Greenwashing in mutual funds[*]

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September 30, 2021

Abstract

This paper investigates mutual funds' potential "greenwashing" behavior. Funds profiled as ESG-based receive higher inflows compared to other similar funds. Importantly, we show this is true also for ESG labeled funds having inferior objective ESG profiles, as based on Morningstar sustainability ratings, applying to both retail and institutional funds. An analysis of mutual funds repurposing into ESG focus shows that fund families especially tend to convert such funds whose ability to attract inflows has been lagging behind. Documenting and uncovering the motives for greenwashing is vital in terms of trust in the emerging and rapidly growing market of green financial products, with high hopes for its pivotal role in combating climate change.

Keywords: Mutual funds, ESG, Responsible investment, Greenwashing

Introduction

Environmental, Social, and Governance (ESG) investing is probably the most significant investment theme of recent times. About $17 trillion, or 33%, of the total assets under professional management in the US were invested according to some social responsibility strategy in 2020, a fivefold increase in 10 years. At the same time, the number of investment asset management firms in the US committing to principles of responsible investment has grown to over 400, a tenfold increase.[1]

To stand out in the offering space, ESG-related investment products are often marked with labels such as ESG, CSR (Corporate Social Responsibility), SRI (Socially Responsible Investing), and Sustainability. Labeling is an essential marketing tool in consumer products. While it can provide useful information, there have been concerns about mislabeling and misleading advertising. It can be difficult for capacity-constrained consumers to spot these instances. For example, "natural" goods are popular and widely believed to be organic or non-GMO (non-Genetically Modified) by many consumers. In 2016, 73% of consumers looked for the label "natural" when shopping for food items according to Consumer Reports Survey. However, to fulfill the Food and Drug Administration requirements for natural, a food item only needs to be without such artificial or synthetic elements that wouldn't normally be expected in that food. The realm of green or sustainable products is of course not immune to such problems. TerraChoice, an advertising consultancy, reported that in 2010 over 95% of green products surveyed committed at least one of the "Seven Sins of Greenwashing."

In this paper, we investigate greenwashing in the mutual fund industry via the use of ESG-labeling. The purpose of ESG investing is to tackle environmental issues such as climate change and sustainable land use, social issues such as human rights and labor standards, and governance issues such as corruption and tax avoidance. However, as with consumer products, it is not always straightforward for investors to see if the fund's investment policy really matches the claims made.

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[1] Sources: The Forum for Sustainable and Responsible Investment (SIF), and Principles for Responsible Investment (PRI), respectively.

For example, investors often expect these funds to avoid certain industries like fossil fuels, but this is often not the case.[2] The SEC has called for better and more transparent ESG labeling.[3]

Mutual funds are an ideal setting to spot potential greenwashing in the realm of finance. On the one hand, the objective of a mutual fund company is to maximize its own corporate value by attracting the inflows (Chevalier and Ellison, 1997), and fuzzy or downright misleading labeling can be one tactic.[4] On the other hand, mutual funds' publicly reported holdings enable third-party assessment and monitoring.

We study three related research questions: 1) Is mere self-designation as a sustainable mutual fund rewarded with higher inflows, even when it is at odds with a third-party sustainability rating based on fund holdings. 2) What drives the decision to repurpose a fund into an ESG fund. 3) What happens to these funds after repurposing.

To answer the first question, we hand collect from US equity mutual funds' prospectuses a time-series list of which mutual funds describe themselves as ESG, including other related labels (socially conscious, socially responsible investing, sustainability, and sustainable investing). We refer to all these funds collectively as self-designated ESG funds. To measure the funds' objective ESG level, we use Morningstar's mutual fund sustainability ratings, what Morningstar calls Globe ratings, a term we also henceforth use. It aggregates Sustainalytics ESG ratings of listed equities in the funds' holdings.

We conduct pairwise comparisons of objective and self-designated ESG profiles' ability to attract flows, especially during the initial period right after Morningstar launched the Globe rating system. We first compare ESG-labeled funds to other funds and find that this self-designated ESG status is associated with on average 0.8% of assets under management (AUM) higher category-adjusted

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[2] See, for example, "ESG Funds Enjoy Record Inflows, Still Back Big Oil and Gas", *Wall Street Journal*, November 11, 2019; "Thord of low-carbon funds invest in oil and gas stocks", *Financial Times*, December 20, 2020.

[3] SEC official Elad Roisman says "Retail investors who want "green" or "sustainable" products deserve more clarity". There is serious concerns about the greenwashing on misleading information (Financial Times 2020).

[4] ESG-related labelling is shown to attract flows. Białkowski and Starks (2016) report that SRI (socially responsible) funds receive higher flows than conventional funds. Eco-labelling ((Ceccarelli, Ramelli, and Wagner, 2021)) is also shown to attract flows.

monthly flows to both retail funds and institutional funds. The effect is very large in relative terms, representing a fourfold increase for retail funds and ninefold for institutional funds. We then study the impact of the objective ESG levels by matching funds that receive above-average Globe ratings to funds that get average ratings or below. We find only small effects in retail funds and small and statistically insignificant differences in institutional funds: retail funds with above-average Globe ratings receive 0.1% of AUM monthly flows while funds with otherwise similar profiles but only average or below Globe ratings get 0.02%. Lastly, we interact the self-designated ESG label with Globe ratings. Specifically, we compare ESG-label funds with average or below Globe ratings to such other funds that have above-average Globe ratings but do not use any ESG label. We find a favorable effect on flows for ESG-labeled funds having inferior objective ESG profiles. These potential greenwashing ESG retail and institutional funds receive 1.4% and 3.6% (of AUM) higher category-adjusted monthly flows, respectively, than non-ESG retail and institutional funds with similar profiles. The fact that self-designated ESG attracts higher flows, even with inferior Globe ratings, is evidence of an ESG labeling effect. Interestingly, using a more recent period from 2018 to 2020, we find a much smaller ESG-labelling effect. The self-designated ESG label can only bring around half of the extra flows it brought in the initial period from 2016 to 2017. More importantly, the self-designated label can no longer benefit these potential greenwashing ESG institutional funds, indicating possible behavioral changes of institutional investors.

For the second research question, we identify ESG repurposing events, i.e., funds that have switched to calling themselves ESG. The idea is that the fund family may strategically change the labeling of funds that fail to attract sufficient flows.[5] In contrast, they may be more reluctant to change any attributes of funds that perform well in attracting flows. Of course one strategy is to erase the track record of underperforming funds altogether, through merger or closure. Prior research (Brown and Goetzmann, 1995; Elton, Gruber, and Blake, 1996) shows that action is typically carried out only

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[5] Prior research has documented asset management company level strategic behavior toward their decisions about individual funds. For example, Cooper, Gulen, and Rau (2005) find that funds with lower flows, fees and returns are more likely to change their names towards the current hot investment style or away from the cold style.

after severe underperformance in terms of fund returns, perhaps because not much else can then be done to salvage the fund's marketing appeal. We thus expect that ESG-labeling as a tactical move is more likely for funds that are for some reason lagging in attracting client money, but have not necessarily produced any clear underperformance in terms of fund returns.

We expect the above logic to play a role in the repurposing of single fund asset management companies, as well as in multi-fund companies (fund families) making tactical decisions on which fund to potentially repurpose. In contrast, when a fund family repurposes its entire fleet of funds, it is less likely due to individual fund performance issues. Since we want to get to such individual fund issues, we exclude events that look like categorical family-level change.[6] In the absence of hard data on these motivations, we infer that cases in which most of the funds in a family are repurposed within a short period of time are likely not related to individual funds' performance. We consider individual repurposing events within a family as related, if the funds' prospectus' are updated to include ESG within a 6-month window. This is because even within the same family, individual funds tend to have varying annual prospectus filing / updating dates with the SEC. In our quarterly frequency analysis, we then exclude all such observations from the analysis where concurrent updates represent more than half of the family's funds for each event quarter.

We run a stacked quarterly regression where the left-hand side variable is an indicator of whether a particular fund is repurposed into an ESG fund in that quarter. The sample of these repurposing events is augmented by a control group consisting of all the non-ESG funds in existence in that event quarter. The main explanatory variable of interest is fund flow, measured as the percentile rank of flows cumulated over three years in the fund category, relative to AUM.[7] We remove fund categories that have fewer than 5 funds for each repurposing event quarter and control for log AUM, the category

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[6] An example of such a categorical decision by an asset management company is becoming a signatory of a sustainable investment principles or pledge requiring ESG incorporation throughout the group's operations. Two leading organizations facilitating such pledges are SIF and PRI (The forum for Sustainable and Responsible Investment) and PRI (Principles for Responsible Investment). The funds that then are repurposed would amend their prospectuses to reflect this new policy. But instead of all prospectuses updating at once, varying fund specific SEC reporting dates cause some dispersion.

[7] Percentile ranks of flows are commonly employed in prior research such as Evans(2010), Evans and Sun (2021), and Barber, Scherbina, and Schlusche (2017).

percentile rank of past 3-year returns, volatility, as well as expense and turnover ratios. To get to possible tournament effects amongst the funds belonging to the same fund family, we also use a within family-based flow ranking as an alternative measure. Both types of flow ranks are quite highly correlated, at 0.82, but it is interesting to see which effect might be stronger. More specifically, our family rank-based flow measure takes the fund category-based measures, and then forms a percentile rank within each family. To get reasonable within family variation, we remove fund families having fewer than 3 funds when using this variable. The control variables are the same except that to control for returns, we also use a family rank-based measure, i.e., family rank of the category percentile rank of past 3-year returns. We include event quarter fixed effects in all analyses.

The results show that fund families tend to convert individual funds whose ability to attract past flows has been inferior. On average, a 10 percentage point decrease in percentile rank of past 3-year flows increases the probability of a fund being repurposed by 0.02 percentage points in each quarter. The unconditional probability is 0.2 percentage points per quarter, so the 0.02 marginal increase is 10% in relative terms. Using the within family based -flow ranking shows similar results. If anything, the results are even stronger: a 10 percentage point decrease increases the probability of a fund being repurposed by 0.03 percentage points in each quarter, a 15% increase in relative terms. Both sets of results are consistent with ESG-repurposing decisions being at least partially driven by tactical considerations: something different is being tried for a product that is performing adequately in terms of returns, but for one reason or another underperforming in its flow-getting ability.

