Moral Licensing? ESG Score Improvements and Misbehaviors in Mutual Funds

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March 2026
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Abstract

I show that after an ESG score improvement, mutual fund managers become more likely to engage in window dressing and reducing reporting small losses. These patterns are consistent with a moral-licensing mechanism in which recent prosocial behavior can license less prosocial behavior thereafter. The evidence is inconsistent with the explanations based on pecuniary benefits and further test rules out performance pressure explanation.

Keywords: Mutual Funds, Moral Licensing, Window Dressing, Return Discontinuity, ESG

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1 Introduction

A large experimental literature shows that prior "good deeds" can license less moral behavior thereafter (e.g., Mazar and Zhong (2010); Jordan et al. (2011); Clot et al. (2014, 2017); Effron et al. (2012, 2013); Conway and Peetz (2012); Sachdeva et al. (2009)). One more operational definition of moral licensing in Merritt et al. (2010) is: Past good deeds can liberate individuals to engage in behaviors that are immoral, unethical, or otherwise problematic, behaviors that they would otherwise avoid for fear of feeling or appearing immoral. Odds with that, a number of well-established psychological findings and theories that stress consistency in behavior (Bem, 1972; Heider, 1946; Festinger, 1957; Freedman and Fraser, 1966; Arkes and Blumer, 1985). We learn what we like and who we are by watching what we do. After virtuous acts, people try harder to stay aligned with that identity. Managers also care about self-image: "what kind of manager are we?" Whether such consistency or moral licensing operates among mutual fund managers remains an open question. This paper asks: *Do mutual fund managers exhibit moral licensing or behavioral consistency? Specifically, after an ESG score improvement, do mutual fund managers become more or less likely to engage in window dressing and avoiding reporting small losses?*

Suppose that, by the disclosure date, a fund's portfolio shows a higher ESG score. Regardless of the cause, this "realized ESG improvement" serves as a self-signal to the manager that "we did it right." Does that self-signal relax or strength self-restraint for subsequent appearance-driven practices? If licensing dominates, we should see more window dressing and more avoidance of reporting small losses. If consistency dominates, we should see less of these moves.

I take Morningstar's monthly Sustainability Rating as an observable signal of virtue,and take window dressing and avoiding reporting small losses as observable suspicious behaviors. If higher ESG serves as moral credit, then a larger lagged increase in ESG should predict more window dressing and avoiding reporting small losses in the subsequent period. To measure window dressing and avoiding reporting small losses, I bring together three well-established proxies: *Rank Gap* and backward holding return gap (*BHRG*) to measure window dressing (Lakonishok et al. (1991); Agarwal et al. (2014)) and *Kink* to measure avoiding reporting small losses (Bollen and Pool (2009, 2012)). First, *Rank Gap* captures

relative window dressing by comparing a fund's performance rank with the ranks of portfolio weights in "Winner" and "Loser" stocks at quarter-end. Second, *BHRG* captures absolute window dressing by the gap between the return of a hypothetical portfolio comprising a fund's end-of-quarter holdings that are assumed to have been held throughout the quarter and the quarter's actual fund return. Third, *Kink* is the discontinuity-at-zero statistic measuring avoiding reporting small losses and I use share-class daily returns, counting observations in the three bins bracketing zero and compute a z-score.

The results support the moral-licensing hypothesis. Increases in the last-month ESG change are positively associated with subsequent *Rank Gap*, *BHRG* and *Kink*, indicating more window dressing and more avoiding reporting small losses. Quantitatively, a one-unit ESG improvement is followed by a 0.0058 increase in *Rank Gap* (theoretical range $\approx [-0.495, 0.495]$), a 12 bps increase in *BHRG*, and a 0.09 increase in *Kink*, which means a one-SD increase in ESG change corresponds to roughly 2.4%, 1.4%, and 2.2% of the SD of *Rank Gap*, *BHRG* and *Kink*, respectively. However, the licensing effect is short-lived: its magnitude disappears with one additional month of lag, while a cumulative quarterly effect remains for *Rank Gap* and $BHRG$ (but not for $Kink$).

I rule out explanations based on pecuniary benefits. Managers' compensation is mostly AUM-driven; return performance directly influences bonuses beyond AUM, and flows significantly affect manager compensation and career outcomes (Cen et al., 2023). I show that the ESG upgrade dones't make misbehavior more lucrative in pecuniary channel, by regressing the changes in total net assets, return and flow on ESG score changes, misbehavior measures and their interaction. That indicates the ESG upgrade doesn't raise the marginal pecuniary payoff of window dressing and avoiding reporting small losses.

