that underperformance in the portfolio of stocks with high ESG scores is due to bad trades.

In column 6, however, we find outperformance in the sub-portfolio of low ESG stocks that funds with high ESG trading hold, suggesting that the funds' performance suffers from excluding low ESG stocks, which are potentially subject to positive shocks during the sample period. Importantly, the sub-portfolio of other stocks that high-ESG-trading funds sell underperforms

(column 4), indicating that fund managers exhibit skills in which stocks to sell when they are not encumbered by ESG considerations.

Overall, this evidence suggests that funds' underperformance is driven by their ESG-related trading, that is, by purchasing stocks with high ESG scores at prices that are too high and selling stocks with low ESG scores that end up performing well during the period in which we observe particularly strong incentives for funds to improve their globe ratings. This may be the case because stocks with high (low) ESG scores become over- (under)-valued in the first few months after the introduction of the globe ratings due to the demand pressure created by the mutual funds pursuing better globe ratings. It is equally possible, however, that the managers of funds striving for better globe ratings did not use their information and usual investment strategies in their ESG-driven trades and consequently underperformed.

In the next section, we show how the funds' underperformance and the relative importance of performance and sustainability ratings in attracting flows can explain why fund managers appear to have stopped trading to improve their globe ratings.

5. Consequences for Fund Flows

5.1 Dynamic Effects of the Globe Ratings on Flows

In this section, we consider fund flows and study how the apparent tradeoff between sustainability and performance we describe in Section 4 affected fund managers' incentives. Managers' compensation depends on the fees they earn, which in turn are driven by the funds' net assets under management (Chevalier and Ellison, 1997; Ibert, Kaniel, Van Nieuwerburgh, and Vestman, 2018; Ma, Tang, and Gomez, 2019). Based on these considerations, a fund's trading strategy should aim to maximize net flows, which are known to be affected by the fund's

performance as well as by its sustainability and performance ratings. If some investors value sustainability over performance in their fund selection, there might exist an equilibrium in which some funds pursue better sustainability ratings, while other funds strive for better performance, even if the funds that achieve the top globe rating underperform.

Table 7 explores to what extent this is the case. As is evident from columns 2 and 5 of Panels A and B, in the first nine months after the globe ratings' introduction, funds with the top globe rating experienced higher inflows, while those with the bottom globe rating suffered outflows. Such a finding is revealed in Panel A, where we estimate specifications similar to those in Hartzmark and Sussman (2019), controlling for the funds' prior-month categorical star ratings. We confirm these results in Panel B, where we instead include dichotomous variables for each of the lagged star ratings, using the middle globe/star ratings as the omitted variables. The estimates are economically significant: For instance, in column 2 of Panel B, achieving a globe rating of 5 in the first half of the sample period is associated with a 0.32% increase in fund flows, which is equivalent to about 20% of the interquartile variation in flows. Figure IA.1 further shows that in the aftermath of the ratings' introduction, the dynamic of flows to globe 1 and globe 5 funds is fully consistent with Hartzmark and Sussman (2019).

However, performance is also important for fund flows, and as seen in Panel A of Table 5, ESG trading is associated with worse performance. For example, lower performance attributable to an average amount of ESG trading is associated with about 0.09% decrease in flows, which offsets around 30% of the inflows from achieving a globe 5 status. Given that many funds attempt to improve their portfolio sustainability scores, high ESG trading only slightly increases the probability of achieving or maintaining a top globe rating. Thus, even a small drop in performance may translate into a net loss.

In addition, *Border Funds* do more ESG trading than the average fund. Based on Panel A of Table 3, about 10% of funds that are closest to the cutoffs for the top and bottom ratings have strong incentives to trade to achieve a better globe rating or avoid being downgraded. According to our estimates in column 2 of Panel B, if a fund's ESG trading is in the top decile, the associated poor performance could lead to a 0.16% decrease in flows, offsetting more than 54% of the inflows from achieving a top globe status, which is an uncertain and very low-probability outcome.

Poor performance can lead to lower flows also through a fund's star rating. In this respect, a comparison of the coefficients on the globe and star ratings is also informative: the star ratings have larger effects on flows than the corresponding globe ratings. Thus, poor performance, increasing the likelihood of a star rating downgrade in the future, can again lead to lower assets under management because collectively investors appear to care more about performance.

In columns 3 and 6 of Panel B, where we consider the second half of the sample period after the introduction of the globe ratings, the coefficients on the globe rating dummies are not statistically significant. It is unlikely that the globe ratings lose power in attracting flows just because all investors that wanted to hold sustainable mutual funds quickly reallocated their portfolios in the immediate aftermath of the globe ratings' introduction. This could be the case if fund investors would not need to switch funds because the globe ratings are rarely changed once they are assigned. While this would be consistent with an equilibrium in which both sustainability and performance matter for different investors depending on their preferences, Table 1 shows that the globe ratings continued to exhibit high turnover throughout our sample period.

In Table 8, we consider the reaction of flows to globe rating upgrades and downgrades, controlling for the initial rating. We find no evidence that investors respond to upgrades and downgrades from/to the bottom/top globe rating in the second part of the sample. Only a fund's

performance and its star rating appear to matter. Put differently, even if the assets under management of funds with the top sustainability ratings increased after the introduction of the ratings, changes in the sustainability of the funds' portfolios, captured by rating upgrades and downgrades, do not lead investors to reallocate capital.

These findings indicate that flows stop responding to the globe ratings after their initial disclosure, arguably because investors gradually become aware of the tradeoff with performance. Figure 3 provides some evidence on how rating changes and ESG trading affected fund flows. Upgraded funds with low ESG trading, which are less likely to have underperformed, do not attract flows, consistent with the earlier funding that flows did not significantly respond to rating changes. Upgraded funds with high ESG trading, that is, the funds that were more likely to experience worse performance as a result of their trading of ESG stocks, experienced outflows.

Table 9 provides more direct evidence that the initially coveted upgrade from the bottom rating or to the top rating failed to increase flows because of the poor performance of the managers that achieved an upgrade. To test this conjecture, we rank funds' returns each month into deciles, and define *Poor Performance* as an indicator variable that equals one if a fund's monthly return belongs to the bottom decile. We also introduce an interaction between the dummy for a fund's poor performance and its upgrade from globe 1 or to globe 5, respectively. The estimates show that even funds that managed to be upgraded, which as shown in Table 4 was an uncertain event due to competition with other funds, did not attract flows. While the direct effect of an upgrade is positive but not statistically significant in the first part of the sample, upgraded funds lost assets under management when their performance was remarkably poor in the nine months after the introduction of the globe ratings (column 2). Interestingly, an upgrade from globe 1 to globe 2 does not magnify the negative effect of poor performance (columns 7-9), but we find that this

negative effect on flows is larger for funds that are upgraded to the top rating, as the coefficient on the interaction term between *Poor Performance* and *Upgrade to Globe 5* is negative and statistically significant (column 5). The effect is also economically significant – an upgraded fund with a record of poor performance experiences an additional 1.2% outflows (equivalent to 37.3% of the standard deviation of fund flows). This suggests that some investors in the upgraded funds redeemed, possibly fearing that a change in strategy towards sustainability would have resulted in persistently poor performance.

This evidence provides an explanation for our finding that fund managers stopped trading to improve their portfolio ESG scores. Realizing that globe rating upgrades and downgrades did not matter for flows, and that high ESG trading 'backfired' because of the negative effects on performance, fund managers stopped tilting their portfolios towards stocks with higher sustainability scores, confirming our results in Table 3.

The findings in Tables 8 and 9 are also important for another reason. During the second half of our sample period, the Trump administration had taken over. The change in administration and the announcement of the US withdrawal from the Paris climate agreement in June 2017 could have weakened any risks of regulatory interventions that lead companies to improve their environmental policies. As we show, this is unlikely to explain the differences in fund performance we observe because funds underperformed only in the high ESG stocks they purchased, not in those they held. However, if the changes in fund performance we observe in the second half of the sample were driven by a change in regulatory risk, we should still observe that some investors continue to care about sustainability and respond to the changes in sustainability ratings. Instead, we find that flows are only responsive to the funds' performance ratings.

Overall, the findings we have presented so far suggest that in the long term, the globe ratings are unlikely to lead to an increase in financial flows to sustainable investments. Nevertheless, it could be that a top globe rating insulates funds from redemptions following weak performance (Bollen, 2007). In turn, this could give underperforming asset managers incentives to invest in sustainable stocks. In Table IA.3 in the Internet Appendix, we show that a top globe rating does not mitigate the negative effects of weak performance. The interactions between bottom and top globe ratings and fund performance are not statistically significant. In addition, funds with a top globe rating do not experience smaller outflows when their performance ratings are downgraded. This suggests that fund managers have stronger incentives to pursue performance than sustainability and explains why fund managers stopped trading to increase their sustainability ratings in the second half of the sample period, when presumably they also became aware of the tradeoff between sustainability and performance and its consequences for flows.

In sum, the globe ratings appear to leave flows unaffected in the second half of the sample period. These findings are confirmed in Table 10, where we distinguish between funds' institutional and retail share classes. While immediately after the introduction of the globe ratings, institutional investors allocate capital to funds with the top globe rating (column 2) and retail investors also redeem capital from funds with the bottom globe rating (column 5), the sustainability ratings lose power in explaining the flows for both categories of investors in the second half of the sample.