For the third research question, we compare the change in flows, as well as portfolio realignment after the repurposing. We find essentially no change for future flows, indicating no obvious short-term business benefits to repurposing. However, the caveat is that we do not observe the counterfactual of what would've happened, had the fund not been repurposed. As far as portfolio allocations, we find clear evidence that repurposed funds reduce their holdings in ESG-unfriendly industries such as tobacco and oil production. Before the event, they hold 10% in these industries, which is about 1 percentage point higher than what funds in general do (9.2%). This reduces to 8.4%,

a slightly lower level than other funds' allocation (8.8%), in the 6 months after repurposing. There is a slight secular trend in funds in general allocating away from these industries. However, it only stands at 0.4 percentage points per 6-months, thus explaining around 1/4 of the rate of reduction carried out by the repurposing funds.

The key contribution of this paper is that it provides direct evidence of greenwashing behavior in the ESG investment product offering space. Prior studies have documented other types of misleading information in the fund industry. For example, Sensoy (2009) shows that mutual funds' self-designated benchmark indexes do not match the funds' actual styles to the benefit of the funds. Chen, Cohen, and Gurun (2020) document misclassification of bond fund holdings making the funds appear less risky.

Our paper is crucial for uncovering the motives and the potential strategies behind ESG investing and promoting investor and regulatory awareness. Gibson Brandon, Krueger, and Mitali (2021) find that US investors who commit to responsible investing but only partially apply ESG strategies (e.g., screening) have worse portfolio-level ESG scores. Liang, Sun, and Teo (2021) find greenwashing in the hedge fund industry using hedge fund PRI signatories. The paper is also related to the literature on strategic behavior in fund family-level decisions. Prior studies focus on product differentiation (Massa, 2003), star-creating strategy (Nanda, Wang, and Zheng, 2004), cross-subsidization (Gaspar, Massa, and Matos, 2006), and incubation (Evans, 2010). We extend this literature in the ESG investing context by showing that mutual fund families are more likely to add an ESG label to funds that have inferior flows, consistent with strategic optimizing at the family level.

The rest of this paper is organized as follows. Section 2 describes our data. Section 3 presents our sample and methodology. In Section 4, we provide our empirical results. Section 5 concludes.

2. Data

In this section, we first introduce the ESG related variables we use, including the objective ESG level (Section 2.1) and the self-designated ESG label (Section 2.2). We then describe other mutual fund data.

2.1 Morningstar Globe ratings as objective ESG level

We use Morningstar Globe ratings as the measure of objective ESG levels. A fund's Globe rating is a rank within the fund's category based on its sustainability score, calculated as the asset-weighted average of firm-level sustainable scores using the fund's underlying holdings. The underlying firm-level sustainable scores are produced by Sustainalytics. This Globe rating system provides the objective ESG level on a 1-5 scale. A fund is assigned the rating 1 if its sustainability score is ranked in the lowest 10% group in the fund category. It is assigned rating 2 if its sustainability score is in percentile 10% through 32.5%, 3 for percentiles 32.5% through 67.5% and 4 for percentiles 67.5% through 90%. It is assigned the highest rating of 5 if its sustainability score is ranked in the top 10%. In our analysis we pool Globe ratings 1 and 2 to "GR Low," use Globe rating 3 as "GR Mid," and pool Globe ratings 4 and 5 to "GR High."

Morningstar first launched this system at the end of February 2016, and it become available to individual investors in March through various Morningstar platforms. In October 2018, Morningstar enhanced its methodology to construct the Globe rating. The most significant change Morningstar has so far made is to take historical fund holdings into consideration (for details, see Morningstar (2018). As a result, the Globe ratings become less volatile since then. Meanwhile, Morningstar made the time-series records of this variable available, starting from August 2018. In addition, Morningstar improved its methodology again in November 2019 by including ESG risks in the Globe rating calculation process (for details, see Morningstar (2019)).

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2.2 Self-designated ESG fund list and the ESG-Repurposing event

We define self-designated ESG funds as funds that include ESG, socially conscious, or sustainability criteria in their investment strategy section or the additional investment strategy section, in the prospectus. Our definition excludes religious funds and so-called value-based funds. Religious funds invest according to religious beliefs and guidances, so they possibly have primary considerations other than ESG investment. Value-based funds only screen out firms that invest in specific industries such as alcohol, tobacco, or gambling. Although ESG funds may also contain value-based criteria in their investment process, they only serve a supplementary role in their investment process. Value-based funds may also have other considerations not directly linked with ESG.

Prior literature has used various definitions of ESG funds, which are slightly different from ours. Bollen (2007) obtains the ESG fund list from SIF (The Forum for Sustainable and Responsible Investment). SIF only considers funds that its member firms offer and classifies a fund to be socially responsible if the fund applies any social screen or sponsors shareholder resolutions on social responsibility issues. This list is a one-time list with no available histories. Białkowski and Starks (2016) combine Morningstar's socially conscious list, Bloomberg's socially responsible list, and fund prospectuses to define ESG funds. Renneboog, Ter Horst, and Zhang (2011) collect ESG information by aggregating several sources, including fund prospectus, SIF, and other online ESG investing-related platforms. Their list also includes funds with screening strategies. Some other papers (Starks, Venkat, and Zhu, 2020; Gibson Brandon, Krueger, and Mitali, 2021) use a value-weighted average of firm-level ESG scores for each portfolio, which is a more objective measure since it already considers fund holdings.

Our prospectus-based definition of self-designated ESG funds is more narrow on purpose: by limiting to the material produced by the fund itself, it better reflects what the fund purports to be. We also additionally include the Morningstar's objective ESG measure (as described in Section 2.1), in an effort to separately study both effects.

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To form our binary indicator of self-designated ESG, we start with Morningstar's "socially conscious" variable, which contains ESG-focused funds, religious funds, and value-based funds. [8] To find our time-series list of self-designated ESG funds and the date of a non-ESG fund being repurposed to an ESG fund, we obtain the socially conscious fund list in 2020 and manually collect those funds' prospectuses from January 2010 to June 2020. We then define a fund as self-designated ESG if its prospectus contains ESG-related investment information. Based on this, an ESG-repurposing event is the fund-quarter in which this information first appeared. We further define ESG-repurposing families as fund families that have ESG-repurposing funds. That is, if a fund has ESG criteria in its prospectus since its inception in the market, the fund is an ESG fund but not an ESG-repurposing fund because there is no repurposing event. Appendix A shows one example of how a fund adds ESG criteria in its investment strategy.

2.3 Mutual fund dataset

We retrieve the main variables such as AUM (total assets under management), return, expense ratio, and turnover ratio from Morningstar Direct Database. Because Morningstar only keeps the most recent fund family name and ignores changes across time, we obtain fund family information from the CRSP Survivor-Bias-Free U.S. mutual fund database.[9] To construct fund-level AUM and dollar flow, we sum the AUMs and dollar flows over all the share classes of each fund. For all the other variables, we use lagged AUM-weighted averages. When studying retail funds and institutional funds, we sum the AUMs and dollar flows of shares in the respective share class types and use the arithmetic

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[8] This variable has been discontinued by Morningstar in 2020. It was defined in Morningstar Direct as "This data point indicates if the fund selectively invests based on certain non-economic principles. Such funds may make investments based on such issues as environmental responsibility, human rights, or religious views. A socially conscious fund may take a pro-active stance by selectively investing in, for example, environmentally-friendly companies, or firms with good employee relations. This group also includes funds that avoid investing in companies involved in promoting alcohol, tobacco, or gambling, or in the defense industry."

[9] Fund Family is identified by the management company code from the CRSP mutual fund database. We follow Berk and van Binsbergen (2015) and Pástor, Stambaugh, and Taylor (2015) to clean the CRSP database and merge the CRSP mutual fund database to Morningstar Direct Database. In Pástor, Stambaugh, and Taylor (2015), they drop the partially matched funds that have at least one share class unmatched. We keep all the partially matched funds to have the ultimate size of funds. For the unmatched funds in Morningstar, we use our best judgement by looking up each fund's prospectus to find the management company and then assign the same management company code used for other matched funds in the same prospectus to this fund's management company code. Our main interpretation remains the same if we use the current Morningstar's information on fund family.

average for other variables. Fund flows in month t are calculated as $\text{Flow}_{i,t} = (\text{Dollar Flow}_{i,t}) / \text{AUM}_{i,t-1}$, where $\text{Dollar Flow}_{i,t} = \text{AUM}_{i,t} - (r_{i,t}+1)*\text{AUM}_{i,t-1}$.[10] Past n-month flows are the cumulative monthly flows in the past n months. All the continuous variables are winsorized at 1% and 99% levels.

Other fund information is also from Morningstar, including index fund indicator, fund of funds indicator, institutional fund indicator, fund category, and industry allocation information. Morningstar fund category identifies funds based on their actual investment style. Industry allocation data maps each stock holding of an equity fund into one of 148 industries, reflecting the company's underlying business, based on each company's annual reports, 10-K forms, and Morningstar Analyst input.

3. Sample Selection and Methodology

Because of potential incubation bias (Evans, 2010), we restrict our sample to funds with at least 12 months of history after their AUM exceeds 5 million. We use US open-end equity funds in all analyses, excluding funds of funds, index funds, value-based funds, and religious funds.[11]

We use two sample periods. The first period is from March 2016 to July 2017, right after Morningstar launched its Globe rating system. This is also the only period we have the Globe rating data in before Morningstar changed its methodology to construct the variable and made the time-series records available (for details, see Morningstar (2018)).[12] Another period is from September 2018 to December 2020, during which the new methodology is applied. In this analysis, we study retail and institutional funds separately.

3.1 Flow comparison

We conduct three pairwise flow comparison tests to investigate whether the ESG label helps funds get higher flows, even when a third-party assigned ESG level disagrees with the label. The first

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[10] Using another flow measure where the denominator is $(r_{i,t}+1)*\text{AUM}_{i,t-1}$ instead of $\text{AUM}_{i,t-1}$ does not change our main interpretations.

[11] Index funds are identified by using Morningstar's indicator "Index Fund" and "Enhanced Index". Fund of Funds are identified by using Morningstar's indicator "Fund of Funds". Value-based funds are identified by manually screening the fund prospectus. Religious funds are identified by using Morningstar's indicator "Ethical Issue Strategy Focus".

[12] We get the Globe rating data in this period directly from Morningstar representatives.

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comparison is between self-designated ESG funds and other funds, aiming to study whether the self-designation as ESG can bring higher flows. The second comparison seeks to investigate the effects of the objective ESG level, measured by the Morningstar Globe rating. Lastly, we interact the self-designated ESG label (used in the first comparison) with the objective Globe rating (used in the second comparison), attempting to study whether the self-designated ESG label can help funds receive higher flows when the objective ESG level disagrees.