My further test rule out other alternative explanations. Gantchev et al. (2024) show that sustainability-driven trades underperforme, impairing the funds' overall performance. This raises the possibility that the observed association between improvements in ESG ratings and increased suspicious behavior is driven by performance pressure, i.e., funds with ESG improvements face more performance pressure and thus have stronger incentives to engage in window dressing and/or avoiding reporting small losses. To test this, I regress *Rank Gap*, *BHRG* and *Kink* on the ESG changes, controlling returns in current quater

and previous quarter. The coefficients on the ESG changes are still statistically significant, ruling out the performance pressure explanation.

To further explore the temporal dynamics of moral licensing, I examine whether the timing of ESG improvements affects subsequent suspicious behavior. First, I extend the measurement period of ESG changes to one quarter. I find ESG improvements concentrated at the end of the prior quarter have a stronger impact on suspicious behavior than those accumulated gradually over the entire quarter. Second, I investigate the persistence of moral licensing by including lagged ESG changes. The results indicate that the effect of ESG improvements as moral credits fades quickly over time.

This paper contributes in three ways. First, it provides direct evidence that upgrades in ESG ratings create "moral credits" that loosen reputational constraints and increase suspicious behavior including window dressing and avoiding reporting small losses. Second, it unifies relative (*Rank Gap*), absolute ($BHRG$), and distributional ($Kink$) tests within the same framework, showing consistent responses to the virtue signal. Third, it documents a timing channel, in which managers observe virtue behaviors before investors, which pinpoints when moral licensing is most likely to bind.

My paper is related to literature in window dressing. Lakonishok et al. (1991) examine the quarterly equity holdings of pension funds and show that they sell more losers in the fourth quarter of the year. He et al. (2004) show that institutions acting on behalf of clients disproportionately sell poorly performing stocks in the fourth quarter, with the effect strongest among institutions whose portfolios have recently underperformed. Complementing this evidence, Ng and Wang (2004) find that institutional year-end selling concentrates in extreme losing small-cap stocks. Using shape-based tests of trade patterns, Meier and Schaumburg (2004) provide additional support for mutual-fund window dressing, documenting end-of-year trades consistent with cosmetically improving reported holdings. Agarwal et al. (2014) find conditional on good (bad) performance (in delay period), window dressers benefit (suffer) from higher (lower) investor flows compared with non–window dressers.

My paper is related to literature in avoiding reporting small losses. Burgstahler and Dichev (1997) shows firms manage reported earnings to avoid earnings decreases and losses.

Bollen and Pool (2009) show that the distribution of hedge fund returns is discontinuous at zero. The discontinuity disappears when returns are computed at the bimonthly frequency instead, indicating that some returns are inflated to avoid reporting losses, and that these overstatements are subsequently reversed. Bollen and Pool (2012) documents that hedge funds with return distributions with a pronounced discontinuity at zero, are much more likely to be engaged in activity resulting in a reporting violation than other funds. They therefore derive a discontinuity in the distribution of hedge fund returns as one of the family of performance flags based on suspicious patterns in a fund's reported returns that are consistent with fraudulent activity.

My paper is related to literature in ESG. Hartzmark and Sussman (2019) show that the funds with the lowest sustainability ratings experienced outflows and do not find evidence that high-sustainability funds outperform low-sustainability funds. Gantchev et al. (2024) show that sustainability-driven trades underperforme, impairing the funds' overall performance. List and Momeni (2021) find use of CSR increases employee misbehavior: 24% more employees act detrimentally toward our firm by shirking on their primary job duties when introduce CSR, and Observed data patterns across the treatments are consonant with a model of moral licensing.

My paper is related to literature in moral licensing. A large body of experimental evidence suggests that reflecting on prior good behavior (Mazar and Zhong (2010); Jordan et al. (2011); Clot et al. (2014, 2017); Effron et al. (2012, 2013); Conway and Peetz (2012); Sachdeva et al. (2009)) and planning to engage future good acts (Cascio and Plant (2015); Urbszat et al. (2002)) can license less moral, more anti-social, and more self-indulgent choices. In addition, moral licensing has been documented in a variety of domains such as consumer behavior (Mazar and Zhong (2010); Kouchaki and Jami (2016)), racial bias (Cascio and Plant (2015); Effron et al. (2012)), diet and health related decisions (Effron et al. (2013); Urbszat et al. (2002); Chiou et al. (2011)), charitable giving (Conway and Peetz (2012); Sachdeva et al. (2009)) and energy conservation (Tiefenbeck et al. (2013)). Merritt et al. (2010) show a meta-analytic review of moral licensing.

The remainder of this paper is organized as follows. Section 2 presents the framework. Section 3 describes the data and measures. Section 4 shows the regressions and results.

Section 5 shows ruling out alternative explanations. Section 6 concludes. Appendices 7 contains tables and figures.