The evidence that mutual fund investors pay close attention to performance and the star rating upgrades and downgrades further suggests that the poor performance of the funds that achieved the highest sustainability rating may have led investors to subsequently ignore the globe ratings. This effect is likely to have been stronger for institutional share classes as more

sophisticated institutional investors realized that a top globe rating was not a costless marketing tool, but instead came at the expense of performance.

It is also possible that some or all investors that value sustainability over performance are inattentive and do not track changes in the globe ratings. However, the insignificant interaction term between the globe ratings and fund performance in Table IA.3 does not support such an interpretation. Furthermore, even if mutual fund investors were inattentive to the globe rating changes, we would still conclude that increased transparency about the sustainability of funds' portfolios does not provide long-term incentives for fund managers to tilt their portfolios towards sustainable investments, and thus fails to increase the allocation of capital to sustainable stocks. As long as most investors focus on performance, the tradeoff between performance and sustainability ends up weakening fund managers' incentives to improve their funds' sustainability ratings and makes the globe ratings irrelevant.

5.2 Robustness

5.2.1 Sustainability Scores vs. Globe Ratings

The globe ratings may no longer affect flows because investors rely on other portfolio sustainability metrics. For instance, investors could consider the funds' portfolio sustainability scores as opposed to their globe ratings. The sustainability score is displayed by Morningstar together with other information about the fund, albeit less prominently than the fund's globe rating. It has the advantage to give an absolute ranking of the sustainability of the fund's portfolio, rather than ranking the fund relative to the other funds in the same category, and may therefore be preferred by investors with pro-social preferences. In this case, the sustainability of a fund's portfolio could attract flows, even if the globe ratings stop being relevant.

To evaluate this possibility, in Table 11, we substitute the fund's globe rating with its sustainability score. Consistent with our earlier findings, the sustainability score appears to be positively related to flows only in the first half of the sample period, confirming that only the fund's performance matters for flows in the long term.

5.2.2 New Globe Rating Methodologies and Other Sustainability Metrics

Since the globe ratings' initial introduction, Morningstar has made several changes to the methodology to compute them. Some of these modifications occurred after the sample period on which we have focused so far. Specifically, in October 2018, Morningstar announced some changes to the criteria used to assign the globe ratings, which became effective in November 2018. First, Morningstar started assigning the globe ratings based on a fund's historical sustainability score, which also considers the sustainability of the fund's portfolio in the past, even though more recent scores are assigned higher weights. Second, instead of ranking funds within the Morningstar category, Morningstar started considering the Morningstar Global category, a coarser classification. In this way, funds have a larger number of peers.

The methodology was once again changed in November 2019, when Morningstar started also considering the absolute *Historical Portfolio Sustainability Score* of a fund. Funds in categories like energy could score well within their categories even if their portfolios have poor sustainability. The new methodology does not allow these funds to have a globe rating above 3. Morningstar also introduced a 1% buffer around the rating cutoffs so that a fund must move by at least 1% above (below) the threshold to be upgraded (downgraded).

These changes in the methodology for the globe rating computation may indeed indicate that Morningstar wanted to make the globe ratings more relevant by addressing some of the

problems arising from funds' attempts to improve their globe status. Making a fund's globe rating less sensitive to the current portfolio holdings, increasing the number of peers, and allowing for a buffer should have decreased funds' incentives to manipulate their globe ratings.

However, in columns 1 to 3 of Table 12, we find no evidence that the arguably improved methodology may have increased the relevance of the sustainability ratings for fund flows. We also consider whether a higher historical sustainability score attracts flows. In column 4, we find that a fund's *Historical Portfolio Sustainability Score* is not statistically significant in explaining the fund's flows. These findings mirror our results for the latter part of our main sample period and confirm that the globe ratings and portfolio sustainability scores do not contribute much to the allocation of capital across different funds because investors seem to focus mostly on performance, as captured by the funds' past returns and star ratings.

Finally, we consider an alternative measure to evaluate whether our results can be generalized to other sustainability metrics. This is particularly important because several recent papers have raised concerns about the informativeness of ESG ratings (see, e.g., Serafeim, Park, Freiberg, and Zochowski, 2020; Cohen, Gurun, and Nguyen, 2020). Thus, investors with pro-social preferences may have started using other measures of sustainability, which are easier to interpret. Specifically, we exploit that in April 2018, Morningstar introduced the *Low Carbon Designation*, identifying mutual funds that have portfolios aligned with the transition to a low carbon economy. In column 5, we find no evidence that this new measure affects fund flows, supporting our interpretation that when evaluating the tradeoff between sustainability and performance, mutual fund managers and their investors overwhelmingly choose performance.

6. Conclusion

Rating financial intermediaries on the basis of the sustainability of their portfolios may appear to be an effective mechanism that allows investors to allocate funds in accordance with their environmental and social preferences. We show that if most investors care to a larger extent about performance, a tradeoff between portfolio sustainability and performance arises, which reduces the subsequent effectiveness of the sustainability ratings.

The behavior of mutual funds and their investors is consistent with evidence showing that a majority of ESG proposals is not supported by shareholders, and in particular by mutual fund investors (He, Kahraman, and Lowry, 2023), suggesting that ultimately these investors care predominantly about performance. Our findings indicate that increased transparency may be insufficient and regulation may be necessary to direct capital to more sustainable investments.

Finally, even if we focus on funds without an explicit sustainability objective, our results can inform on the drivers of socially responsible investing (SRI) growth. The returns of sustainable stocks have been benefitting from flows into sustainable investments (Pastor, Stambaugh, and Taylor, 2022), which have likely helped the performance of the SRI industry. Hence, flows into SRI funds may not necessarily have been driven by investor preferences for sustainable investments, but rather may have been chasing good performance. Extrapolating our findings on funds without an explicit sustainability objective to SRI funds may suggest that a stop in flows (once the industry no longer grows) may translate to a large setback for sustainable funds because sustainable stocks would stop outperforming in the absence of inflows. In this respect, the negative reaction of sustainable flows to geopolitical events that spurred the performance of brown industry stocks, such as oil and gas, may indicate that even investors in sustainable funds put a large weight on performance.

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Appendix: Variable Definition

Variable Name	Definition
Panel A: Fund Trading	
Effective ESG Score	The normalized company-level ESG score minus a Sustainalytics controversy deduction. The company-level ESG score is normalized using a *z*-score transformation within each company's peer group. Morningstar's Portfolio Sustainability Score is based on the weighted average of the stocks' effective scores, with the funds' portfolio shares as weights.
Abnormal ESG Trading	The abnormal ESG trading of fund *f* in month *t* is defined as: $$Abnormal\ ESG\ Trading(f,t) = ESG\ Trading(f,t) - \frac{1}{24} \times \sum_{\tau=March16-36}^{March16-12} ESG\ Trading(f,\tau)$$ where $ESG\ Trading(f,t) = \frac{\sum_{j=1}^{g} abs(NumShares(f,j,t) - NumShares(f,j,t-1)) \times Price(j,t-1)}{\sum_{i=1}^{n} abs(NumShares(f,i,t) - NumShares(f,i,t-1)) \times Price(i,t-1)}$, *i* is any stock held by fund *f* and *j* is $$j \in \{High\ ESG\ stocks | NumShares(f,j,t) - NumShares(f,j,t-1) > 0\}\ U\ \{Low\ ESG\ stocks | NumShares(f,j,t) - NumShares(f,j,t-1) < 0\}$$
Position Change	The position change in stock *i* of fund *f* in quarter *t*, defined as: $$Position\ Change(f,i,t) = \frac{Price(i,t-1) * [(NumShares(f,i,t) - NumShares(f,i,t-1)]}{TNA(f,t-1)}$$
Fund turnover (% TNA)	Fund *f*'s quarterly portfolio turnover, computed as the aggregate absolute value of the position change between quarters *t-1* and *t* across all stock holdings, computed using the stock price at time *t-1*, divided by the fund's TNA at the end of quarter *t-1*, multiplied by two.
Abnormal ESG turnover	Fund *f*'s quarterly ESG turnover, computed as the absolute value of the aggregate fund position change between quarters *t-1* and *t* across the fund's holdings of *High ESG stocks* and *Low ESG stocks*, valued using the stocks' prices at time *t-1*, divided by the fund's TNA at the end of quarter *t-1*. $$Abnormal\ ESG\ Turnover\ (f,t) = ESG\ Turnover(f,t) - \frac{1}{24} \times \sum_{\tau=March2016-36}^{March2016-12} ESG\ Turnover(f,\tau)$$

Panel B: Fund Performance	
Fund excess return	Fund *f*'s monthly net return in excess of the risk-free rate.
DGTW-Adj return	Fund *f*'s monthly portfolio return, risk-adjusted following the methodology of Daniel et al. (1997). Portfolio weights are based on the value of the fund's portfolio holdings at *t-1*.
FF4-Alpha	Fund *f*'s monthly alpha, estimated using Fama-French-Carhart four-factor model on a rolling-window between month *t-60* to *t-1*.
Buy High ESG	The average abnormal return of the high ESG stocks (defined as those with Sustainalytics ESG scores in the top tercile) that fund *f* has purchased in month *t*, risk-adjusted following the methodology of Daniel et al. (1997).
Sell Low ESG	The average abnormal return of the low ESG stocks (defined as those with Sustainalytics ESG scores in the bottom tercile) that fund *f* has sold in month *t*, risk-adjusted following the methodology of Daniel et al. (1997).
Buy Other	The average abnormal return of other stocks (i.e., stocks with no Sustainalytics ESG scores or stocks with Sustainalytics ESG scores not in the top tercile) that fund *f* has purchased in month *t*, risk-adjusted following the methodology of Daniel et al. (1997).
Sell Other	The average abnormal return of other stocks (i.e., stocks with no Sustainalytics ESG scores or stocks with Sustainalytics ESG scores not in the bottom tercile) that fund *f* has sold in month *t*, risk-adjusted following the methodology of Daniel et al. (1997).
No-Trade High ESG	The average abnormal return of the high-ESG stocks that fund *f* held in month *t* and did not trade in month *t*, risk-adjusted following the methodology of Daniel et al. (1997).
No-Trade Low ESG	The average abnormal return of the low-ESG stocks that fund *f* held in month *t* and did not trade in month *t*, risk-adjusted following the methodology of Daniel et al. (1997).
Panel C: Fund Characteristics	
Flow (% TNA)	A fund's quarterly flows, defined as $Flows_{j,q} = \frac{TNA_{j,q} - TNA_{j,q-1} \times (1+R_{j,q})}{TNA_{j,q-1}}$.
Expense Ratio	Ratio of total fees (as a percentage) that shareholders pay for a fund's operating expenses, including 12b-1 fees.
Ln TNA	Natural logarithm of the fund's month-end total net assets.