Figure 1 shows the number and the percentage of self-designated ESG funds with different Globe ratings over time. It shows that most self-designated ESG funds receive High Globe ratings, and it is very rare for an ESG fund to receive the Low Globe rating. On average, around 73% of Retail ESG funds and 74% of Institutional ESG funds receive High Globe ratings in our first sample period from March 2016 to July 2017. This percentage decreases to about 45% for Retail class and 44% for Institutional class in our second period from September 2018 to December 2020. The decrease may be due to both the Morningstar Globe Rating methodology change (which starts to consider historical holdings) and the surge in ESG investment (assuming that the surge also reflects the increasing number of funds with greenwashing strategies to some extent). Nevertheless, the percentage of self-designated ESG funds receiving Low Globe Ratings is relatively small in both periods. Therefore, when studying the second and the third comparison, we pool funds with Low and Mid Globe Ratings together. Specifically, in the second comparison, we compare funds that receive Low or Mid Globe ratings to funds that receive High Globe ratings. In the third comparison, we study ESG funds with Low or Mid Globe ratings and compare those funds to non-ESG funds with High Globe ratings.

Similar to the matching methods used in Bollen (2007), Renneboog, Ter Horst, and Zhang (2011), and Białkowski and Starks (2016), we match funds in the target group with other funds based on risk exposure and AUM. The matched funds in the control group for a target fund must not be more than two years older or younger than the target fund. We force an exact match on the load vs. no-load fee mechanism. We calculate scores each month as:

$$\text{Score} = \frac{(\text{AUM}_i - \text{AUM}_j)^2}{\sigma_{AUM}^2} + \frac{(\beta_{MKT,i} - \beta_{MKT,j})^2}{\sigma_{MKT}^2} + \frac{(\beta_{SMB,i} - \beta_{SMB,j})^2}{\sigma_{SMB}^2} + \frac{(\beta_{HML,i} - \beta_{HML,j})^2}{\sigma_{HML}^2}$$

$$+ \frac{(\beta_{MOM,i} - \beta_{MOM,j})^2}{\sigma_{MOM}^2}$$

Where *i* represents target funds and *j* represents other funds in the control group. Each of the β coefficients is derived from the Carhart four-factor model using past 3-year monthly returns. AUM is the asset under management at the end of each month, and σ is the cross-sectional standard deviation of the β coefficients and AUMs in each month. The matching funds of a target are the three other funds having lowest scores, after first considering the binary load fee variable.

In our first comparison, each self-designated ESG fund is paired with three nearest neighbor funds every month. All the information used for matching is one month lagged. We use paired t-tests to compare monthly category-adjusted flows of ESG funds and their matched funds. We conduct this process for both sample periods: the initial period from March 2016 to July 2017 and a later period from September 2018 to December 2020. In the initial period, we only include funds that have Globe ratings in March 2016 when Morningstar launched the system. The reason is that the Globe rating seems to only affect flows of funds that have the initial Globe Rating in this period (Amman et al., 2019).

We apply the above method also to the second and third comparison tests. To have a larger pool of potential neighbors for each target fund, we define the target group as the group with fewer observations and the control group as the group with more observations on average in each comparison. Specifically, the target group contains funds with High Globe ratings in the second comparison and ESG funds with Low or Mid Globe ratings in the last comparison.

3.2 ESG-repurposing strategy

In all analyses related to ESG-repurposing events, we stack the data across event quarters to create our sample. In each ESG-repurposing event quarter, we include all funds that are non-ESG by

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that quarter as control observations. ESG-repurposing funds only exist in our sample before and in their repurposing quarters. For example, if a fund updates to include the ESG label in year-quarter t, this fund is in our sample before t, and at t. It is excluded in quarters after t because it could no longer serve as a control observation, nor could it repurpose to ESG again. We further restrict the sample to categories with at least five funds in each event quarter in order to meaningfully measure flows and returns using category ranks. When studying family ranks, we require at least three funds in each event quarter.

When running a family of funds, the asset management company can make strategic business decisions that have little to do with individual funds' performance. For example, the companies may allow investors to switch between funds in the same family without cost. Also, fund differentiations can help fund proliferation in the family (Massa, 2003). On the other hand, a family may also adopt specific strategies to selected funds based on their performance. Cross-fund subsidization is one such example. [13]

The same can be true in the context of ESG investing. For example, the company might categorically incorporate ESG across all of its funds. The two leading organizations promoting ESG investment — SIF (The Forum for Sustainable and Responsible Investment) and PRI (Principles for Responsible Investment) — require signatory registration at the parent company level. However, this does not automatically mean that ESG should be applied to the same extent across all funds in the family, or even at all in every fund, but it may increase the incentives to do that. Alternatively, the company could apply ESG-related decisions selectively to certain funds, perhaps dependent on individual fund performance.

In our analysis, we place more weight on the individual fund specific repurposing events and their determinants. In part, this is due to the relative scarcity of data on fund family level events, although some inference is possible there as well. Without directly observing fund families' ESG-

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[13] Gaspar, Massa, and Matos (2006) document that funds with high fees or high past performance overperform at the expense of funds with low fees or low past performance in the same fund family.

repurposing strategies, we use the percentage of funds being repurposed to ESG in each family in a certain period of time to detect categorical family-level change. This requires a time period bit longer than an instant, because individual funds within the family can have different prospectus filing dates with the SEC. We treat the scenario when more than half of the funds in the same family update the same investment strategy in a 6-month window as categorical family-level change. In the fund-level analysis, for each ESG-repurposing event quarter, we exclude repurposing funds in families with more than half of its funds repurposed to ESG within a 6-month window (3 months before and 3 months after). We also separately run a fund-family level analysis where also these observations are included.

We use logistic regression to study the determinants of fund-level ESG-repurposing events. The repurposing dummy variable which equals one if a fund is repurposed to ESG fund (and zero otherwise) is regressed on the category percentile rank of past 3-year flows, the category percentile rank of past 3-year returns, and other control variables. The category percentile rank ranges from 0 to 1 and is calculated in each ESG-repurposing event quarter within each fund category. Other control variables are the log of AUM, age, flow and return monthly volatility in the past three years, expense ratio, and turnover ratio. Event quarter fixed effects are included in all regressions. In a separate set of regressions, we also use the family percentile rank of category percentile rank to study potential tournament effects within the family. Specifically, we calculate the percentile ranks (ranging from 0 to 1) of category percentile ranks within each fund family in each ESG-repurposing event quarter. Other control variables are the same as before, and event quarter fixed effects are included.

Apart from examining the determinants of individual repurposing events, we also try to understand the categorical family-level repurposing events to some extent. In contrast to individual repurposing behavior, the categorical repurposing behavior is defined as the scenario in which more than half of the funds in the same fund family update the prospectus to include ESG considerations within a 6-month window. By this definition, one fund family may have categorical family repurposing behavior in one event quarter and have individual repurposing event in another event

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quarter. However, if a fund family has the categorical repurposing behavior in one event, all the repurposing decisions of this family are likely to be more related to family-level categorical changes. To have an overall insight into the determinants of categorical family-level repurposing events, we build a purely cross-sectional sample. We collapse the time dimension by averaging family-level performance across all event quarters. Since our sample only includes funds with non-ESG histories in each event quarter, the cross-sectional family-level variables capture a general performance of all non-ESG funds in each family across time. We then use cross-sectional logistic regression to study the determinants of categorical family-level repurposing. Specifically, we regress a dummy variable Mass-Reporposing (indicating whether the family that has at least one categorical family repurposing event) on the family-level category percentile rank of past 3-year flows and returns, the log of AUM, age, expense ratio, and turnover ratio.

3.3 What happens after funds are repurposed to ESG

In this analysis, we use the same sample as in section 3.2. To study the effects of ESG-repurposing events, we first focus on funds' mean equity industry exposure changes in a 6-month window, which are the differences between the mean equity industry exposures six months after the repurposing event and the mean exposures six months before the event. We sort the 148 Morningstar-defined industries based on ESG friendliness, following our common sense that industries that harm the environment or do not fit social norms are ESG-unfriendly and those that help protect the environment are ESG-friendly. We then compare ESG-repurposing funds to other funds in terms of their industry exposure changes in ESG-friendly and ESG-unfriendly industries. ESG-repurposing event-quarter fixed effects and fund category fixed effects are included. Specifically, *ESG friendly* industries contain Pollution & Treatment Controls, Solar, and Waste Management. *ESG unfriendly* industries contain Oil and Gas, Tobacco, Gambling, Coal, Chemicals, Rubber & Plastic, and Specialty Chemicals. In appendix B, we report Morningstar's definitions of all industry exposures used in the analysis.

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We then study whether the ESG-repurposing behavior can bring business benefits regarding fund flows and returns by examining the changes in category percentile ranks. For each ESG-repurposing fund, we first find two funds with the closest category percentile ranks of 6-month flows (or returns) in the same category before each ESG-repurposing event. We then find those funds' category percentile ranks of 6-month flows (or returns) after each event. Finally, we use a paired t-test to compare category percentile rank changes of ESG-repurposing funds to the average changes of the two matched funds. Category percentile rank change is the difference between the category percentile rank of 6-month flows (or returns) after ESG-repurposing events and the category percentile rank of 6-month flows (or returns) before ESG-repurposing events. We also specifically study what happens to those ESG repurposing funds that actually reallocate towards ESG unfriendly industries. Specifically, using the ESG-repurposing sample only, we regress the category percentile rank changes on the dummy variable which equals 1 if the fund increases its holdings in ESG-unfriendly industries and 0 otherwise in a 6-month window.

4. Results

4.1 Summary statistics of ESG funds prevalence and ESG-repurposing behavior.

Table 1 shows the prevalence of ESG funds and families (defined as those having at least one ESG fund) through the sample years. Only about 1.6% of funds are ESG funds, and 6% of fund families are ESG families in 2010. The percentage increases to around 12% and 17%, respectively at the end of 2019. From 2010 to 2016, the rate of increase in ESG fund percentage is only 1 percentage point, while from 2016 to 2019, the increase is almost 10 percentage points.