2 Framework

In this section, I present a simple framework that enables us to formalize the two channels through which ESG changes can affect misbehavior in mutual funds. Consider a fund manger received a pecuniary payoff of F. For the sake of simplicity, I assume that the manger makes only one decision: the level of wondow dressing or avoiding reporting small losses M, two of various measures of misbehavior on mutual fund manager. I use a variation of List and Momeni (2021) employee utility function to measure mutual fund manager's utility. Prosocial behavior is motivated in part, by self- (and social-) image motives: people act prosocially, in part to signal to themselves (and to others) that they are good and moral individuals (Bénabou and Tirole, 2006; Bénabou and Tirole, 2011). Manager maximize,

$$\max_{M} \; U(M, F, E) = \; F(M, E) - C(M, E), \tag{1}$$

where $F(M, E)$ is the pecuniary payoff that the manger get from misbehavior at level M and E. The pecuniary benefit/cost is unclear increasing or decreasing with M or ΔESG. I assume that the manager cares about his self-image. Unethical behavior, M, damages manager's self-image, ESG, especially if perceived as a prosocial act by the manager, improves it. Alternatively, we could think of self-image as an inverse function of psychological cost $C(M, ESG)$. The manager's feeling of guilt increases with his unethical choice M and decreases with ESG.

In this framework, if C_{ME} is negative, which means the marginal non pecuniary cost of misbehavior decreases as ESG upgrades, implying moral licensing. On the other hand, if C_{ME} is positive, which means the marginal non pecuniary cost of misbehavior decreases as ESG upgrades, implying moral licensing.

The first and the second order conditions to the workers problem can be expressed as:

$$\text{FOC:} \quad U_M \equiv F_M(M,E) - G_M(M,E) = 0,$$
$$\text{SOC:} \quad U_{MM} \equiv F_{MM}(M,E) - G_{MM}(M,E) < 0,$$

We can use the Implicit Function Theorem to show:

$$\frac{\mathrm{d}M^*}{\mathrm{d}E} = -\frac{U_{ME}}{U_{MM}} = -\frac{F_{ME}(M^*,E) - G_{ME}(M^*,E)}{F_{MM} - G_{MM}}.$$

$$C_{ME} = \frac{dM^*}{dE} \times (F_{MM} - C_{MM}) + F_{ME}$$

Following the second order condition, the denominator of this expression is negative. If misbehavior increases as ESG upgrades, and the marginal pecuniary payoff doesn't goes up as ESG upgrades, then the evidence is consistent with moral licensing.

In section 4, I empirically show that after ESG upgrades, mutual fund managers' misbehavor increases and the marginal pecuniary payoff doesn't raise.

3 Data

I merge mutual fund data from the Center for Research in Security Prices (CRSP) Survivor-Bias-Free US Mutual Fund Database and Thomson Financial mutual fund holdings databases using the MFLINKS database from Wharton Research Data Services (WRDS). The CRSP database provides daily and monthly returns, total net assets (TNA), expense ratios, investment objectives, and other fund characteristics, while the Thomson Financial database reports quarterly portfolio holdings. I restrict the sample to U.S. equity funds by excluding balanced, bond, international, money market, and sector funds and focus on the five active equity styles: aggressive growth, growth, growth & income, metals, and unclassified. Be-

cause CRSP reports data at the share-class level, I aggregate to the fund level by weighting each share class by its total net assets to compute value-weighted daily and monthly returns and value-weighted annual expense ratios. Mutual funds' ESG ratings are sourced from Morningstar's Sustainability Rating. The final sample comprises 1,407 equity funds that span the period from July 2018 to September 2023. I report summary statistics in Table 1 and correlations in Table 2.

3.1 Measures of Window Dressing

Window dressing typically involves buying high past performing stocks shortly before reporting dates to suggest that the manager purchased them before the gains (Solomon et al., 2014; Lakonishok et al., 1991; Musto, 1999; Meier and Schaumburg, 2006). I examine the relation between fund flows and proportions of winners and losers with my sample, controlling fund performance and other characteristics.

$$\begin{aligned} \text{Flow}_{i,q+1} = \phi_0 + \phi_1 \, Winner\ Proportion + \phi_2 \, Loser\ Proportion \\ + \phi_3 \, \Delta_{1m} ESG_{i,q-1} + \omega' \mathbf{M}_{i,q} + \mu_i \ + \lambda_q \ + \varepsilon_{i,q}, \end{aligned} \tag{2}$$

Table 12 reports the results from the regression estimations. I observe a positive and significant estimated coefficient on the winner proportion, and a negative and significant estimated coefficient on the loser proportion. The findings support the notion that investors respond to portfolio characteristics over and above a fund's past performance, consistent with literature (Agarwal et al., 2014).

Rank Gap (relative measure). I implement the *Rank Gap* measure of Agarwal et al. (2014), building on Lakonishok et al. (1991) and Jegadeesh and Titman (1993). In each fund fiscal quarter q, I sort CRSP domestic common stocks into five quintiles in descending order by their returns over past three months. The top (bottom) quintile is labeled *Winner* (*Loser*). Using funds' reported end-of-quarter holdings, I compute each fund i's portfolio weights invested in the Winner and Loser quintiles.