Fund Age	Natural logarithm of the fund's age, calculated as the number of years since the oldest share class was made available to investors.
Fund Return	Monthly net return of a fund.
Star Rating	Rating based on a fund's Morningstar Risk-Adjusted Return % Rank for all funds in a given category. Morningstar calculates ratings based on the fund's historical performance in the previous three-, five-, and ten-year periods. The fund must have at least 36 continuous months of historical performance in order to receive a rating. More stars mean better performance. A fund's peer group for the three-, five-, and ten-year ratings is based on the fund's current category without adjusting for category changes. The overall star rating is based on a weighted average (rounded to the nearest integer) of the number of stars received for the past three-, five-, and 10-year performance.
Globe Rating	A fund's sustainability rating, based on its portfolio sustainability scores. Funds are ranked within their Morningstar categories. A fund rating is based on its percentile rank within the fund's Morningstar category. To receive a globe rating, the fund's Morningstar category must have at least 10 funds with portfolio sustainability scores.
Low Carbon Designation	A fund is assigned a Low Carbon Designation by Morningstar if its portfolio holdings have low carbon risk scores and low levels of fossil fuel exposure. The designation is an indicator that the companies held in a portfolio are in general alignment with the transition to a low carbon economy.
Panel D: Stock Characteristics	
Monthly Abnormal Return	A firm's monthly abnormal return calculated using the Fama-French four-factor model, with betas estimated over the previous 36-months, computed using the quarter-end stock price.
Ln Market Cap	Natural logarithm of a firm's market capitalization.
Book to Market	Book-to-market ratio, calculated as book value of equity scaled by market value of equity, computed using the quarter-end stock price.
Leverage	Calculated as the sum of long-term debt and debt in current liabilities scaled by total assets.
ROA	Return on assets, calculated as operating income, divided by lagged total assets.
Sales Growth	Net sales at *t* minus net sales at *t-1*, divided by net sales at *t-1*.
Stock Ret	Quarterly stock return.

Figure 1: Google search for "Globe rating"

This figure presents the search volume of the term "Globe rating" from Google Trends between March 2016 and February 2018. The monthly search volume is the four-week moving average of the weekly measure.

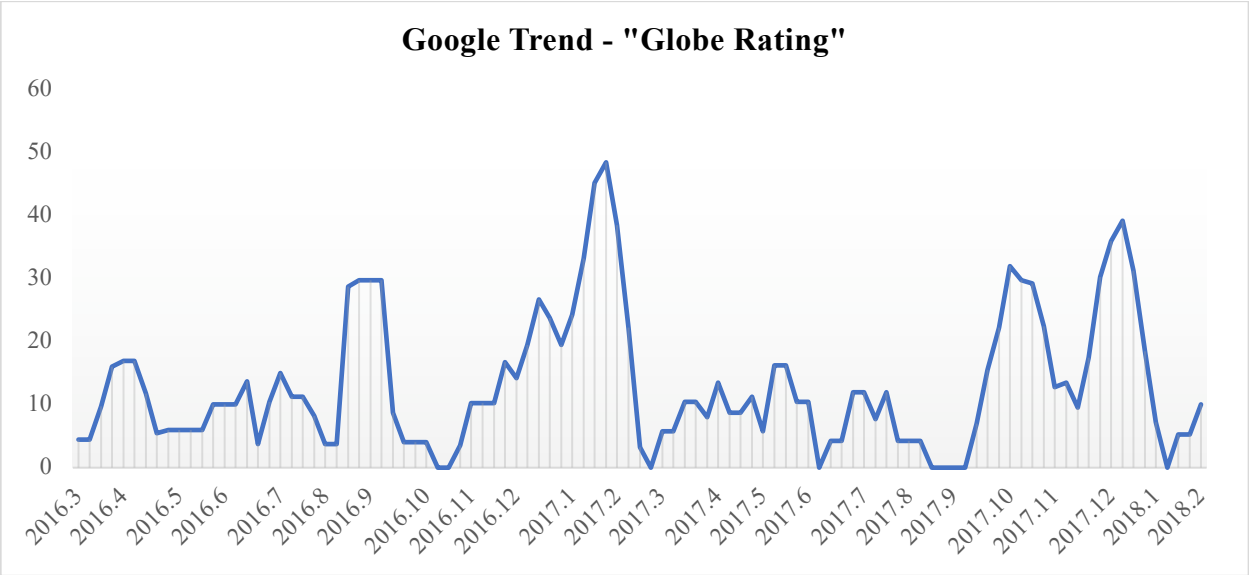

Figure 2: Differences in ESG trading across funds

This figure compares the *Abnormal ESG Trading* (as defined in the Appendix) of border funds and other funds after the official publication of the globe ratings. We separately present the average ESG trading during March to December 2016, when border funds appear to have incentives to improve their globe ratings, and from January to September 2017, when border funds do not appear to trade in a way to improve their globe ratings. Border funds are funds with portfolio sustainability scores within +/-2.5% of the rating cutoffs for globe 1 and globe 5.

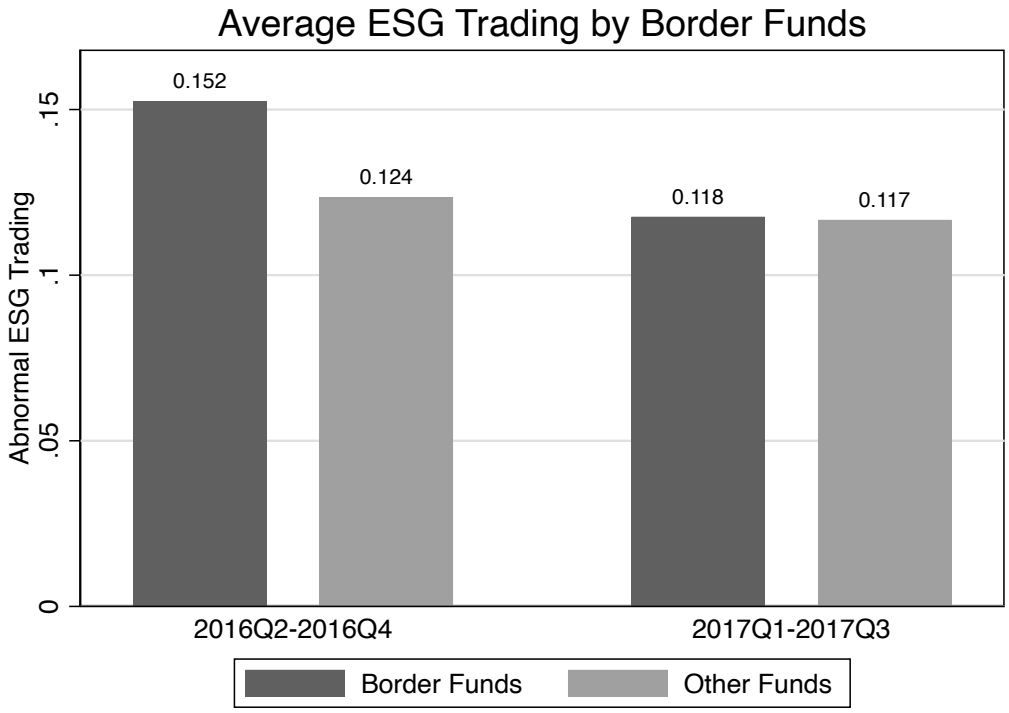

Figure 3: Fund flows, ESG trading, and globe upgrades

This figure compares the cumulative flows for funds that were upgraded to globe 2 or globe 5 at *t=0*. Specifically, we separate the funds into two groups based on the extent to which they have engaged in *Abnormal ESG Trading* (as defined in the Appendix) between *t=-1* and *t=0*. We classify a fund as *High (Low) ESG trade* if the fund's *Abnormal ESG Trading* belongs to the top (bottom) quartile, compared to other funds within the same Morningstar category during the same month. Fund flows are also adjusted by the average fund flow within each Morningstar category during each month. The 90% confidence intervals for both series are also reported.