Table 2 reports the statistics ESG fund families and repurposing events. Despite the emergence of ESG funds in more recent years, Panel A shows that the percentage of ESG funds in each ESG fund family is not high, meaning that most fund families do not have the majority of their funds as ESG funds. The median percentage of ESG funds in each ESG fund family stays at around 20%,

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except for a slight decrease to less than 15% in 2015 and 2016, and an increase to more than 30% at the end of 2019. In terms of absolute numbers, the median of all funds and ESG funds per family is around 7 and 1 before 2016, and it increases to 10 and 2, respectively, at the end of 2020. Panel B uses a subsample of Panel A and studies the ESG-repurposing funds only. ESG-repurposing families are families that repurposed at least one fund. It shows that most ESG-repurposing happens in the recent three years. The median percentage of ESG-repurposing funds in each family is around 20% to 33% from 2017 to 2019, while before 2017 the median percentage of ESG-repurposing funds in each family is only 6% to 8%.

Both Panel A and Panel B suggest that although some fund families have all the funds as ESG funds, there are still many fund families that only have a small part of their funds as ESG. Panel C further reports the repurposing events and how those events are excluded from the regression sample within each year. It further confirms that most ESG-repurposing events happen in the most recent years. Overall, Table 2 suggests that ESG considerations mostly apply to only some funds within the family, while some categorical family-level behavior can also be going on.

4.2 Flow comparison

We now turn to the results on comparing flows in different ESG-related groups, as documented in Table 3. We see that the ESG label in both retail and institutional funds helps attract flows, even when the objective sustainability rating disagrees with the label. This is especially true during earlier years 2016-2017. In the 2018-2020 period, the effect of the ESG label on flows gets weaker, and the label can no longer help institutional funds attract flows if the sustainability rating disagrees with the label. This suggests that institutional investors have learned about potential greenwashing behavior and consider both self-designated label and other measures.

Panel A shows the results using the initial period from March 2016 to July 2017, right after Morningstar launched its system. ESG labeled retail funds receive around 1% of AUM category-adjusted monthly flows, while their paired non-ESG retail funds with similar profiles only receive

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about 0.2%. The difference is statistically significant at 1%. We find a similar flow pattern for institutional funds: ESG labeled funds and their paired non-ESG funds receive 0.9% and 0.1% of AUM category-adjusted monthly flows, respectively. The difference is statistically significant at 5%. For both retail and institutional clienteles, the economic magnitude is very large. By adding the self-designated ESG label, retail funds can increase their flows by around fourfold, and institutional funds can increase their flows by around ninefold. Within Morningstar Globe rating groups, we find no statistically significant differences between flows with GR (Globe rating) High, GR Low or Mid for institutional funds. For retail funds, funds with GR high receive 0.08% of AUM higher flows than funds with GR Low or Mid. This difference is only significant at 10%, though.

In our third comparison, we find that the flows of ESG funds that fail to receive GR High are greater than those of non-ESG funds with GR High. This difference is 1.4% and 3.6% for retail and institutional funds, respectively, both statistically significant at 1%. This result identifies the benefits of adding a self-designated ESG label to funds, regardless of which objective rating funds would receive, implying potential greenwashing. In the later period we find a similar phenomenon but with a smaller effect size.

Compared to Hartzmark and Sussman (2019) and Ammann et al. (2019), the effect we find in Globe ratings is weaker in this initial period. Both papers find that funds with the highest Globe rating (GR5) can receive higher flows, and funds with the lowest Globe rating (GR1) receive lower flows, compared to funds with the average Globe rating (GR3). And such effects especially exist in retail funds. For institutional funds, the effect is much smaller, or there might be no effect. Also, they do not find such phenomenon for funds with the Globe rating 2 or 4. In our analysis, we first pool funds with GR1 to GR3 and funds with GR4 to GR5 and then find three matches in funds with Low or Mid GR (GR1 to GR3) for each fund with High GR (GR 4 to GR5) in each month. The comparison group is different in our analysis. Also, we use a longer period than both Hartzmark and Sussman (2019) and Ammann et al. (2019). The weaker effects in our analysis may be due to both the sample of funds as well as the time period.

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Panel B of Table 3 shows that the ESG label can bring about 0.4% (of AUM) higher flows to retail funds and around 0.5% to institutional funds. The effects of adding the ESG label are halved compared to the earlier period (Panel A). Following the logic of Berk and Green (2004), a possible explanation is that investors learn about ESG investment slowly, and the funds gradually approach equilibrium size.

In the later period there is no longer any statistically significant difference in flows between the ESG funds that fail to receive High Globe Ratings and the non-ESG funds that receive High Globe Ratings. Self-designated ESG label no longer helps institutional funds receive higher flows if the Globe rating disagrees with the label, indicating some learning by institutional investors. In contrast, the ESG label still brings extra flows into retail funds even if the objective Globe Rating disagrees with the label. However, the effect is smaller, about a quarter of that of the earlier period.

4.3 ESG repurposing strategy

In this subsection we investigate the determinants of ESG-repurposing behavior. Table 4 reports summary statistics. Already there we see that the median category percentile rank of past 3-year flows of ESG-repurposing funds is lower than that of other funds. This is confirmed in Table 5 that shows the results of a logit regression for the determinants of ESG-repurposing events. The results are consistent with the idea that fund families repurpose funds with inferior ability to attract flows. The effect of lower flows on ESG-repurposing is statistically significant at the 1% level (Column 2). The marginal effect of the category percentile rank of the past 3-year flow is -0.002 (z-value -2.6), implying that a 10 percentage point decrease in category percentile rank increases the probability of being repurposed by 0.02 percentage point each event quarter.

ESG-repurchasing might be particularly tempting for funds that are for some reason lagging behind in flows even if their return performance is not. This can come about as a fund family top management decision, in an effort to maximize the value of the whole firm. It could also be driven by the manager of that particular fund, perhaps in an effort to increase her relative standing and

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compensation within the company, i.e., tournament behavior. We cannot observe which individual managers are in a position to make such decisions for the funds they run, but anecdotal evidence suggests it can be possible. At least, as in any business context, a lower-level manager may have some influence on the strategic decisions regarding the unit she runs. To study such possible effects within each fund family, we take the category percentile rank used in columns (1) and (2) and calculate a family percentile rank of this rank. Similar to earlier results, we find that funds with inferior flows within a fund family are more likely repurposed (z-value -2.3). The effect size is about 8% larger than in the analysis across individual funds. This is consistent with tournament behavior within families. However, it is not possible to disentangle the effects in these two comparisons, that is, funds across families vs. funds within families, as performance is correlated.

The probability of a fund being repurposed is economically significant. The magnitude of the probability when there is a 10 percentage point decrease in the category percentile rank and the family rank of category percentile ranks is around 0.02 percentage points and 0.03 percentage points, representing approximately 10% and 15%, respectively, of the reference probability ($103/42{,}930 = 0.2$ percentage points).[14] As to returns, we see some evidence of the repurposing decision coming from higher ranks of the past 3-year returns. The effect of the higher category percentile rank of past 3-year returns on the decision of ESG-repurposing strategy is only statistically significant at the 10% level, but the magnitude of the effect is sizable. A 10 percentage point increase in category percentile rank of past 3-year returns increases the probability of a fund being repurposed by 0.02 percentage points, which is around 10% of the reference probability. We find a similar phenomenon in terms of statistical and economic significance in family percentile ranks of category rank of past 3-year returns.

More importantly, the different signs of the coefficients of flow rank and return rank in column (2) and column (4) suggest that the ESG-repurposing strategy applies especially to those funds whose ability to attract flows is lagging behind although their performance is not bad or even slightly better,

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[14] As shown in Table 4, we have 103 ESG-repurposing funds and 42,930 observations in our sample, so the unconditional probability of funds being repurposed to ESG funds is 0.002 (0.2 percentage points).

which is consistent with our conjecture. To investigate this idea further, in an unreported analysis we use tercile dummies of flows and returns as well as their interactions. We find that the ESG-repurposing strategy is more likely in funds with low flows but high returns, as compared with funds with the median flow and median return. This is especially true for funds across families.

Funds with severe underperformance are well known to be more likely terminated (Brown and Goetzmann, 1995) and the fund manager fired or placed lower (Chevalier and Ellison, 1999). In that scenario, tactical moves to boost flows and thus save the fund may be of limited use. Meanwhile, both fund family management and individual fund managers have incentives to improve flows whenever possible since flows increase corporate value (Chevalier and Ellison, 1997) and managers compensation (Khorana, 1996). Therefore, ESG-labelling is more likely to apply to funds whose ability to attract client money is lagging a bit behind, but without dramatically inferior return performance.

In Table 6 we turn to the issue of fund families carrying out categorical ESG repurposing. The results show some evidence that families with better category percentile ranks of past 3-year returns carry out more of these family-wide repurposings. The result is significant, though only at 10%. The average marginal effect of is 0.07, implying that a 10 percentage point increase in the family-level category percentile rank of the past 3-year return increases the probability of a family carrying out categorical ESG-repurposing by 0.7 percentage points. We have 558 fund families and 46 ESG-repurposing families in total, so a 0.7 marginal increase represents 9% of the reference probability. The effect of family-level fund flows, on the other hand, on these categorical repurposings is not statistically significant, even at 10%, and the marginal effect is only 0.07 percentage points

4.4 What happens after funds repurposed as ESG funds

In this subsection, we study the industry allocation and performance subsequent to ESG repurposing. Table 7 Panel A shows that repurposing funds decrease their exposure in ESG-unfriendly industries in the following 6-month window more than other funds do. The difference of equity

exposure change in ESG unfriendly industries between ESG-repurposing funds and other funds is statistically significant at 5%, controlling for category and event quarter fixed effects. On average, ESG-repurposing funds decrease their equity allocation in ESG-unfriendly industries by 1.6 percentage points, from a starting level of 10% allocated on average in those sectors in a 6-month window before the ESG-repurposing event. There is a secular trend out of those industries in mutual funds in general, and so other funds also decrease their equity allocation, by 0.4 percentage points. The greater allocation shift by ESG funds mainly comes from Oil & Gas related industries. ESG-repurposing funds first hold 6.3% of their assets in this industry, and this then reduces to 5.2%. Other funds only reduce their holdings by 0.2 percentage points in this industry. Despite of "putting their money where their mouth is," at least to some degree, the ESG-repurposing funds still continue to hold equities in ESG-unfriendly industries, at 8.4% of their portfolio value.