For quarters with at least 100 funds reporting holdings, I assign percentile ranks from 1 to 100 along three dimensions: (i) fund quarterly return (*Performance Rank*, sorted from

highest to lowest return), (ii) Winner weight (*Winner Rank*, sorted from highest to lowest proportion), and (iii) Loser weight (*Loser Rank*, sorted from lowest to highest proportion). The *Rank Gap* is then

$$Rank\ Gap_{i,q} = \left\{ Performance\ Rank_{i,q} - \frac{Winner\ Rank_{i,q} + Loser\ Rank_{i,q}}{2} \right\} \Big/ 200, \quad (3)$$

which scales the measure and gives a theoretical range of $[-0.495, +0.495]$. A higher *Rank Gap* indicates a greater likelihood of window dressing, which means poor performance rank relative to "good-looking" Winner/Loser ranks. In Panel A of Table 1, I report summary statistics for *Rank Gap* and observe the mean in my sample is 0.0008.

BHRG (absolute measure). As a complementary test, I also implement the *Backward Holding Return Gap* (*BHRG*) of Agarwal et al. (2014). It measures the difference between the quarterly return (net of expenses) of a hypothetical portfolio, constructed based on a fund's end-of-quarter holdings, and assume to have been held throughout the quarter, and the fund's actual quarterly return.

$$BHRG_{i,q} = Backward\ Holding\ Return\ (BHR)_{i,q} - Actual\ Return_{i,q}. \quad (4)$$

The higher the BHRG, the greater the propensity to window dress. In Panel A of Table 1, I report summary statistics for *BHRG* and observe the mean in my sample is 0.0022 after Winsorized at the 0.5 and 99.5 percentiles. Panel A of Table 2 show the correlation between *Rank Gap* and *BHRG* is 0.51 with significance.

3.2 Measure of Avoiding Reporting Small Losses

A significant **discontinuity** exists in the pooled distribution of monthly hedge fund returns, caused at least in part by temporarily overstated returns. (Bollen and Pool, 2009). I examine whether there is an incremental sensitivity of investor fund flow to reported losses by the following regression:

$$\text{Flow}_{i,q+1} = \phi_0 + \phi_1 \mathbf{R}_{i,q} + \phi_2 NPOS_{i,q} + \omega' \mathbf{M}_{i,q} + \mu_i \ + \lambda_q \ + \varepsilon_{i,q}, \tag{5}$$

where $R_{i,q}$ is the cumulative quarterly return, and $NPOS_{i,t1}$ is the number of positive daily returns in share class. I also regress the same estimation for $NPOS_frac_{i,t1}$, which is the fraction of the number of positive daily return over the whole number of returns.

Table 13 reports the results from the regression estimations. I observe a positive and significant estimated coefficient on the number (fraction) of positive returns indicating more positive returns are associated with more subsequent flows. The findings support the notion that investors respond to reporting losses over and above a fund's past performance, consistent with literature (Bollen and Pool, 2009).

Bollen and Pool (2009) show that the distribution of hedge fund returns is discontinuous at zero. The discontinuity disappears when returns are computed at the bimonthly frequency instead, indicating that some returns are inflated to avoid reporting losses, and that these overstatements are subsequently reversed. Following the histogram approach of Burgstahler and Dichev (1997), Bollen and Pool (2012) employ the z-score from a discontinuity test to assess the extent to which negative returns are inflated above zero, and find that changes in discontinuity are significantly associated with an increased probability of a reporting violation.

Figure 2 and 5 shows the distribution of daily and monthly return at the share-class level, respectively. We can observe the discontinuity at zero also existing in mutual funds.

I measure the avoiding reporting small losses as the discontinuity at zero, $Kink$, the z-score of a discontinuity test. I count the number of return observations that fall in three adjacent bins, two to the left of zero (b_{-2} and b_{-1}) and one to the right (b_{+1}). I exclude daily return which are exactly zero with unchanged NAV. To decide the bin width, I minimize the mean squared error between the true distribution and the histogram and follow Silverman (1986) by setting bin width equal to

$$\alpha \times 1.364 \ \min\left(\sigma, \ \frac{Q}{1.340}\right) N^{-\frac{1}{5}}, \tag{6}$$

where σ is the empirical distribution's standard deviation, Q is its inter-quartile range, N is the number of observations, and α is a scalar that depends on the type of underlying distribution assumed. Devroye (1997) shows through simulation that the definition in (3) is robust to alternative distributional assumptions. To proceed, I set $\alpha = 0.776$, corresponding to a normal distribution. Given the mutual fund share class level daily return data from CRSP during my sample period, the bin size is 2.13 bps.