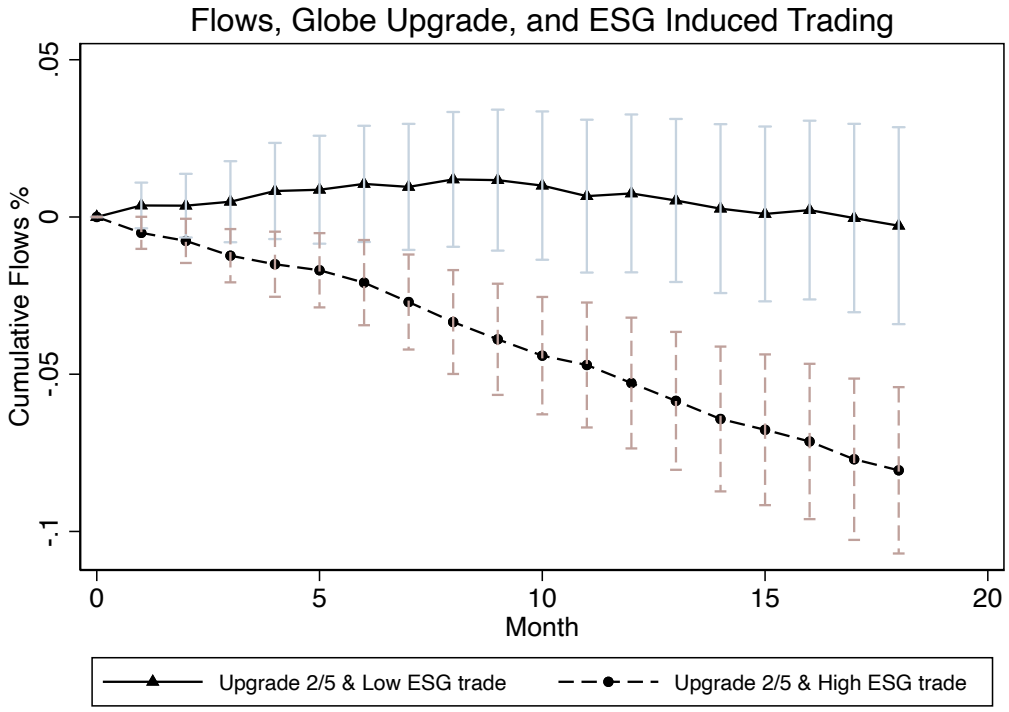

Table 1. Morningstar's star and globe rating upgrades and downgrades

This table shows the frequency of globe and star rating upgrades and downgrades in the first half of the sample period (from March to December 2016) and the second half of the sample period (from January to September 2017). Panel A includes all globe/star rating upgrades and downgrades, whereas Panel B focuses on upgrades from globe/star 1 to 2 and 4 to 5 and downgrades from globe/star 5 to 4 and 2 to 1 (i.e., changes from/to the bottom/top ratings).

	Globes		Star	
	Upgrade	*Downgrade*	*Upgrade*	*Downgrade*
Panel A: all changes				
2016.3 - 2016.12	8.82%	7.85%	6.69%	7.10%
2017.1 - 2017.9	9.10%	8.92%	6.23%	6.59%
Panel B: change to/from top/bottom rating				
2016.3 - 2016.12	3.20%	2.64%	1.96%	2.20%
2017.1 - 2017.9	3.29%	2.95%	1.92%	1.93%

Table 2. Summary statistics

This table reports summary statistics of monthly mutual fund characteristics from July 2015 to February 2016 in Panel A (*Pre-globes*) and from March 2016 (when the globe ratings were first published) to September 2017 in Panel B (*Post-globes*) as well as quarterly stock characteristics from July 2015 to September 2017 in Panel C. The sample includes star-rated US-domiciled funds that invest in US equities and have at least $10 million in assets under management. All variables are defined in the Appendix.

	Num obs	Mean	Std dev	10th pctl	Median	90th pctl
Panel A: Fund (Monthly) – Pre-globes						
Flow (% TNA)	14,635	-0.004	0.035	-0.031	-0.004	0.023
TNA ($ million)	14,635	2,387.942	6,134.15	37.701	561.285	5,236.168
Fund Age (Years)	14,635	18.156	12.038	5.75	16.25	29.917
Expense Ratio (%)	14,635	1.102	0.417	0.56	1.13	1.567
Star Rating	14,635	3.23	1.016	2	3	5
Δ Star Rating	14,580	0.003	0.384	0	0	0
Fund Turnover (% TNA)	14,635	0.644	0.446	0.141	0.561	1.243
Position Change (Fund-Stock-Qtr)	426,240	-0.004	0.337	-0.189	0	0.170
Panel B: Fund (Monthly) – Post-globes						
Flow (% TNA)	32,054	-0.006	0.033	-0.031	-0.006	0.017
TNA ($ million)	32,054	2,439.43	6,154.21	37.147	558.329	5,459.17
Fund Age (Years)	32,054	18.651	12.139	5.833	17	30.75
Expense Ratio (%)	32,054	1.232	0.648	0.58	1.18	1.785
Star Rating	32,054	3.206	1.017	2	3	4
Globe Rating	29,161	2.999	1.132	1	3	5
Δ Star Rating	32,054	-0.004	0.368	0	0	0
Δ Globe Rating	29,161	0.002	0.481	0	0	1
Fund Turnover (% TNA)	32,054	0.648	0.448	0.15	0.561	1.249
Abnormal ESG Trading	32,054	0.122	0.135	-0.022	0.110	0.298
Abnormal ESG Turnover	32,054	0.026	0.087	-0.041	0.012	0.111
Position Change (Fund-Stock-Qtr)	1,427,023	0.001	0.274	-0.106	0	0.101
Fund return	32,054	1.625	2.674	-1.307	1.296	5.331
DGTW-adj return	30,326	0.024	0.867	-1	0.004	1.094
FF4-Adj return	30,326	-0.176	1.213	-1.535	-0.159	1.179
Buy high ESG return	30,326	0.035	3.075	-3.251	0	3.358
Sell low ESG return	30,326	0.031	2.296	-2.492	0	2.63
Buy other return	30,326	0.046	3.047	-3.238	0	3.404
Sell other return	30,326	0.021	2.102	-2.194	0	2.343
No-trade high ESG return	30,326	-0.012	2.087	-2.267	-0.002	2.241
No-trade low ESG return	30,326	0.005	2.118	-2.348	-0.018	2.428
Panel C: Stock (Qtrly) – Pre-/Post-globes						
Effective ESG Score	16,907	44.647	7.088	37.233	43.592	54.166
Ln Market Cap	36,349	6.867	1.797	4.314	6.78	9.294
Book to Market	36,317	0.531	0.423	0.093	0.449	1.095
ROA	35,434	0.012	0.047	-0.051	0.019	0.054
Ret	36,198	0.023	0.195	-0.213	0.017	0.265
Leverage	34,949	0.228	0.219	0	0.177	0.541
Sales Growth Rate	35,399	0.035	0.223	-0.161	0.019	0.224

Table 3. Mutual fund trading and stocks' ESG scores

Panel A of this table estimates the relation between funds' position changes (× 100) and stocks' Sustainalytics ESG scores. We define an indicator *Border Funds*, which equals one for funds with portfolio sustainability scores within +/-2.5% of the globe rating cutoffs for globe 1 and globe 5, and zero otherwise. The sample period is from the third quarter (Q3) of 2015 to the third quarter (Q3) of 2017. We split the sample period into a pre-globes period (Q3 2015 – Q1 2016, columns 1, 4, and 7) and a post-globes main period divided into two equal subperiods – first half (Q2 2016 – Q4 2016, columns 2, 5, and 8) and second half (Q1 2017 – Q3 2017, columns 3, 6, and 9). Columns 4-6 present results for active funds and columns 7-9 present results for index funds. In Panel B, we use broader definitions of *Border Funds*. In columns 1-3, *Border Funds* are defined as funds with portfolio sustainability scores within +/-2.5% of the globe rating cutoffs for all globes, whereas in columns 4-6 *Border Funds* are those with portfolio sustainability scores within +/-5% of the globe rating cutoffs for globe 1 and globe 5. In Panel C, we report estimates using indicators for *High ESG* (*Low ESG*) stocks, defined as those with ESG scores in the top (bottom) tercile of the Sustainalytics ESG scores. All specifications include lagged firm-level controls, including firm size, book-to-market ratio, leverage, ROA, sales growth rate, and quarterly stock return, and interactions of fund and year-quarter fixed effects. Standard errors are clustered at the fund level.