With respect to returns and flows, Table 8 shows no clear evidence that ESG-repurposing behavior helps funds attract flows or perform better in a 6-month window. By studying the changes in category percentile ranks of flows, Panel A shows a decrease in the category percentile ranks of flows in both ESG-repurposing funds and their matched other funds after ESG repurposing events. On average, percentile rank of ESG-repurposing funds decreases by 0.05 percentage points — 11% (0.05/0.45) compared to the pre-event level, while the matched other funds experience a decrease of 0.004 percentage points. However, the difference in these two is not statistically significant. When it comes to returns, we find a decrease in both ESG-repurposing funds and their paired other funds. Unlike with flows, the return rank in ESG-repurposing funds decreases less compared to the paired other funds. ESG-repurposing funds experience a decrease of 0.016 percentage points (equivalent to around 0.016/0.54 = 3% of the pre-event level) after repurposing events, which is not economically significant compared to the 0.05 percentage points decrease in paired other funds. The difference in rank changes is not statistically significant.

Interestingly, around 1/5 of the ESG-repurposing funds actually increase their holdings in ESG-unfriendly industries, as shown in Panel B of Table 8. We further study the flow rank changes between

these funds and other repurposing funds. Panel C reports that ESG-repurposing funds with increased ESG-unfriendly industry holdings suffer a sizable amount of around 0.02 percentage points more decrease (40% of the total decrease) compared to other ESG-repurposing funds, but the difference is not statistically significant, however. Undoubtedly, in part, this comes from the low power owing to the small sample size in this particular analysis.

4.5 Robustness checks

This subsection reports several robustness checks. We first use an alternative matching method. In the main analysis, we follow the literature (Bollen (2007), Renneboog, Ter Horst, and Zhang (2011), and Białkowski and Starks (2016)) to find nearest neighbors for ESG funds by matching on AUM and risk exposures. Considering that other variables could also affect the attractiveness of the fund and thus flows, we conduct Mahalanobis distance matching based on lagged terms of log AUM, fund age, the number of stock holdings, Morningstar star ratings, turnover ratio, and expense ratio, with no replacement. The patterns reported in Table C1 are very similar to those in Table 3, with one exception: the difference in flows between ESG labeled institutional funds and their paired non-ESG funds is no longer statistically significant at 10%. In the initial period from March 2016 to July 2017, flows of ESG funds that fail to receive GR High are greater than those of non-ESG funds with GR High. The difference is statistically significant at 1% for both retail funds and institutional funds. As in the main analysis, we observe some behavior changes of institutional investors in the later period from September 2018 to December 2020. There is no longer any statistically significant difference in flows between institutional ESG funds that fail to receive High Globe Ratings and non-ESG institutional funds that receive High Globe Ratings.

Second, we use normalized flows, as defined in Hartzmark and Sussman (2019), to check that outliers or small funds do not bias our flow comparison results. To construct the normalized flow variable, we first split funds into deciles based on their AUM in the previous month and then sort fund flows into percentiles (from 0 to 100) based on flows within each decile. These results are shown

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in Table C2. The main interpretations are qualitatively the same as in Table 3, with one notable difference that ESG institutional funds that fail to receive High Globe Ratings now receive economically and statistically significant lower flows than their matched other funds. Nevertheless, this result suggests the same interpretation of the institutional investors' behavior change as in Table 3. That is, they have learned about potential greenwashing behavior.

We next investigate the definition of ESG-repurposing funds. We compare our manually collected list of funds to Morningstar's "Sustainable Investment Overall" list. The date of new entries on the Morningstar list can reflect event of funds actually repurposed to ESG. However, it also reflects Morningstar's coverage changes. We nevertheless find that their definition is very similar to ours. There are 9 funds in our ESG-repurposing list that are not on Morningstar's list. The results excluding those funds are shown in Appendix C Table C3 Panel A. They are very similar to our baseline results except that the effect of higher family rank of category percentile rank of past 3-year returns is no longer statistically significant.

Our final robustness check revisits our fund family exclusion requirement. In the main analysis of family ESG-repurposing behavior, we exclude categorical family-level changes, defined as repurposing events in families with more than half of their non-ESG funds repurposed to ESG funds in a 6-month window in each event quarter. However, if a fund family has the categorical family-level change for one event, it could be that little of this family's ESG-repurposing decisions overall are related to individual fund performance. We thus redefine categorical changes as repurposing events in fund families with at least one event that meets the above original exclusion. As reported in Appendix C Table C2 Panel B, our main interpretation remains the same. We also check several other exclusion requirements, such as excluding fund families with more than 15 funds repurposed and excluding fund families with more than 90% of their funds removed based on our original criteria. Our main interpretations still remain the same.

5. Conclusion

In this paper we study the potential greenwashing behavior of mutual fund companies. We first document that a self-designated ESG label helps mutual funds attract more flows than their non-ESG peers with otherwise similar characteristics. We show this happens even if labeling the fund as ESG is in conflict with Morningstar's objective Globe ratings. This is consistent with greenwashing motivations. We then explore the determinants of fund families' ESG-repurposing behavior and detect potential greenwashing strategies. Funds attracting below average flows are more likely to be repurposed as ESG funds. On average, a 10 percentage point decrease in the percentile rank of past 3-year flows increases the probability of a fund being repurposed by 0.02 percentage points. We find no evidence that ESG-repurposing behavior improves flows or performance, at least in a short-term window after the repurposing event. On the brighter side, we empirically demonstrate that ESG-repurposing funds reduce their equity industry exposure in ESG-unfriendly industries, especially in Oil and Gas related industries.

With the growing concern among the general public on greenwashing behavior, our results help understand how mutual fund families decide to repurpose a fund to an ESG fund and what happens to its flow, return, and industry exposure afterwards. This has implications for the required regulation in the ESG investment market. For example, a clear and unified definition of what is an ESG investment should be applied, and a certain level of disclosure on how a firm or a fund does for sustainability should be required. We also extend the literature of fund family strategic behavior, showing that families use the trend of ESG investment as a way to boost their assets under management.

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Figure 1: Morningstar Globe Ratings for Self-designated ESG funds

The figures show the number and the percentage of self-designated ESG funds with different Morningstar Globe ratings from March 2016 to July 2017 and from September 2018 to December 2020. "GR Low" represents funds with Globe rating 1 and 2. "GR Mid" represents funds with Globe rating 3. "GR High" represents funds with Globe rating 4 and 5. The primary y-axis on the left and the bars represent the number of ESG funds with different Morningstar Globe ratings. The secondary y-axis on the right and the lines represent the percentage of ESG funds with different Morningstar Globe ratings. Figure 1a demonstrates the number and the percentage in retail funds, and Figure 1b demonstrates institutional funds.

Figure 1a: Retail Funds
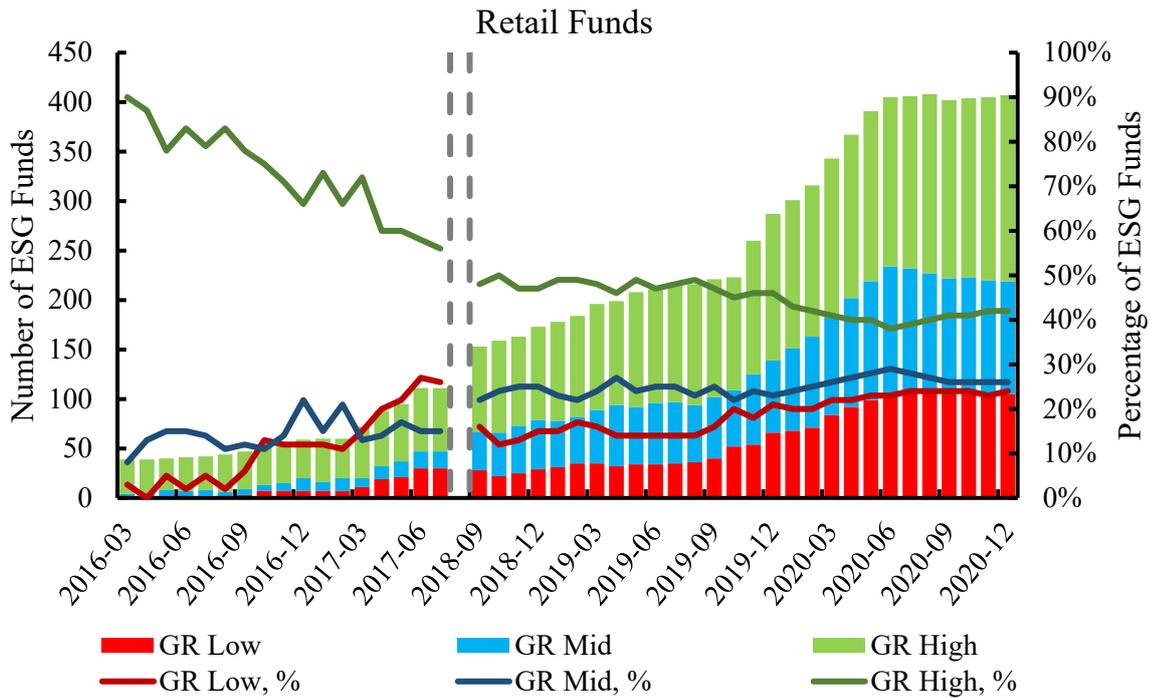
Figure 1b: Institutional Funds

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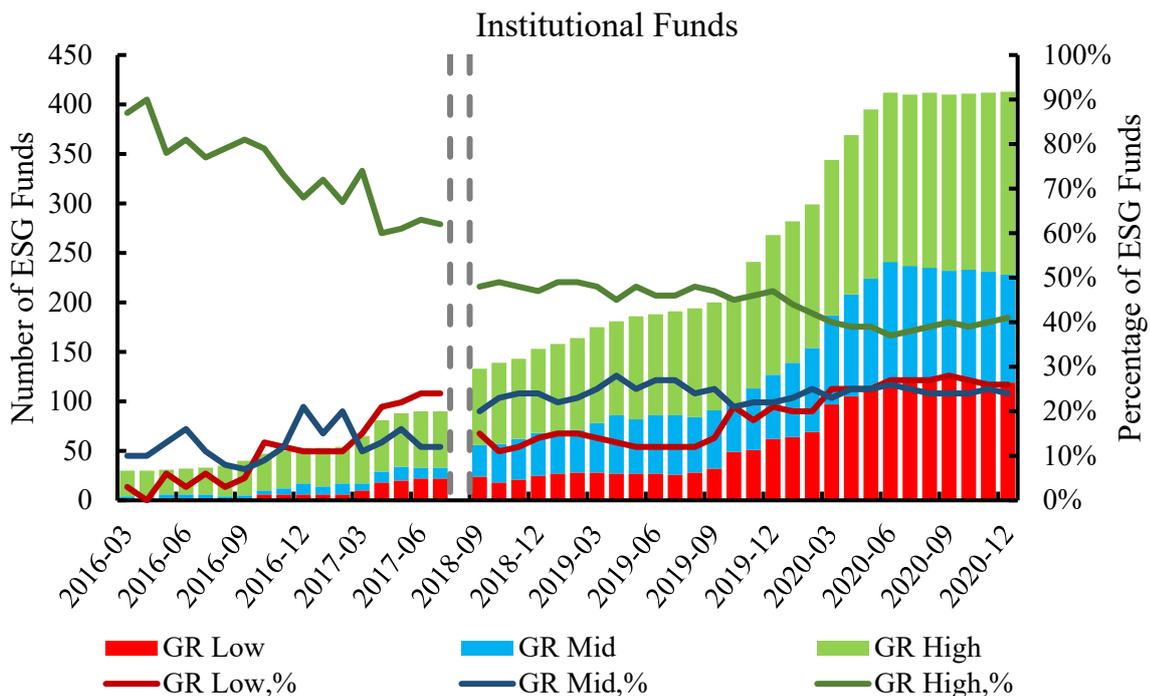
Table 1: ESG Mutual Funds and Families

This table shows the year-end number and percentage of US equity funds that are ESG funds and the year-end number and percentage of US fund families that are ESG families from 2010 to 2019. ESG fund is defined as the fund that includes ESG, social investing, or sustainability in their investment strategy in the prospectus. ESG family is defined as the fund family that has ESG funds. Funds of funds, index funds, religious funds, and value-based funds are excluded from our sample.