Under the null hypothesis of a smooth distribution, the number of observations that fall in the middle-bin should be approximately equal to the average of the surrounding two bins. I interpret a significant shortfall in the middle-bin observations as evidence that some negative returns have been purposefully inflated above zero. The statistical test I use to test smooth distribution is

$$H_0 : n_{b_{-1}} = \frac{n_{b_{-2}} + n_{b_{+1}}}{2} \tag{7}$$

$$\text{Kink} \equiv \frac{(n_{b_{-2}} + n_{b_{+1}})/2 - n_{b_{-1}}}{\sqrt{N\, p_{b_{-1}}(1 - p_{b_{-1}}) + \frac{1}{4} N\, (p_{b_{-2}} + p_{b_{+1}})\big(1 - p_{b_{-2}} - p_{b_{+1}}\big)}}, \tag{8}$$

where n_{b_j} denotes the number of observations in b_i. N is the total number of observations. p_{b_j} is the probability that an observation falls in b_i. [1]

The larger the $kink$, the less observations fall in bin_{-1}, the more discontinuity at zero. I report in Panel A of Table 1 that the mean $Kink$ is 1.30 with a standard deviation of 1.44.

3.3 Mutual Fund Characteristics, Returns and Holdings

$Flow$ is measured as $[TNA_t - TNA_{t-1} \times (1 + R_t)]/TNA_{t-1}$ from CRSP, where TNA_t and TNA_{t1} are the fund's total net assets under management at the end of quarter t and $t1$, respectively, and R_t is the net-of-fee return during month t.

Alpha. I estimate daily alphas based on the four-factor model of Carhart (1997) and extend it to include $MKTRF$, SMB, HML, RMW, CMA and MOM. To require a three-month evaluation period to match funds' reporting horizon, and a three-month holding

[1] The variance of the difference is approximately $Np_{b_{-1}}(1 - p_{b_{-1}}) + 1/4N(p_{b_{-2}} + p_{b_{+1}})(1 - p_{b_{-2}} - p_{b_{+1}})$.

period to help distinguish between the horizons of a momentum trader and a window dresser, I compute momentum factor returns by taking long and short positions in stocks in the top and bottom 20%. Due to their propensity to buy winners and sell losers, window dressers may show a greater increase in exposure to or loading on the momentum factor toward the end of a quarter. To account for these potential changes and thus mitigate bias in the estimation of the daily alphas, I repeat the estimation of the six-factor model on a monthly basis. Using daily fund and factor returns from a given month along with the estimated factor loadings, I obtain estimates of daily alphas. I then sum these daily alphas to obtain the alphas of various maturities. Panel B of Table 1 shows that the mean quarterly alpha is 0.01%.

Other variables used in the analysis include TNA, measured as the summation of total net assets of share-class level at each quarter-end from CRSP; $Turnover$ is minimum of aggregated sales or aggregated purchases of securities, divided by the average 12-month total net assets of the fund from CRSP; $Expense$, defined as a fund's annual expense ratio; and $Load$, defined as an indicator variable having a value of 1 if a fund has a front-end or back-end load, and 0 otherwise.

3.4 Mutual Fund ESG Rating

I use ESG changes measuring mutual fund virtue behavior. Mutual funds' ESG ratings are sourced from Morningstar's Sustainability Rating (scaled from 1 to 5), which evaluates ESG risk at the portfolio level. A higher rating indicates that the underlying portfolio companies exhibit lower ESG risk and stronger ESG risk management. The Sustainability Rating is issued monthly and portfolios will receive a rating one month and six business days after their reported as-of date based on the most recent portfolio. [2] The Sustainability Rating is constructed as a trailing-twelve-month, asset-weighted average of Sustainalytics' firm-level ESG Risk Ratings, aggregated to the fund level. Morningstar began publishing the Sustainability Rating in 2018; accordingly, my baseline sample spans July 2018 through September 2023, subject to data availability.

In Panel B of Table 1, I observe that the mean ESG rate is 2.97 with standard deviation

[2]See Morningstar Sustainability Rating for Funds Methodology.

of 1.44, and the mean of $\Delta_{1m}ESG$ is -0.00 with standard deviation of 0.36.

4 Empirical Work

4.1 Timeline

Figure 1 shows the timing of ESG changes (*virtue* signal), window dressing, and avoiding reporting small losses. I define the virtue signal as the change in the fund's ESG rating prior to each quarter, (e.g., $\Delta_{\mathrm{m2,m3}}ESG$) prior to quarter Q including m4, m5 and m6). Before each quarter, managers already know their own portfolio actions and any ESG adjustments, whereas investors do not learn the updated Morningstar rating until *one month and six business days after* quarter end. Thus virtue signal is known to managers but not to investors at the beginning of quarter Q. Window dressing (measured by $RankGap_q$ and $BHRG_q$) and avoiding reporting small losses (measured by $Kink_q$) are then evaluated over the subsequent quarter.