Panel A. Border funds' trading and stocks' ESG scores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Position Change *(f,i,t)*								
	All Funds			Active Funds			Index Funds		
	Pre-globes	Post-globes		Pre-globes	Post-globes		Pre-globes	Post-globes	
Border Fund definition: Within 2.5%, Globes 1/5	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3
ESG Score	-0.013**	-0.007	0.009**	-0.014*	-0.005	0.014**	-0.011	-0.009*	-0.001
	(-2.241)	(-1.418)	(2.316)	(-1.946)	(-0.791)	(2.507)	(-1.245)	(-1.735)	(-0.198)
ESG Score × Border Funds	-0.005	0.046**	0.020	-0.004	0.049**	0.016	0.026	0.046	0.050
	(-0.183)	(2.167)	(1.083)	(-0.123)	(2.003)	(0.846)	(0.560)	(1.277)	(0.965)
Observations	426213	641819	785203	299967	441014	515780	126246	200791	269389
Adjusted R-squared	0.183	0.249	0.272	0.147	0.183	0.224	0.408	0.554	0.610
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ

Panel B. Broader definitions of border funds

	(1)	(2)	(3)	(4)	(5)	(6)
	Position Change *(f,i,t)*					
	All Funds					
	Pre-globes	Post-globes		Pre-globes	Post-globes	
	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3
Border Fund definition:	*Within 2.5%, All Globes*			*Within 5%, Globes 1/5*		
ESG Score	-0.013**	-0.006	0.011**	-0.013**	-0.008*	0.011***
	(-2.064)	(-1.140)	(2.568)	(-2.203)	(-1.692)	(2.733)
ESG Score × Border Funds	-0.001	0.013	-0.000	-0.001	0.030**	-0.001
	(-0.061)	(1.073)	(-0.046)	(-0.065)	(1.969)	(-0.102)
Observations	426213	641819	785203	426240	641819	785203
Adjusted R-squared	0.183	0.249	0.272	0.183	0.249	0.272
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ

Panel C. Indicators for high and low sustainability stocks

	(1)	(2)	(3)	(4)	(5)	(6)
	Position Change *(f,i,t)*					
	All Funds					
	Pre-globes	Post-globes		Pre-globes	Post-globes	
Border Fund definition: Within 2.5%, Globes 1/5	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3
High ESG	-0.020	-0.052	-0.047			
	(-0.181)	(-0.600)	(-0.600)			
High ESG × Border Funds	-0.937	0.913**	0.415			
	(-1.383)	(2.535)	(1.212)			
Low ESG				-0.165	0.064	-0.202***
				(-1.555)	(0.811)	(-2.880)
Low ESG × Border Funds				-0.608	-0.791**	-0.443
				(-1.054)	(-2.101)	(-1.506)
Observations	567420	715891	869330	567420	715891	869330
Adjusted R-squared	0.184	0.247	0.269	0.184	0.247	0.269
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ

Table 4. Funds' ESG trading and globe rating upgrades and downgrades

This table explores the relation between the likelihood of a fund experiencing a globe rating upgrade or downgrade and the fund's *Abnormal ESG Trading* (as defined in the Appendix). The sample period is from March 2016 to September 2017. In column 1 (column 2), the dependent variable is an indicator equal to one if the fund experiences an upgrade (downgrade) in its globe rating in month *t+1*, and zero otherwise. All specifications include *Abnormal ESG Turnover* and lagged fund-level controls as well as interactions of Morningstar category and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)
	Globe Upgrade	Globe Downgrade
Abnormal ESG Trading	0.111***	-0.156***
	(7.673)	(-12.014)
Abnormal ESG Turnover	0.089***	0.194***
	(3.530)	(8.262)
Fund Turnover (% TNA)	0.001	0.007*
	(0.149)	(1.692)
One Star	-0.001	0.009
	(-0.151)	(1.135)
Two Stars	0.003	0.007
	(0.518)	(1.370)
Four Stars	-0.006	-0.000
	(-1.394)	(-0.048)
Five Stars	0.002	-0.001
	(0.314)	(-0.221)
One Globe	0.014**	-0.052***
	(2.049)	(-9.860)
Two Globes	0.025***	-0.001
	(5.050)	(-0.309)
Four Globes	-0.018***	0.016***
	(-3.956)	(3.327)
Five Globes	-0.057***	-0.001
	(-9.983)	(-0.165)
Ln TNA	-0.002**	-0.002*
	(-2.075)	(-1.868)
Age	0.001	-0.002
	(0.238)	(-0.660)
Flow	0.009	0.024
	(0.151)	(0.429)
Expense Ratio	0.007**	0.002
	(2.307)	(0.492)
Constant	0.125***	0.151***
	(5.068)	(6.197)
Observations	28058	28058
Adjusted R-squared	0.047	0.031
Fixed effects	Cat*YM	Cat*YM

Table 5. Funds' ESG trading and performance

This table explores the relation between a fund's *Abnormal ESG Trading* and its performance. In Panel A, the dependent variable is the fund's monthly return in excess of the risk-free rate at *t+1*. In Panel B, we interact the fund's *Abnormal ESG Trading* with an indicator variable for *Border Fund*s, which equals one for funds with portfolio sustainability scores within +/-2.5% of the globe rating cutoffs for globe 1 and globe 5, and zero otherwise. In Panels A and B, column 1 reports estimates for the full sample period (from March 2016 to September 2017), column 2 studies the first half of the sample period (from March to December 2016), and column 3 focuses on the second half (from January to September 2017). In Panel C, the dependent variable is the fund's monthly return in excess of the risk-free rate at *t+1* in column 1, the fund's DGTW risk-adjusted portfolio return (Daniel et al., 1997) at *t+1* in column 2, and the fund's monthly alpha from a Fama-French-Carhart four-factor model estimated on a rolling window between month *t-60* to *t-1* in column 3. The indicator variable *First half* equals one if the sample period is between March and December 2016. All specifications include *Abnormal ESG Turnover* and lagged fund-level controls. Panels A and B include fund fixed effects, whereas Panel C includes fund and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

Panel A

	(1)	(2)	(3)
	Fund Excess Return		
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
Abnormal ESG Trading	-0.187	-0.465**	0.108
	(-1.517)	(-2.019)	(0.733)
Abnormal ESG Turnover	-0.646***	-2.970***	2.647***
	(-3.022)	(-6.948)	(8.406)
Globe One	-0.020	-0.131	0.158*
	(-0.297)	(-0.861)	(1.744)
Globe Five	0.054	-0.006	0.019
	(0.737)	(-0.040)	(0.237)
Fund Turnover (% TNA)	0.125	0.015	0.351***
	(1.365)	(0.051)	(2.910)
Flow	1.235*	-3.130**	-0.046
	(1.867)	(-2.463)	(-0.074)
Ln TNA	-1.789***	-6.643***	-1.893***
	(-8.512)	(-9.503)	(-6.230)
Age	-3.579***	-11.905***	0.408
	(-11.995)	(-12.044)	(0.587)
Exp Ratio	-0.176**	-62.958***	-0.123
	(-2.333)	(-9.135)	(-1.150)
Constant	47.024***	242.615***	37.882***
	(12.043)	(11.202)	(6.644)
Observations	30309	14679	15622
Adjusted R-squared	-0.024	-0.033	0.035
Fixed effects	Fund	Fund	Fund

Panel B

	(1)	(2)	(3)
	Fund Excess Return		
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
Abnormal ESG Trading	-0.103	-0.340	0.153
	(-0.797)	(-1.407)	(0.986)
Border funds	0.175**	0.394**	0.050
	(2.273)	(2.574)	(0.600)
Abnormal ESG Trading × Border Funds	-0.775**	-1.234*	-0.392
	(-2.163)	(-1.868)	(-1.006)
Abnormal ESG Turnover	-0.658***	-2.952***	2.612***
	(-2.935)	(-6.675)	(8.053)
Abnormal ESG Turnover × Border Funds	0.096	-0.161	0.325
	(0.163)	(-0.161)	(0.413)
Globe One	-0.021	-0.133	0.161*
	(-0.318)	(-0.878)	(1.764)
Globe Five	0.051	-0.007	0.018
	(0.702)	(-0.045)	(0.220)
Fund Turnover (% TNA)	0.127	0.026	0.352***
	(1.386)	(0.091)	(2.914)
Flow	1.225*	-3.131**	-0.045
	(1.856)	(-2.470)	(-0.072)
Ln TNA	-1.791***	-6.648***	-1.893***
	(-8.529)	(-9.501)	(-6.236)
Age	-3.584***	-11.923***	0.415
	(-12.027)	(-12.051)	(0.597)
Exp Ratio	-0.177**	-62.979***	-0.122
	(-2.341)	(-9.129)	(-1.141)
Constant	47.071***	242.739***	37.861***
	(12.061)	(11.198)	(6.645)
Observations	30309	14679	15622
Adjusted R-squared	-0.024	-0.033	0.035
Fixed effects	Fund	Fund	Fund

Panel C

	(1)	(2)	(3)
	Fund Excess Return	DGTW-Adj Return	FF4-Alpha
Abnormal ESG Trading	1.392***	0.183**	0.294***
	(11.431)	(2.555)	(3.975)
Abnormal ESG Trading × First half	-1.932***	-0.444***	-0.428***
	(-10.856)	(-4.227)	(-3.839)
Abnormal ESG Turnover	-0.581**	0.071	-0.139
	(-2.319)	(0.474)	(-0.918)
Abnormal ESG Turnover × First half	-1.008***	0.074	0.424**
	(-3.065)	(0.369)	(2.114)
Globe One	0.014	0.033	0.009
	(0.321)	(1.058)	(0.264)
Globe Five	0.032	-0.039	-0.082**
	(0.704)	(-1.200)	(-2.316)
Fund Turnover (% TNA)	0.038	-0.041	-0.042
	(0.583)	(-1.101)	(-1.013)
Flow	-0.245	-1.177***	-1.018***
	(-0.596)	(-5.420)	(-4.267)
Ln TNA	-0.849***	-0.433***	-0.371***
	(-8.204)	(-7.363)	(-6.031)
Age	0.659**	0.337*	0.283
	(2.272)	(1.849)	(1.312)
Exp Ratio	-0.024	0.025	0.048
	(-0.386)	(0.769)	(1.523)
Constant	16.659***	7.757***	6.445***
	(8.206)	(6.499)	(5.101)
Observations	30309	28761	30309
Adjusted R-squared	0.641	0.083	0.050
Fixed effects	Fund, YM	Fund, YM	Fund, YM