Year	ESG funds	Funds	Percentage	ESG Families	Fund Families	Percentage
2010	47	3,004	1.6%	26	426	6.1%
2011	47	2,968	1.6%	25	443	5.6%
2012	45	3,006	1.5%	22	460	4.8%
2013	48	3,027	1.6%	24	471	5.1%
2014	51	3,134	1.6%	26	510	5.1%
2015	53	3,195	1.7%	27	533	5.1%
2016	67	3,193	2.1%	38	517	7.4%
2017	141	3,158	4.5%	47	507	9.3%
2018	219	3,132	7.0%	65	516	12.6%
2019	361	3,044	11.9%	87	499	17.4%

Table 2: ESG Prevalence and Repurposing Within Fund Families

This table shows the characteristics of ESG fund families, defined as families having any ESG funds, at the end of the year from 2010 to 2019 in our data set. Panel A reports the total number of ESG families, the total number of ESG funds, and the summary statistics across families of the percentage of ESG funds within a fund family. ESG funds are funds that include ESG, social investing, or sustainability in their investment strategy in the prospectus. Panel B uses a subsample of Panel A and only includes ESG-repurposing funds and ESG-repurposing fund families. ESG-repurposing funds are the funds that are repurposed to ESG funds at some point, and ESG-repurposing families are families with ESG-repurposing events. Panel C shows the number of individual repurposing events and how those events are excluded from analyses. Funds of funds, index funds, religious funds, and value-based funds are excluded from our sample.

Panel A: ESG funds and ESG families

Year		Number of ESG funds	Percentage of ESG funds per ESG family					
			Mean	Min	Q1	Median	Q3	Max
2010	26	47	42.0%	0.7%	8.2%	19.4%	100%	100%
2011	25	47	38.8%	0.7%	5.9%	16.7%	100%	100%
2012	22	45	46.5%	0.6%	8.7%	23.6%	100%	100%
2013	24	48	43.0%	0.7%	8.3%	20.8%	100%	100%
2014	26	51	42.2%	0.6%	7.9%	22.5%	100%	100%
2015	27	53	40.5%	0.6%	7.5%	14.3%	100%	100%
2016	38	67	34.7%	0.6%	6.9%	13.4%	54.2%	100%
2017	47	141	38.0%	0.6%	7.4%	20.0%	70.3%	100%
2018	65	219	39.9%	0.6%	9.1%	18.9%	73.3%	100%
2019	87	361	46.6%	0.6%	10.3%	33.3%	100.0%	100%

Panel B: ESG-repurposing funds and ESG-repurposing families

Year	Number of ESG-repurposing families	Number of ESG-repurposing funds	Percentage of ESG-repurposing funds per ESG-repurposing family					
			Mean	Min	Q1	Median	Q3	Max
2010	0	0	0%	0%	0%	0%	0%	0%
2011	0	0	0%	0%	0%	0%	0%	0%
2012	0	0	0%	0%	0%	0%	0%	0%
2013	1	1	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
2014	1	1	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
2015	4	4	6.3%	3.9%	4.9%	6.2%	7.6%	9.1%
2016	11	15	18.8%	2.1%	3.7%	7.7%	12.1%	100%
2017	19	84	36.6%	2.1%	5.2%	22.5%	50.0%	100%
2018	34	154	35.9%	2.1%	6.3%	19.1%	58.0%	100%
2019	54	286	46.3%	2.6%	9.5%	33.3%	95.2%	100%

Panel C: Exclusion process of repurposing events

Year	Repurposing event	Observations to be excluded			
		Missing data		Exclusion criteria	
		number	percentage	number	percentage
2013	1	0	0%	0	0%
2015	3	0	0%	0	0%
2016	11	2	18%	0	0%
2017	68	9	13%	40	59%
2018	70	4	6%	20	29%
2019	136	26	19%	85	63%
Total	289	41		145	

Table 3: Fund Flow Comparison in ESG and Globe Rating Groups

This table reports adjusted mean fund flow comparisons in three paired groups − ESG funds v.s Non-ESG funds; funds with High Morningstar Globe ratings vs. funds with Low or Mid Morningstar Globe ratings; and ESG funds with Low or Mid Morningstar Globe ratings vs. Non-ESG funds with High Morningstar Globe ratings. Low Mid Morningstar Globe rating includes Morningstar Globe ratings 1, 2, or 3. High Morningstar Globe rating includes Morningstar Globe rating 4 or 5. Monthly flow is the monthly asset growth rate minus fund return, expressed in percentage points. In each comparison, the group with a smaller number of observations is regarded as the treated group. For each treated fund, three nearest neighbor funds in the control group are matched every month using the past month distance score matching based on AUM and Carhart four-factor model. The sample period is from March 2016 to July 2017 in Panel A, and from September 2018 to December 2020 in Panel B. Flows are adjusted by fund categories. Funds of funds, index funds, religious funds, and value-based funds are excluded from our sample. Paired t statistics are reported in parenthesis. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Category-adjusted monthly flow (March 2016 to July 2017), % of AUM

Retail			Institutional		
ESG	Non-ESG	dif	ESG	Non-ESG	dif
0.984	0.219	0.764***	0.888	0.095	0.793**
		(3.84)			(2.28)
GR High	GR Low Mid	dif	GR High	GR Low Mid	dif
0.101	0.017	0.084*	-0.039	0.12	-0.159
		(1.67)			(-1.39)
ESG+ GR Low Mid	Non-ESG+ GR High	dif	ESG+ GR Low Mid	Non-ESG+ GR High	dif
1.99	0.607	1.38***	2.67	-0.939	3.61***
		(3.09)			(6.19)

Panel B: Category-adjusted monthly flow (September 2018 to December 2020), % of AUM

Retail			Institutional		
ESG	Non-ESG	dif	ESG	Non-ESG	dif
0.328	-0.096	0.423***	0.374	-0.119	0.493***
		(7.31)			(5.37)
GR High	GR Low Mid	dif	GR High	GR Low Mid	dif
0.057	0.022	0.034	0.202	-0.112	0.314***
		(1.02)			(5.54)
ESG+ GR Low Mid	Non-ESG+ GR High	dif	ESG+ GR Low Mid	Non-ESG+ GR High	dif
0.225	-0.079	0.304***	-0.1	-0.020	-0.0799
		(3.83)			(-0.651)

Table 4: Characteristics of ESG-Repurposing Funds Relative to Other Funds

This table reports the mean and the median fund characteristics for ESG-repurposing funds and for other funds included in our pooled cross-sectional sample. We stack data across event quarters to create the pooled cross-sectional sample. Our sample spans from 2013 to 2019. Past 3-year flow (return) category rank is the percentile rank (ranging from 0 to 1) of the fund past 3-year flows (return) in each fund category. Family rank of past 3-year flow (return) category rank is the percentile rank (ranging from 0 to 1) of the fund past 3-year flow (return) category rank described above in each fund family. Age is the number of months since the fund is included in our sample (12 months after the fund's AUM exceeds 5 million). AUM (total asset under management) is in millions. Expense ratio is the percentage of fund assets paid for operating expenses and management fees, including 12b-1 fees, administrative fees, and all other asset-based costs incurred by the fund, except brokerage costs. Turnover ratio is the percentage of fund's holdings that have changed over the past year. Past 3-year Flow Volatility is the volatility of fund's monthly flows in the past 3 years. Past 3-year Return Volatility is the volatility of fund's monthly returns in the past 3 years. Fund families with more than half of their non-ESG funds repurposed to ESG funds in a 6-month window are excluded in each event quarter in our sample. Funds of funds, index funds, religious funds, and value-based funds are excluded.

| | ESG-repurposing funds | | Other funds | |
| | 103 | | 42,827 | |
Variable Name	Mean	Median	Mean	Median
Past 3-year Flow Category Rank	0.45	0.38	0.50	0.50
Past 3-year Return Category Rank	0.54	0.56	0.50	0.50
AUM (in millions)	1624	654	1886	441
Age (in months)	222	193	217	209
Past 3-year Flow Volatility	0.032	0.027	0.030	0.025
Past 3-year Return Volatility	0.036	0.034	0.037	0.036
Expense Ratio (%)	1.07	1.04	1.09	1.07
Turnover Ratio (%)	57.2	45.0	60.1	46.0

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Table 5: Determinants of Individual Funds Repurposing Behavior