4.2 Marginal Pecuniary Payoff of Misbehavior

Managers' compensation is mostly AUM-driven; return performance directly influences bonuses beyond AUM, and flows significantly affect manager compensation and career outcomes (Cen et al., 2023). I run the following regression to test the sign of F_{ME},

$$\begin{aligned} F_{i,q} = \psi_0 + \psi_1 \,\mathrm{M}_{i,q} + \psi_2 \,\Delta_{1m}ESG_{i,q-1} + \psi_3 \,\Delta_{1m}ESG_{i,q-1} \times \mathrm{M}_{i,q} \\ + \omega' \mathbf{M}_{i,q} + \mu_i \ + \tau_{q+1} \ + \delta_{i,q+1}. \end{aligned} \tag{9}$$

Where F is the proxies of mutual fund managers' pecuniary payoff, including changes in TNA, $Return$, and $Flows$. Table 16 presents the regression results. The coefficients of interaction are insignificant for *Rank Gap* and $BHRG$ and negatively for $Kink$, indicating the pecuniary payoff doesn't increases as ESG upgrades.

4.3 Regression and Results

I use the following panel regressions to test whether prior improvements in ESG is associated to subsequent suspicious behavior.

$$\begin{aligned}\text{Misbehavior}_{i,q} = \beta_0 + \beta_1\, \Delta_{1m} ESG_{i,q-1} \\ + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} \\ + \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} \\ + \mu_i \ + \lambda_q \ + \varepsilon_{i,q}. \end{aligned} \tag{10}$$

Table 6 shows the regression results. $\Delta_{1m} ESG$ is standardized to have zero mean and unit variance. The findings support the moral-licensing mechanism: an increase in ESG rate is positively associated to subsequent window dressing and avoiding reporting small losses.

From column of *Rank Gap*, we observe a positive and significant estimated coefficient on $\Delta_{1m} ESG$ (coeff.=0.0237, p-value = 0.003), indicating 1-unit increase of $\Delta_{1m} ESG$, is related with roughly 2.4% of SD of *Rank Gap*. Economically, the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter increases by 0.0021. TNA and *Turnover* are also positively associated with *Rank Gap*, and *Alpha* and *Load* are negatively associated with *Rank Gap*.

From column of $BHRG$, in percentage terms, we observe a positive and significant estimated coefficient on $\Delta_{1m} ESG$ (coeff.=0.0138, p-value = 0.045), indicating 1 unit increase of $\Delta_{1m} ESG$, is associated with 1.4% of the SD of $BHRG$, which is 4.3 bp increase of the difference between the quarterly return (net of expenses) of a hypothetical portfolio, constructed based on a fund's end-of-quarter holdings, and assume to have been held throughout the quarter, and the fund's actual quarterly return on average. *Turnover* is also positively associated to $BHRG$, consistent with window-dressing behavior.

From column of $Kink$, we observe a positive and significant estimated coefficient on $\Delta_{1m} ESG$ (coeff.=0.0219, p-value = 0.033), indicating 1 unit increase of $\Delta_{1m} ESG$, is asso-

ciated with about 2.2% of the SD of Kink, indicating a 0.0315 increase in z-score of a test for a discontinuity at zero on average. TNA is negatively associated with $Kink$.

Table 5 shows the regression results without controlling ESG. Table 7 shows the regression results with *year* fixed effect.

I also extend the measurement period of ESG changes to one quarter to test whether cumulative ESG improvements over a longer horizon produce similar effects,

$$\begin{aligned}\text{Misbehavior}_{i,q} = \beta_0 + \beta_1 \Delta_{3m} ESG_{i,q-1} \quad (11)\\ + \beta_2 ESG_{i,q-1} + \beta_3 TNA_{i,q-1} + \beta_4 Flow_{i,q-1} + \beta_5 Turnover_{i,q-1}\\ + \beta_6 Expense_{i,q-1} + \beta_7 Alpha_{i,q-1} + \beta_8 Load_{i,q-1}\\ + \mu_i \ + \lambda_q \ + \varepsilon_{i,q}. \quad (12)\end{aligned}$$

Table 8 report the results. The coefficients on quarterly ESG changes are significantly positive for *Rank Gap* and $BHRG$, but not significant for $Kink$. These results suggest that ESG improvements (i.e., moral credits) acquired specifically at the end of the previous quarter have a stronger effect on subsequent suspicious behavior than ESG improvements accumulated over the entire quarter.