Table 6. Funds' ESG trading and performance in sub-portfolios of stocks

This table explores the relation between a fund's *Abnormal ESG Trading* and the performance of sub-portfolios of stocks based on the stocks' ESG ratings. The dependent variables are the fund's average DGTW risk-adjusted returns of different sub-portfolios of stocks. The indicator variable *First half* equals one if the sample period is between March and December 2016. *High ESG* (*Low ESG*) stocks are those with Sustainalytics ESG scores in the top (bottom) tercile; other stocks are those with no ESG scores or stocks with ESG scores not in the top or bottom tercile. All specifications include *Abnormal ESG Turnover* and lagged fund-level controls as well as fund and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Buy High ESG	Sell Low ESG	Buy Other	Sell Other	No-Trade High ESG	No-Trade Low ESG
Abnormal ESG Trading	0.493**	-0.478**	0.279	0.231	0.161	-0.707***
	(2.363)	(-2.209)	(1.487)	(1.429)	(1.256)	(-4.493)
Abnormal ESG Trading × First half	-1.018***	0.665**	-0.223	-0.667***	0.075	1.178***
	(-3.638)	(2.414)	(-1.005)	(-3.151)	(0.393)	(5.673)
Abnormal ESG Turnover	-0.200	0.495	-0.056	0.325	-0.047	0.305
	(-0.519)	(1.238)	(-0.164)	(1.076)	(-0.231)	(1.069)
Abnormal ESG Turnover × First half	1.100**	0.201	-0.150	0.027	0.158	-0.298
	(2.401)	(0.433)	(-0.370)	(0.077)	(0.655)	(-0.898)
Fund Turnover (% TNA)	0.069	0.176	-0.123	-0.148*	0.082	0.014
	(0.668)	(1.457)	(-1.501)	(-1.834)	(1.122)	(0.166)
Flow	-0.753	0.042	-1.177***	-0.375	-0.743	-0.700
	(-1.097)	(0.063)	(-2.617)	(-0.788)	(-1.623)	(-1.614)
Ln TNA	-0.343***	-0.100	-0.397***	-0.332***	-0.136*	-0.095
	(-3.408)	(-0.883)	(-4.686)	(-3.906)	(-1.859)	(-1.254)
Age	-0.399	1.935***	0.053	0.303	-0.759*	1.039**
	(-0.807)	(3.290)	(0.146)	(0.729)	(-1.959)	(2.432)
Exp Ratio	0.088	0.170*	-0.016	0.099	0.080	-0.061
	(0.895)	(1.815)	(-0.213)	(1.516)	(1.201)	(-1.286)
Constant	7.697***	-3.472	7.909***	5.809***	4.458**	-0.776
	(3.419)	(-1.343)	(4.475)	(3.025)	(2.571)	(-0.435)
Observations	31849	31849	31849	31849	31849	31849
Adjusted R-squared	0.030	0.014	0.038	0.027	0.129	0.128
Fixed effects	Fund, YM	Fund, YM	Fund, YM	Fund, YM	Fund, YM	Fund, YM

Table 7. Effects of the globe ratings on fund flows

Panel A reports the effects of the globe ratings on monthly fund flows. Panel B performs a horse race between the star and globe ratings at *t-1* to evaluate their effects on fund flows. Columns 1 and 4 show results for the full sample period (from March 2016 to September 2017), columns 2 and 5 report results for the first half of the sample (March to December 2016), and columns 3 and 6 report results for the second half (January to September 2017). Columns 1-3 use globe 3 as the baseline, whereas columns 4-6 use the three middle globe ratings as the baseline. All specifications include lagged controls for the fund's returns, size, age, and expense ratio as well as interactions of the fund's Morningstar category and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

Panel A. Globe ratings and fund flows

	(1)	(2)	(3)	(4)	(5)	(6)
	Flow (%TNA)					
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9	*Full Sample* 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
One Globe	-0.001	-0.003**	0.001	-0.001	-0.003***	0.001
	(-1.053)	(-2.153)	(0.429)	(-1.338)	(-2.634)	(0.440)
Two Globes	-0.000	-0.000	-0.000			
	(-0.238)	(-0.380)	(-0.041)			
Four Globes	0.001	0.002*	0.000			
	(1.229)	(1.782)	(0.091)			
Five Globes	0.002**	0.004***	0.001	0.002**	0.003**	0.001
	(2.061)	(2.614)	(0.563)	(2.039)	(2.527)	(0.593)
Star Rating	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(18.128)	(15.747)	(15.129)	(18.108)	(15.726)	(15.131)
Fund return	0.004***	0.004***	0.003***	0.004***	0.004***	0.003***
	(9.816)	(9.083)	(6.485)	(9.798)	(9.084)	(6.484)
Ln TNA	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(-4.604)	(-4.266)	(-3.214)	(-4.591)	(-4.302)	(-3.211)
Age	-0.003***	-0.002***	-0.004***	-0.003***	-0.002***	-0.004***
	(-5.383)	(-2.955)	(-5.822)	(-5.331)	(-2.843)	(-5.849)
Exp Ratio	0.001	0.001	0.000	0.001	0.001	0.000
	(0.907)	(1.206)	(0.545)	(0.964)	(1.264)	(0.554)
Constant	-0.008	-0.009	-0.008	-0.008	-0.009	-0.008
	(-1.540)	(-1.418)	(-1.423)	(-1.532)	(-1.375)	(-1.423)
Observations	28547	13215	15332	28547	13215	15332
Adjusted R-squared	0.090	0.105	0.077	0.090	0.105	0.078
Fixed effects	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM

Panel B. Star and globe ratings and fund flows

	(1)	(2)	(3)	(4)	(5)	(6)
	Flow (%TNA)					
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9	*Full Sample* 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
One Globe	-0.001	-0.003**	0.000	-0.002*	-0.004***	0.000
	(-1.414)	(-2.549)	(0.239)	(-1.682)	(-2.995)	(0.257)
Two Globes	-0.000	-0.000	-0.000			
	(-0.355)	(-0.454)	(-0.141)			
Four Globes	0.001	0.001	0.000			
	(1.119)	(1.539)	(0.112)			
Five Globes	0.002	0.003**	0.000	0.002	0.003**	0.000
	(1.636)	(2.254)	(0.261)	(1.618)	(2.200)	(0.285)
One Star	-0.010***	-0.009***	-0.011***	-0.010***	-0.009***	-0.011***
	(-6.325)	(-4.944)	(-5.240)	(-6.344)	(-4.919)	(-5.265)
Two Stars	-0.006***	-0.007***	-0.006***	-0.006***	-0.007***	-0.006***
	(-7.396)	(-6.235)	(-5.489)	(-7.388)	(-6.187)	(-5.491)
Four Stars	0.008***	0.009***	0.008***	0.008***	0.009***	0.008***
	(12.020)	(9.784)	(9.744)	(12.012)	(9.767)	(9.732)
Five Stars	0.021***	0.023***	0.020***	0.021***	0.023***	0.020***
	(13.154)	(11.777)	(10.979)	(13.172)	(11.854)	(10.983)
Fund return	0.004***	0.004***	0.003***	0.004***	0.004***	0.003***
	(9.948)	(9.090)	(6.621)	(9.929)	(9.088)	(6.618)
Ln TNA	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(-4.880)	(-4.545)	(-3.403)	(-4.867)	(-4.583)	(-3.396)
Age	-0.003***	-0.002**	-0.004***	-0.003***	-0.002**	-0.004***
	(-4.948)	(-2.502)	(-5.570)	(-4.895)	(-2.399)	(-5.587)
Exp Ratio	0.000	0.001	0.000	0.000	0.001	0.000
	(0.474)	(0.838)	(0.229)	(0.529)	(0.886)	(0.243)
Constant	0.016***	0.016**	0.015***	0.016***	0.016**	0.015***
	(3.227)	(2.414)	(2.734)	(3.234)	(2.463)	(2.717)
Observations	28547	13215	15332	28547	13215	15332
Adjusted R-squared	0.093	0.110	0.079	0.093	0.110	0.080
Fixed effects	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM

Table 8. Effects of globe rating upgrades and downgrades on fund flows

This table reports the effects of star and globe rating upgrades and downgrades on monthly fund flows. Column 1 presents results for the full sample period (from March 2016 to September 2017), column 2 reports results for the first half of the sample (March to December 2016), and column 3 reports results for the second half (January to September 2017). All specifications include lagged controls for the fund's returns, size, age, and expense ratio as well as interactions of the fund's Morningstar category and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)
	Flow (%TNA)		
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
Globe Downgrade	0.001	0.000	0.001
	(0.820)	(0.111)	(1.002)
Globe Upgrade	0.000	-0.000	0.001
	(0.720)	(-0.120)	(1.178)
Star Downgrade	-0.004***	-0.005***	-0.004***
	(-5.400)	(-4.128)	(-3.727)
Star Upgrade	0.004***	0.005***	0.003***
	(5.085)	(4.597)	(2.734)
One Globe	-0.001	-0.003**	0.000
	(-1.381)	(-2.491)	(0.237)
Two Globes	-0.000	-0.000	-0.000
	(-0.351)	(-0.465)	(-0.131)
Four Globes	0.001	0.001	0.000
	(1.061)	(1.531)	(0.019)
Five Globes	0.002	0.003**	0.000
	(1.621)	(2.273)	(0.230)
One Star	-0.011***	-0.010***	-0.011***
	(-6.649)	(-5.357)	(-5.390)
Two Stars	-0.007***	-0.007***	-0.006***
	(-7.754)	(-6.581)	(-5.721)
Four Stars	0.009***	0.010***	0.008***
	(12.374)	(10.134)	(9.993)
Five Stars	0.022***	0.024***	0.020***
	(13.281)	(11.967)	(11.088)
Fund return	0.004***	0.004***	0.003***
	(9.828)	(9.038)	(6.487)
Ln TNA	-0.001***	-0.001***	-0.001***
	(-5.041)	(-4.779)	(-3.467)
Age	-0.003***	-0.002**	-0.004***
	(-4.872)	(-2.425)	(-5.539)
Exp Ratio	0.000	0.001	0.000
	(0.521)	(0.965)	(0.209)
Constant	0.017***	0.017**	0.015***
	(3.342)	(2.562)	(2.776)
Observations	28515	13209	15306
Adjusted R-squared	0.096	0.113	0.082
Fixed effects	Cat*YM	Cat*YM	Cat*YM