This table investigates the determinants of individual fund repurposing behavior and reports the results of pooled cross-sectional logit regressions. The dependent variable is Change, which is a dummy variable that equals 1 if the fund is repurposed to ESG fund. Our sample spans from 2013 to 2019. We stack data across event quarters to create the pooled cross-sectional sample. In each ESG-repurposing event quarter, we include all funds that are non-ESG by that quarter. Past 3-year Flow (Return) Category Rank in column (1) and (2) is the percentile rank (ranging from 0 to 1) of the past 3-year flow (return) in each Morningstar Category in each event quarter. Family Rank of Past 3-year Flow (Return) Category Rank in column (3) and (4) is the percentile rank (ranging from 0 to 1) of the past 3-year flow (return) category rank in each fund family in each quarter. Past 3-year Flow (Return) volatility is the volatility of the past 3 years' monthly flows (returns). Other control variables include past 1-month AUM, age, expense ratio, and turnover ratio. Repurposing event quarter fixed effect is included. Fund categories with fewer than 5 funds are excluded in each event quarter. In column (3) and (4), fund families with fewer than 3 funds are excluded further in each event quarter. Funds of funds, index funds, religious funds, and value-based funds are excluded from our sample. Standard errors used to compute test statistics are robust to heteroskedasticity. Z-statistics are shown in parentheses, and average marginal effects are reported in square brackets. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Past 3-year Flow Category Rank	-0.624*	-0.995**		
	(-1.73)	(-2.56)		
	[-0.001]	[-0.002]		
Past 3-year Return Category Rank		0.767*		
		(1.89)		
		[0.002]		
Family Rank of Past 3-year Flow Category Rank			-0.719*	-1.02**
			(-1.75)	(-2.26)
			[-0.002]	[-0.003]
Family Rank of Past 3-year Return Category Rank				0.775*
				(1.70)
				[0.002]
Log(AUM)		0.073		0.031
		(1.02)		(0.422)
		[1.73e-04]		[7.80e-05]
Age		-0.0001		0.0001
		(-0.109)		(0.095)
		[-2.58e-07]		[2.45e-07]
Past 3-year Flow Volatility		6.54		5.97
		(1.44)		(1.25)
		[0.016]		[0.015]
Past 3-year Return Volatility		-17.5		-27.0*
		(-1.18)		(-1.78)
		[-0.042]		[-0.068]
Expense Ratio		0.224		0.333
		(0.608)		(0.865)
		[0.001]		[0.001]
Turnover Ratio		-0.001		-0.002
		(-0.662)		(-0.713)
		[-3.33e-06]		[-4.27e-06]
Event Quarter Fixed Effects	Yes	Yes	Yes	Yes
Observations	42,930	42,930	38,511	38,511
Pseudo R-squared	0.045	0.050	0.048	0.054

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Table 6: Determinants of Family-Level Categorical Repurposing Behavior

This table investigates the determinants of family-level categorical repurposing behavior and reports the results of a cross-sectional logit regression. Family-level categorical repurposing behavior is defined as the scenario when more than half of the funds in the same fund family update the prospectus to include ESG considerations with a 6-month window. The cross-sectional family sample is constructed by taking the averages of all funds in the family in all event quarters. The same sample used for the main regression is used here. The dependent variable is Mass Repurposing, which is a dummy variable that equals one if the fund family has conducted the categorical repurposing behavior at least once in the sample period. Past 3-year Flow (Return) Category Rank is the average percentile rank (ranging from 0 to 1) of the past 3-year flow (return) in each Morningstar Category in each event quarter of all non-ESG funds in the family. Other control variables include past 1-month AUM, age, expense ratio, and turnover ratio. Standard errors used to compute test statistics are robust to heteroskedasticity. Z-statistics are shown in parentheses, and average marginal effects are reported in square brackets. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Past 3-year Flow Category Rank	-0.193
	(-0.206)
	[-0.007]
Past 3-year Return Category Rank	2.09*
	(1.786)
	[0.072]
Log(AUM)	0.383***
	(3.76)
	[0.00001]
Expense Ratio	0.474
	(0.616)
	[0.016]
Turnover Ratio	0.004
	(1.21)
	[0.0001]
Age	-0.002
	(-0.540)
	[0.0001]
Observations	558
Pseudo R-squared	0.11

Table 7: Equity Industry Exposure Change after ESG-Repurposing Events

This table investigates the equity exposure change after funds are repurposed to ESG funds. Our sample is from 2013 to 2019. The same sample used for the main regression is used here. Mean exposure in each industry is expressed as the percentage of total equity holdings. Mean exposure change is calculated as the average equity industry exposure in a 6-month window after ESG-repurposing events minus the average equity industry exposure in a 6-month window before repurposing events. All the numbers are in percentage points. Panel A compares the mean exposure change of ESG-friendly and ESG-unfriendly industries in the ESG-repurposing fund group and the non-ESG fund group. Panel B reports the mean exposure in ESG-friendly and ESG-unfriendly industries 6 months before and after ESG-repurposing events in the ESG-repurposing fund group and the non-ESG fund group. The ESG-unfriendly industry is further decomposed into four subgroups: Oil-related industries, Tobacco industry, Gambling industry, and other industries such as "Coal," "Chemicals," "Rubber & Plastic," and "Specialty Chemicals." "ESG Friendly" industry contains "Pollution & Treatment Controls," "Solar," and "Waste Management." Dif represents the difference between ESG-repurposing funds and non-ESG funds without fixed effects. Dif* reports the difference with repurposing date and category fixed effects. Standard errors used to compute test statistics are robust to heteroskedasticity. t statistics are reported in parentheses. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Mean equity exposure change (% of total equity holdings)

	ESG repurposing funds	Others	Dif	Dif*
ESG Friendly	0.0553	0.0004	0.0549	0.0313
			(0.879)	(0.489)
ESG Unfriendly	-1.56	-0.379	-1.18**	-1.11**
			(-2.19)	(-2.1)
Oil & Gas related	-1.13	-0.261	-0.87*	-0.895*
			(-1.69)	(-1.78)
Tobacco	-0.324	-0.061	-0.264*	-0.217
			(-1.9)	(-1.59)
Gambling	-0.067	-0.009	-0.058*	-0.037
			(-1.7)	(-1.13)
Others	-0.036	-0.048	0.012	0.040
			(0.09)	(0.32)

Panel B: Mean equity exposure (% of total equity holdings)

	ESG repurposing funds		Others	
	6m before	6m after	6m before	6m after
ESG Friendly	0.546	0.600	0.388	0.388
ESG Unfriendly	9.9	8.36	9.21	8.83
	6m before	6m after	6m before	6m after
Oil & Gas related	6.34	5.24	5.98	5.72
Tobacco	1.17	0.85	0.661	0.600
Gambling	0.224	0.159	0.497	0.488
Others	2.16	2.11	2.08	2.03

Table 8: Flows and Returns Percentile Rank Change after ESG-Repurposing Events

This table studies the category percentile rank change of 6-month flows and returns after funds are repurposed to ESG funds. Our sample is from 2013 to 2019. The same sample used for the main regression is used here. Category percentile rank ranges from 0 to 1 and it measures the percentile rank in each Morningstar fund category. Category percentile rank change is the difference between the category percentile rank of 6-month flows (returns) after ESG-repurposing events and the category percentile rank of 6-month flows (returns) before ESG-repurposing events. Panel A compares 6-month flow and return category rank changes of ESG-repurposing funds and those of non-ESG funds. For each ESG-repurposing fund, 2 non-ESG funds with similar category percentile ranks of past 6 months flows or returns before the repurposing event are matched. In Panel A, the first row reports the comparison of category percentile rank changes of 6-month flows, and the second row reports the comparison of the category percentile rank changes of 6-month returns. t-statistics of the paired t-tests are reported in parentheses. Panel B and Panel C study the effects of the ESG-unfriendly allocation increase after ESG-repurposing events on flow category rank changes. Only ESG-repurposing funds with non-missing industry allocation data are included in those two panels. Panel B shows the number of funds that increase and those that decrease their equity exposures in ESG-unfriendly industries in the 6-month window after the event. Panel C shows the OLS regression results of the impact of increasing allocations in ESG-unfriendly industries on flow category percentile rank changes in a 6-month window. ESG-unfriendly allocation increase dummy equals 1 if the fund increases its holdings in ESG unfriendly industries 6-month after the event. Event Quarter fixed effects and category fixed effects are included. Standard errors used to compute test statistics are robust to heteroskedasticity. t-statistics are reported in parentheses.

Panel A: 6-month flow and return category percentile rank change

	ESG-repurposing funds	Non-ESG funds	Dif
6-month Flow Category Percentile Rank Change	-0.053	-0.004	-0.048 (-1.62)
6-month Return Category Percentile Rank Change	-0.016	-0.05	0.037 (0.923)

Panel B: ESG-repurposing funds with different allocation changes in ESG-unfriendly industries

	number of ESG-repurposing funds
ESG-unfriendly allocation increase	25
ESG-unfriendly allocation decrease	73

Panel C: ESG-unfriendly allocation increase and flow category percentile rank changes

ESG-unfriendly allocation increase dummy	-0.016
	(-0.205)
Event Quarter Fixed Effects	Yes
Category Fixed Effects	Yes
Observations	98
Adjusted R2	0.032

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Appendix

Appendix A: An Example of ESG-Repurposing Fund

Principal Investment Strategy in prospectus of Driehaus Micro Cap Growth Fund

Date: 2018-05-01
The Fund uses a growth style of investment in equity securities, including common and preferred stocks. Under normal market conditions, the Fund invests at least 80% of its net assets (plus the amount of borrowings for investment purposes) in the equity securities of US micro-capitalization ("micro-cap") companies. …The Fund expects to frequently and actively trade its portfolio securities. Investment decisions for the Fund's growth style of investing are based on the belief that fundamentally strong companies are more likely to generate superior earnings growth on a sustained basis and are more likely to experience positive earnings revisions. This decision involves evaluating a company's competitive position, evaluating industry dynamics, identifying potential growth catalysts and assessing the financial position of the company. The decision is also based on the evaluation of relative valuation, macroeconomic and behavioral factors affecting the company and its stock price. The Fund sells holdings for a variety of reasons, including to take profits, changes to the fundamental investment thesis, changes in the risk/reward assessment of the holding, an assessment that the holding is efficiently priced, to make room for more attractive ideas or for other portfolio or risk management considerations.

Date: 2019-04-25
The Fund uses a growth style of investment in equity securities, including common stocks and other equity securities of issuers. Under normal market conditions, the Fund invests at least 80% of its net assets (plus the amount of borrowings for investment purposes) in the equity securities of US micro-capitalization ("micro-cap") companies. … The Fund expects to frequently and actively trade its portfolio securities. Investment decisions for the Fund's growth style of investing are based on the belief that fundamentally strong companies are more likely to generate superior earnings growth on a sustained basis and are more likely to experience positive earnings revisions. This decision involves evaluating a company's competitive position, evaluating industry dynamics, identifying potential growth catalysts and assessing the financial position of the company. **The investment adviser also takes environmental, social and governance ("ESG") factors into account when evaluating investment opportunities.** The decision is also based on the evaluation of relative valuation, macroeconomic and behavioral factors affecting the company and its stock price. The Fund sells holdings for a variety of reasons, including to take profits, changes to the fundamental investment thesis, changes in the risk/reward assessment of the holding, an assessment that the holding is efficiently priced, to make room for more attractive ideas or for other portfolio or risk management considerations.