4.4 Temporal Dynamics of Moral Licensing

To test the time effect of moral licensing in this setting, I use the following panel regressions with lagging ΔESG in one month.

$$\begin{aligned}\text{Misbehavior}_{i,q} = \beta_0 + \beta_1 lag_{1m} \Delta_{1m} ESG_{i,q-1}\\ + \beta_2 ESG_{i,q-1} + \beta_3 TNA_{i,q-1} + \beta_4 Flow_{i,q-1} + \beta_5 Turnover_{i,q-1}\\ + \beta_6 Expense_{i,q-1} + \beta_7 Alpha_{i,q-1} + \beta_8 Load_{i,q-1}\\ + \mu_i \ + \lambda_q \ + \varepsilon_{i,q} \quad (13)\end{aligned}$$

$$\begin{aligned}\text{Misbehavior}_{i,q} = \beta_0 &+ \beta_1\, lag_{2m}\Delta_{1m}ESG_{i,q-1} \\ &+ \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} \\ &+ \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} \\ &+ \mu_i \ + \lambda_q \ + \varepsilon_{i,q} \end{aligned} \tag{14}$$

Table 9 shows the regression results. The coefficients on $lag_{1m}\Delta_{1m}ESG$ and $lag_{2m}\Delta_{1m}ESG$ are statistically insignificant across all specifications. These results suggest that ESG improvements (i.e., moral credits) acquired specifically at the end of the previous quarter have a stronger effect on subsequent suspicious behavior than those acquired one or two months earlier, indicating that the influence of ESG improvements as moral credits fades quickly over time.

4.5 Reverse Moral Licensing Test

Another natural question is when one funds did window dressing or avoiding reporting small losses, whether they increases ESG to restore that self-image (cleansing). To test the this balancing channel, I regress subsequent ESG improvements on previous window dressing or avioding reporting losses, controlling ESG rate and fund characteristics,

$$\begin{aligned}\Delta_{1m}ESG_{i,q} = \beta_0 &+ \beta_1\, \mathrm{M}_{i,q-1} + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} \\ &+ \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} + \mu_i \ + \lambda_q \ + \varepsilon_{i,q}. \end{aligned} \tag{15}$$

Table 10 show the regression results. The coefficients on previous window dressing and avoiding reporting small losses measures are not significant, indicating funds don't balance their self-image through that way.

However, moral licensing can happen in different domain, such as donation less after writing a short story about themselves or someone they knew using nine morally positive trait words. Therefore, the balancing mechanism may take place in other domains. I can

not ruling out the "balance" mechanism.

5 Atlernative Explanations

I next consider alternative mechanisms that could generate similar reduced-form patterns. Evidence show that after ESG upgrades, fund's performance decreases. Mutual fund managers may have incentive to hide the bad performance and then misbehavior more.

Another explanation for these results is performance pressure. Gantchev et al. (2024) show that sustainability-driven trades underperforme, impairing the funds' overall performance. Therefore, funds with higher ESG rates may face greater performance pressure, increasing their incentives to engage in window dressing and to avoid reporting small losses. To rule out this performance pressure explanation, I first regress subsequent returns on ESG changes, controlling misbehavior and fund characteristics,

$$\begin{aligned} R_{i,q} =& \beta_0 + \beta_1 \, \Delta_{1m} ESG_{i,q-1} + \beta_2 \, \mathrm{M}_{i,q-1} \\ & + \omega' \mathbf{X}_{i,q-1} + \tau_i \ + \eta_q \ + \delta_{i,q}. \end{aligned} \tag{16}$$

$$\tag{17}$$

Table 17 shows the regression results. The coefficient of ESG improvements are positively significant, indicating higher ESG improvements are associated with lower subsequent return, consistent with Gantchev et al. (2024). Then I regress window dressing and avoiding reporting small losses on previous return,

$$\begin{aligned} \mathrm{M}_{i,q} =& \beta_0 + \beta_1 \, \Delta_{1m} \mathrm{ESG}_{i,q-1} + \beta_2 \, \mathrm{Return}_{i,q} \\ & + \beta_3 \, \mathrm{Return}_{i,q-1} + \omega' \mathbf{X}_{i,q-1} + \tau_i + \eta_q + \delta_{i,q}. \end{aligned} \tag{18}$$

Tabel 18 presents the regression results. After allowing the effects of returns in current quarter and in previous quarter, the coefficients on ESG changes are still positive and statistically significant, although the magnitude decreases compared to without controlling

returns. This suggests that the observed association between improvements in ESG ratings and increased suspicious behavior is not driven by performance pressure.

6 Conclusion

This study examines whether after a ESG score improvement, do mutual funds become more or less likely to engage in in window dressing and avoiding reporting small losses. Using sample of U.S. equity funds from July 2018 to September 2023, I show that increases in ESG rating during the last month of a quarter are followed by more subsequent window dressing and stronger avoiding reporting small losses, consistent with moral licensing mechanism. Further analyses rule out explanations based on pecuniary payoff and alternative explanation of performance pressure. Moreover, ESG improvements concentrated at the end of the prior quarter have a stronger impact on suspicious behavior than those accumulated gradually over the entire quarter, and the effect of ESG improvements as moral credits fades rapidly over time. Finally, I find no evidence supporting a customer-trust channel as a driving mechanism. Overall, the findings points to a moral-licensing mechanism in mutual fund context: past virtue can license less moral behavior thereafter.