Table 9. Sustainability rating upgrades, funds' performance, and flows

This table studies the effects of the interaction between negative performance and globe rating upgrades on fund flows. Each month, we rank funds' returns into deciles and define *Poor Performance* as an indicator variable that equals one if a fund's monthly return belongs to the bottom decile. The dependent variable is a fund's monthly flow. Columns 1, 4, and 7 show results for the full sample period (March 2016 to September 2017), columns 2, 5, and 8 report results for the first half (March to December 2016), and columns 3, 6, and 9 report results for the second half (January to September 2017). All specifications include lagged controls for the fund's categorical star rating, returns, size, age, and expense ratio as well as interactions of the fund's Morningstar category and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Flow (%TNA)								
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9	*Full* 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9	*Full* 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
Poor Performance	-0.008***	-0.008***	-0.007***	-0.008***	-0.008***	-0.007***	-0.008***	-0.008***	-0.007***
	(-8.803)	(-7.294)	(-5.873)	(-8.941)	(-7.421)	(-5.920)	(-8.980)	(-7.534)	(-5.949)
Upgrade to Globe 2/5	0.001	0.003	-0.001						
	(0.619)	(1.479)	(-0.611)						
Poor Performance × Upgrade to Globe 2/5	-0.005	-0.008*	-0.003						
	(-1.507)	(-1.730)	(-0.525)						
Upgrade to Globe 5				0.001	0.003	-0.000			
				(0.539)	(1.088)	(-0.185)			
Poor Performance × Upgrade to Globe 5				-0.011**	-0.012**	-0.011			
				(-2.147)	(-2.271)	(-1.024)			
Upgrade to Globe 2							0.000	0.002	-0.001
							(0.309)	(1.000)	(-0.682)
Poor Performance × Upgrade to Globe 2							-0.002	-0.005	0.001
							(-0.433)	(-0.715)	(0.134)
Globe One	-0.002**	-0.004***	-0.000	-0.002**	-0.004***	-0.000	-0.002**	-0.004***	-0.000
Adjusted R-squared	0.044	0.050	0.039	0.044	0.049	0.039	0.044	0.049	0.039
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM

Table 10. Effects of the globe ratings on institutional and retail fund flows

This table reports the effects of the globe ratings on monthly fund flows for institutional and retail share classes separately. Columns 1 and 4 show results for the full sample period (from March 2016 to September 2017), columns 2 and 5 report results for the first half of the sample (March to December 2016), and columns 3 and 6 report results for the second half (January to September 2017). All specifications include lagged controls for the fund's returns, size, age, and expense ratio as well as interactions of the fund's Morningstar category and year-month fixed effects. Standard errors are clustered at the share class level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Institutional Flows (%TNA)			Retail Flows (%TNA)		
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9	*Full Sample* 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
One Globe	0.000	-0.002	0.003	-0.002**	-0.003**	-0.001
	(0.230)	(-0.999)	(1.410)	(-1.985)	(-2.408)	(-0.507)
Five Globes	0.003**	0.004**	0.002	0.001	0.005***	-0.002
	(1.969)	(2.093)	(1.043)	(1.255)	(3.169)	(-1.333)
Star Rating	0.012***	0.014***	0.010***	0.008***	0.009***	0.007***
	(19.352)	(17.163)	(14.670)	(16.518)	(14.496)	(12.148)
Fund return	0.003***	0.004***	0.003***	0.005***	0.005***	0.005***
	(5.023)	(4.824)	(3.149)	(10.856)	(9.146)	(7.458)
Ln TNA	-0.002***	-0.003***	-0.002***	-0.002***	-0.002***	-0.002***
	(-9.945)	(-8.508)	(-7.083)	(-7.864)	(-8.469)	(-4.746)
Age	-0.002***	-0.002*	-0.003***	-0.003***	-0.003***	-0.003***
	(-3.137)	(-1.726)	(-3.421)	(-4.536)	(-3.431)	(-3.763)
Exp Ratio	-0.002	-0.001	-0.003*	-0.002**	-0.002	-0.002*
	(-1.615)	(-0.734)	(-1.738)	(-2.116)	(-1.520)	(-1.894)
Constant	0.012*	0.005	0.016**	0.018***	0.023***	0.013
	(1.797)	(0.617)	(2.108)	(2.844)	(3.002)	(1.610)
Observations	41222	18946	22276	45215	21218	23997
Adjusted R-squared	0.044	0.063	0.032	0.055	0.077	0.036
Fixed effects	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM

Table 11. Effects of the sustainability score on fund flows

This table reports the effects of a fund's *Portfolio Sustainability Score* on monthly fund flows. Column 1 shows results for the full sample period (from March 2016 to September 2017), column 2 reports results for the first half (from March to December 2016), and column 3 reports results for the second half (from January to September 2017). All specifications include lagged controls for the fund's returns, size, age, and expense ratio as well as interactions of the fund's Morningstar category and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)
		Flow (%TNA)	
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
Portfolio Sustainability Score	0.062***	0.102***	0.018
	(2.898)	(3.677)	(0.664)
Fund Return	0.004***	0.004***	0.003***
	(10.171)	(9.223)	(6.687)
One Star	-0.010***	-0.009***	-0.011***
	(-6.361)	(-5.039)	(-5.230)
Two Stars	-0.006***	-0.007***	-0.006***
	(-7.370)	(-6.205)	(-5.434)
Four Stars)	0.008***	0.009***	0.008***
	(11.941)	(9.666)	(9.704)
Five Stars	0.021***	0.023***	0.020***
	(13.218)	(12.070)	(10.927)
Ln TNA	-0.001***	-0.001***	-0.001***
	(-4.893)	(-4.616)	(-3.410)
Age	-0.003***	-0.002***	-0.004***
	(-5.089)	(-2.708)	(-5.634)
Exp Ratio	0.000	0.001	0.000
	(0.357)	(0.654)	(0.135)
Constant	-0.011	-0.029**	0.007
	(-0.995)	(-1.979)	(0.562)
Observations	29307	13985	15322
Adjusted R-squared	0.094	0.110	0.080
Fixed effects	Cat*YM	Cat*YM	Cat*YM

Table 12. Morningstar's modified methodologies and fund flows

This table reports the effects of a fund's globe rating and *Historical Portfolio Sustainability Score* on monthly fund flows after November 2018 (columns 1, 3 and 4) and November 2019 (column 2), when Morningstar implemented two modifications of its globe rating methodology. In columns 1-3, we use globe 3 as the baseline. In column 4, we replace a fund's globe rating with its *Historical Portfolio Sustainability Score*. In column 5, we consider instead the effect of Morningstar's *Low Carbon Designation* after its introduction in April 2018. All specifications include lagged controls for the fund's returns, size, age, and expense ratio as well as interactions of the fund's Morningstar category and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)	(5)
	Flow (%TNA)				
	2018.11-2019.9	2019.11-2020.9	2018.11-2020.9	2018.11-2020.9	2018.4-2020.9
One Globe	-0.001	0.002	-0.000		
	(-0.987)	(1.128)	(-0.153)		
Two Globes	0.001	0.000	0.001		
	(1.016)	(0.366)	(0.947)		
Four Globes	-0.000	0.000	0.000		
	(-0.278)	(0.255)	(0.052)		
Five Globes	0.000	-0.000	0.001		
	(0.289)	(-0.012)	(0.413)		
Historical Portfolio Sustainability Score				-0.000	
				(-0.472)	
Low Carbon Designation					-0.001
					(-0.517)
One Star	-0.003*	-0.004*	-0.003**	-0.003**	-0.004***
	(-1.929)	(-1.866)	(-2.264)	(-2.430)	(-3.395)
Two Star	-0.003***	-0.001	-0.003***	-0.003***	-0.003***
	(-3.453)	(-1.263)	(-3.227)	(-3.264)	(-3.718)
Four Star	0.010***	0.009***	0.009***	0.009***	0.009***
	(10.424)	(9.938)	(13.131)	(13.043)	(13.883)
Five Star	0.020***	0.023***	0.021***	0.021***	0.021***
	(11.828)	(12.738)	(14.890)	(14.793)	(16.060)
Fund return	0.004***	0.003***	0.003***	0.003***	0.003***
	(7.141)	(6.190)	(8.156)	(8.415)	(9.668)
Ln TNA	-0.001***	-0.001**	-0.001***	-0.001***	-0.001***
	(-2.999)	(-2.389)	(-3.252)	(-3.007)	(-3.683)
Age	0.001	0.001	0.001	0.001	0.001
	(1.169)	(0.833)	(1.285)	(1.362)	(0.890)
Exp Ratio	-0.000**	0.000	-0.000	-0.000	-0.000
	(-2.193)	(1.016)	(-0.743)	(-0.803)	(-1.434)
Constant	-0.004	-0.010	-0.007	-0.006	-0.003
	(-0.619)	(-1.336)	(-1.276)	(-0.742)	(-0.589)
Observations	13865	13465	28581	28825	37041
Adjusted R-squared	0.092	0.075	0.083	0.081	0.085
Fixed effects	Cat*YM	Cat*YM	Cat*YM	Cat*YM	Cat*YM

Internet Appendix:

Sustainability or Performance?
Ratings and Fund Managers' Incentives

Figure IA.1: Fund flows and globe ratings

This figure reproduces the results in Hartzmark and Sussman (2019) for our sample. Specifically, we compare the cumulative flows of funds with globe 1 and globe 5 ratings, respectively. Fund flows are adjusted by the average fund flows within each Morningstar category during each month. The sample period is March to December 2016.