Appendix B: Definitions of ESG-Friendly and ESG-Unfriendly Industries

Panel A: ESG-Friendly Industry

Main Industry	Industry	Definition from Morningstar
Pollution & Treatment Controls	Pollution & Treatment Controls	Companies that manufacture equipment designed to control pollution including control systems, hazardous waste disposal systems, recovery systems, treatment processes, filtration systems, cleaning and separation applications and recycling machinery.
Solar	Solar	Companies engaged in the manufacturing of mono and multicrystalline photovoltaic (PV) modules.
Waste Management	Waste Management	Companies engaged in the collection, treatment, storage, transfer, recycling and disposal of waste materials as well as companies providing supporting environmental, engineering and consulting services.

Panel B: ESG-Unfriendly Industry

Main Industry	Industry	Definition from Morningstar
Oil & Gas related	Oil & Gas Drilling	Companies primarily engaged in the drilling and exploration for petroleum and natural gas by means of offshore and onshore drilling and related oil well and contracting services.
	Oil & Gas Exploration and Production	Major energy companies engaged in gas exploration and production.
	Oil & Gas Equipment Services	Companies primarily engaged in providing oilfield services and equipment such as contract drilling, seismic surveys, equipment and tool rental, pumping and processing services, inspection and contracting services.
	Oil & Gas Integrated	Major energy companies engaged in the diverse aspects of oil and gas operations including crude oil & gas exploration, production, manufacturing, refining, marketing & transportation.
	Oil & Gas Midstream	Companies primarily engaged in owning and operating oilfield pipelines involving the gathering, processing and transportation of natural crude petroleum.
	Oil & Gas Refining Marketing	Companies primarily engaged in the refining, gathering, marketing and selling of petroleum and petroleum products.
Tobacco	Tobacco	Companies that manufacture and market cigarettes, snuff, cigars, chewing tobacco and all other tobacco products except for cigarettes.
Gambling	Gambling	Companies that own, operate and manage lawful gaming activities and events including horse and dog racing, bingo, riverboat gambling, video lottery and other coin-operated gaming devices.
	Resorts & Casinos	Companies that own, operate, and manage resort properties including beach clubs, time-share properties and luxury resort hotels and that conduct casino gaming operations through casino/resort hotel facilities, riverboat casinos and other gaming properties.
Coal	Coal	Companies engaged in mining coal.
Chemicals	Chemicals	Major international chemical manufacturing companies engaged in diverse chemical and chemical-related operations.
	Specialty Chemicals	Companies that manufacture specialty chemical products such as polishes, adhesives and sealants, explosives, printing ink, carbon black, acids, repellants and cleaning solutions.
Rubber & Plastic	Rubber & Plastic	Companies that manufacture rubber and plastic based products including tires and inner tubes, hose and belting, plastic plate, pipe and film and other fabricated plastic and rubber products.

Appendix C: Additional Analyses

Table C1: Adjusted Mean Flow Comparison in ESG and Globe Rating Groups — Alternative Matching

This table reports adjusted mean fund normalized monthly flow comparisons in three paired groups --- ESG funds v.s Non-ESG funds; funds with High Morningstar Globe ratings vs. funds with Low or Mid Morningstar Globe ratings; and ESG funds with Low or Mid Morningstar Globe ratings vs. Non-ESG funds with High Morningstar Globe ratings. Low Mid Morningstar Globe rating includes Morningstar Globe ratings 1, 2, or 3. High Morningstar Globe rating includes Morningstar Globe rating 4 or 5. Monthly flow is measured as the monthly asset growth rate minus fund return. For each treated fund, three nearest neighbor funds in the control group are matched every month using the past month log(AUM), age, Morningstar star rating, the number of stock holdings, turnover ratio, and expense ratio. In each comparison, the group with a smaller number of observations is regarded as the treated group. The sample period is from March 2016 to July 2017 in Panel A and from September 2018 to December 2020 in Panel B. Flows are adjusted by fund categories. Paired t statistics are reported in parenthesis. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Category-adjusted monthly flow (March 2016 to July 2017)

	Retail			Institutional	
ESG	Non-ESG	dif	ESG	Non-ESG	dif
0.984	0.082	0.902***	0.76	0.238	0.522
		(5.1)			(1.6)
GR High	GR Low Mid	dif	GR High	GR Low Mid	dif
0.101	-0.035	0.135**	-0.049	0.034	-0.083
		(2.51)			(-0.67)
ESG+ GR Low Mid	Non-ESG+ GR High	dif	ESG+ GR Low Mid	Non-ESG+ GR High	dif
1.99	0.278	1.71***	2.67	-0.043	2.71***
		(3.97)			(4.02)

Panel B: Category-adjusted monthly flow (September 2018 to December 2020)

	Retail			Institutional	
ESG	Non-ESG	dif	ESG	Non-ESG	dif
0.328	-0.001	0.328***	0.374	-0.007	0.381***
		(5.84)			(4.26)
GR High	GR Low Mid	dif	GR High	GR Low Mid	dif
0.057	-0.03	0.087**	0.196	-0.095	0.291***
		(2.41)			(4.84)
ESG+ GR Low Mid	Non-ESG+ GR High	dif	ESG+ GR Low Mid	Non-ESG+ GR High	dif
0.225	-0.118	0.343***	-0.073	-0.046	-0.026
		(4.41)			(-0.211)

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Table C2: Adjusted Mean Flow Comparison in ESG and Globe Rating Groups — Alternative Flows

This table reports adjusted mean fund normalized monthly flow comparisons in three paired groups --- ESG funds v.s Non-ESG funds; funds with High Morningstar Globe ratings vs. funds with Low or Mid Morningstar Globe ratings; and ESG funds with Low or Mid Morningstar Globe ratings vs. Non-ESG funds with High Morningstar Globe ratings. Low Mid Morningstar Globe rating includes Morningstar Globe ratings 1, 2, or 3. High Morningstar Globe rating includes Morningstar Globe rating 4 or 5. Monthly flow is measured as the monthly asset growth rate minus fund return. Normalized monthly flow is the percentile (ranging from 0 to 100) in which the fund's flow is within each decile of the fund's previous month AUM. For each treated fund, three nearest neighbor funds in the control group are matched every month using the past month distance score matching based on AUM and Carhart four-factor model. In each comparison, the group with a smaller number of observations is regarded as the treated group. The sample period is from March 2016 to July 2017 in Panel A and from September 2018 to December 2020 in Panel B. Normalized flows are adjusted by fund categories. Paired t statistics are reported in parenthesis. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Category-adjusted normalized monthly flow (March 2016 to July 2017)

Retail			Institutional		
ESG	Non-ESG	dif	ESG	Non-ESG	dif
9.18	1.21	7.97***	9.65	-0.67	10.3***
		(7.02)			(7.66)
GR High	GR Low Mid	dif	GR High	GR Low Mid	dif
1.05	0.599	0.453	1.04	0.053	0.988***
		(1.48)			(2.6)
ESG+ GR Low Mid	Non-ESG+ GR High	dif	ESG+ GR Low Mid	Non-ESG+ GR High	dif
14.4	1.65	12.7***	18.1	-1.54	19.6***
		(5.92)			(8.48)

Panel B: Category-adjusted normalized monthly flow (September 2018 to December 2020)

Retail			Institutional		
ESG	Non-ESG	dif	ESG	Non-ESG	dif
4.16	-1.03	5.19***	2.58	-0.877	3.46***
		(12.3)			(7.62)
GR High	GR Low Mid	dif	GR High	GR Low Mid	dif
1.1	0.589	0.512**	1.56	-0.503	2.06***
		(2.14)			(7.52)
ESG+ GR Low Mid	Non-ESG+ GR High	dif	ESG+ GR Low Mid	Non-ESG+ GR High	dif
2.22	-1.22	3.44***	-1.28	-0.058	-1.22**
		(5.96)			(-1.98)

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Table C3: Determinants of Individual Funds Repurposing Behavior — Alternative Samples

This table investigates the determinants of individual fund repurposing behavior by using two alternative samples. Panel A uses Morningstar's sustainable investment list as the ESG fund list. Panel B excludes repurposing funds in fund families that have more than half of their non-ESG funds repurposed to ESG funds in a 6-month window in any event quarter. All other variables are the same as in the main regression. In both panels, column (1) shows the results using category percentile rank of past 3-year flows or returns, and column (2) uses family percentile rank of past 3-year flow or return category percentile ranks. The dependent variable is Change, a dummy variable that equals 1 if the fund is repurposed to ESG fund. Past 3-year Flow (Return) volatility is the volatility of the past three years' monthly flows (returns). Other control variables include past 1-month AUM, age, expense ratio, and turnover ratio. Our sample is from 2013 to 2019. We stack data across event quarters. In each ESG-repurposing event quarter, we include all funds that are non-ESG by that quarter. Repurposing event quarter fixed effect is included. Standard errors used to compute test statistics are robust to heteroskedasticity. Z-statistics are shown in parentheses, and average marginal effects are reported in square brackets. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Alternative definition of ESG funds

	(1)	(2)
Past 3-year Flow Category Rank	-0.920**	
	(-2.33)	
	[-0.002]	
Past 3-year Return Category Rank	0.679*	
	(1.66)	
	[0.002]	
Family Rank of Past 3-year Flow Category Rank		-0.951**
		(-2.06)
		[-0.002]
Family Rank of Past 3-year Return Category Rank		0.607
		(1.32)
		[0.001]
Controls	Yes	Yes
Event Quarter Fixed Effects	Yes	Yes
Observations	42,974	38,549
Pseudo R-squared	0.049	0.053

Panel B: Alternative family exclusion strategy

	(1)	(2)
Past 3-year Flow Category Rank	-1.23***	
	(-2.66)	
	[-0.002]	
Past 3-year Return Category Rank	0.832*	
	(1.78)	
	[0.002]	
Family Rank of Past 3-year Flow Category Rank		-1.40***
		(-2.58)
		[-0.003]
Family Rank of Past 3-year Return Category Rank		0.645
		(1.21)
		[0.001]
Controls	Yes	Yes
Event Quarter Fixed Effects	Yes	Yes
Observations	42,909	38,491
Pseudo R-squared	0.056	0.062