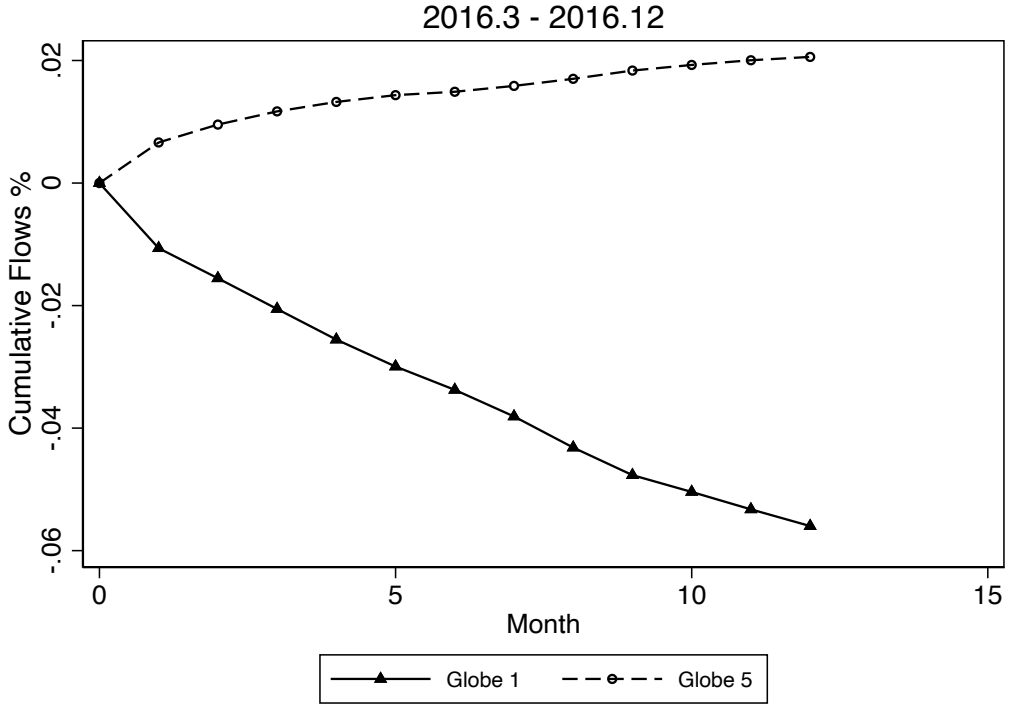

Table IA.1. Mutual fund trading and stocks' ESG scores – Position changes computed using end-of-quarter prices

This table estimates the relation between funds' position changes, defined as $\left(\frac{Price(i,t)*[(NumShares(f,i,t)-NumShares(f,i,t)]}{TNA(f,t)} \times 100\right)$, and stocks' Sustainalytics ESG scores. The indicator *Border Funds* equals one for funds with portfolio sustainability scores within +/-2.5% of the globe rating cutoffs for globe 1 and globe 5, and zero otherwise. The sample period is from the third quarter (Q3) of 2015 to the third quarter (Q3) of 2017. We split the sample period into a pre-globes period (Q3 2015 – Q1 2016, columns 1, 4, and 7) and a post-globes main period divided into two equal subperiods – first half (Q2 2016 – Q4 2016, columns 2, 5, and 8) and second half (Q1 2017 – Q3 2017, columns 3, 6, and 9). Columns 1-3 present the continuous ESG scores. In columns 4-6 (columns 7-9) we report estimates using indicators for *High ESG* (*Low ESG*) stocks, defined as those with ESG scores in the top (bottom) tercile of the Sustainalytics ESG scores. All specifications include lagged firm-level controls, including firm size, book-to-market ratio, leverage, ROA, sales growth rate, and quarterly stock return, and interactions of fund and year-quarter fixed effects. Standard errors are clustered at the fund level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Position Change *(f,i,t)*								
	Pre-globes	Post-globes		Pre-globes	Post-globes		Pre-globes	Post-globes	
	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3	2015Q3-2016Q1	2016Q2-2016Q4	2017Q1-2017Q3
ESG Score	-0.006	0.002	0.011***						
	(-1.072)	(0.462)	(2.678)						
ESG Score × Border Funds	-0.002	0.050**	0.012						
	(-0.073)	(2.423)	(0.820)						
High ESG				-0.031	0.090	0.019			
				(-0.313)	(1.067)	(0.242)			
High ESG × Border Funds				-0.883	0.987***	0.274			
				(-1.380)	(2.846)	(0.941)			
Low ESG							-0.228**	-0.048	-0.156**
							(-2.247)	(-0.625)	(-2.154)
Low ESG × Border Funds							-0.745	-0.901**	-0.341
							(-1.334)	(-2.415)	(-1.344)
Observations	426227	641753	785203	567436	715815	869330	567436	715815	869330
Adjusted R-squared	0.175	0.225	0.241	0.176	0.224	0.240	0.176	0.224	0.240
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ	Fund*YQ

Table IA.2. Fund Characteristics – Border Funds vs. Other Funds

This table present a comparison of the mean values of monthly fund characteristics between border funds and other funds in the first half of the post-globes period (March to December 2016). *Border Funds* are defined as funds with portfolio sustainability scores within +/-2.5% of the globe rating cutoffs for all globes. The sample includes star-rated US-domiciled funds that invest in US equities and have at least $10 million in assets under management. All variables are defined in the Appendix.

	Border Funds	Other Funds	Diff	*t*-stat
Flow (% TNA)	-0.007	-0.007	0	0.1
TNA ($ million)	2209.297	2399.510	-190.213	-1.3
Fund Age (Years)	21.106	18.32	2.786	6.1
Expense Ratio (%)	1.237	1.206	0.032	1.85
Star Rating	3.159	3.216	-0.057	-1.7
Δ Star Rating	-0.011	-0.003	-0.008	-0.65
Fund Turnover (% TNA)	0.674	0.658	0.015	1.05

Table IA.3. Sustainability ratings and funds' flow-performance sensitivity

This table studies the effects of the sustainability ratings on funds' flow-performance sensitivity. The dependent variable is a fund's monthly flow. Column 1 shows results for the full sample period (March 2016 to September 2017), column 2 reports results for the first half (March to December 2016), and column 3 reports results for the second half (January to September 2017). All specifications include lagged controls for the fund's categorical star rating, returns, size, age, and expense ratio as well as interactions of the fund's Morningstar category and year-month fixed effects. Standard errors are clustered at the fund level. Statistical significance at the 10%, 5%, and 1% level is denoted by *, **, and ***, respectively.

	(1)	(2)	(3)
	Flows (% TNA)		
	Full Sample 2016.3-2017.9	*First half* 2016.3-2016.12	*Second half* 2017.1-2017.9
One Globe × Return (t-1)	-0.000	0.000	-0.001
	(-0.162)	(0.444)	(-1.573)
Five Globes × Return(t-1)	-0.000	-0.000	0.000
	(-0.571)	(-0.756)	(0.264)
One Globe	-0.002	-0.004***	0.002
	(-1.531)	(-2.764)	(0.994)
Five Globes	0.002**	0.003**	0.000
	(1.994)	(2.333)	(0.231)
Return (t-1)	0.004***	0.004***	0.004***
	(9.729)	(8.924)	(6.634)
One Star (t-1)	-0.010***	-0.009***	-0.011***
	(-6.416)	(-5.036)	(-5.290)
Two Star (t-1)	-0.006***	-0.007***	-0.006***
	(-7.495)	(-6.289)	(-5.483)
Four Star (t-1)	0.008***	0.009***	0.008***
	(11.946)	(9.645)	(9.723)
Five Star (t-1)	0.022***	0.024***	0.020***
	(13.328)	(12.301)	(10.961)
Ln TNA (t-1)	-0.001***	-0.001***	-0.001***
	(-4.889)	(-4.650)	(-3.372)
Age	-0.003***	-0.002***	-0.004***
	(-4.974)	(-2.595)	(-5.615)
Exp Ratio (t-1)	0.000	0.001	0.000
	(0.418)	(0.740)	(0.193)
Constant	0.017***	0.017***	0.014***
	(3.324)	(2.677)	(2.646)
Observations	29352	14018	15334
Adjusted R-squared	0.094	0.109	0.080
Fixed effects	Cat*YM	Cat*YM	Cat*YM