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7 Appendix

Table 1: Summary Statistics, July 2018 - September 2023, Quarterly

	N	Mean	SD	Min	p25	p50	p75	Max
Panel A: Window Dressing and Discontinuity at Zero								
Rank Gap	22,608	0.0007	0.0886	-0.4875	-0.0475	-0.0025	0.0450	0.4925
Δ_{3m}*Rank Gap*	22,342	0.0004	0.1163	-0.9325	-0.0625	0.0000	0.0625	0.9750
$BHRG(\%)$	21,302	0.0039	0.0311	-0.5479	-0.0042	0.0014	0.0094	0.6819
$\Delta_{3m}BHRG(\%)$	21,055	-0.0002	0.0399	-0.9542	-0.0084	-0.0002	0.0079	0.9816
$Kink$	9,946	1.3025	1.4397	-6.0359	1.0013	1.4254	2.0331	9.9830
$\Delta_{3m}Kink$	7,166	-0.0082	1.7546	-9.3749	-0.9145	0.0000	0.8578	9.6614
Panel B: ESG Rate								
ESG	20,131	2.9657	1.0450	1	2	3	4	5
$\Delta_{1m}ESG$	20,015	-0.0017	0.3596	-4	0	0	0	4
$\Delta_{3m}ESG$	18,831	0.0037	0.4418	-3	0	0	0	4
Panel C: Fund Characteristics								
Return	22,608	0.0240	0.1184	-0.5050	-0.0359	0.0401	0.0942	0.4705
TNA	22,447	6.5004	2.0405	1.3863	5.1263	6.4891	7.8913	11.9128
$Flow(\%)$	22,352	-0.0094	0.0981	-0.4525	-0.0410	-0.0195	-0.0036	1.1135
$Turnover(\%)$	21,308	0.5329	0.5327	0.0100	0.2000	0.3900	0.6800	4.8800
$Expense(\%)$	21,313	0.0088	0.0040	0.0000	0.0067	0.0090	0.0109	0.0234
$Alpha(\%)$	22,382	-0.0001	0.0015	-0.0092	-0.0008	-0.0001	0.0002	0.0097
Load	22,493	0.6598	0.4771	0	0	1	1	1

Summary statistics of the key variables used in the empirical analysis. My sample includes 21,277 fund-quarter observations for 1,407 mutual funds between July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$) is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter. $\Delta_{3m}ESG$ is ESG score changes over the entire previous quarter. *Return* is the fund quarterly return. TNA is the total net assets at the end of the quarter. *Flow* is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, *Flow*, $Turnover$, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles.

Table 2: Correlation Coefficients, July 2018 - September 2023, Quarterly

	Rank Gap	Δ*Rank Gap*	*BHRG*	Δ*BHRG*	*Kink*	Δ*Kink*	*ESG*	$\Delta_{1m}ESG$	$\Delta_{3m}ESG$	*TNA*	*Flow*	*Turnover*	*Expense*	*Alpha*	*Skill*
Δ*Rank Gap*	0.67***														
BHRG	0.52***	0.30***													
Δ*BHRG*	0.30***	0.46***	0.64***												
Kink	0.03***	-0.01	0.01	0.01											
Δ*Kink*	0.00	-0.00	0.00	0.00	0.58***										
ESG	-0.03***	0.01***	-0.03***	0.00	-0.03***	-0.01									
$\Delta_{1m}ESG$	0.03***	0.03***	0.02***	0.01	-0.00	0.03***	0.16***								
$\Delta_{3m}ESG$	0.02***	0.02***	0.01	0.01	-0.00	0.01	0.20***	0.73***							
TNA	-0.03***	0.01	-0.00	-0.00	-0.01	-0.01	-0.01***	-0.01***	-0.01						
Flow	-0.02***	0.01	-0.01	-0.04***	0.00	0.01	0.02***	0.01	-0.00	-0.02***					
Turnover	0.17***	-0.00	0.17***	0.00	0.06***	0.01	-0.08***	0.02***	0.01	-0.23***	0.00				
Expense	0.07***	-0.00	0.03***	-0.00	0.09***	0.01	-0.03***	0.01	0.00	-0.51***	-0.06***	0.25***			
Alpha	-0.07***	0.08***	-0.00	-0.01	0.00	-0.02	0.01	0.01	0.02***	0.03***	0.07***	-0.04***	-0.02***		
Skill	-0.11***	0.00	-0.12***	0.01	-0.02***	0.00	0.02***	-0.00	-0.01	0.04***	-0.01	-0.23***	-0.10***	0.04***	
Load	0.02***	-0.00	0.02***	0.01	0.12***	0.01	-0.04***	-0.02***	-0.00	-0.01***	-0.05***	0.06***	0.28***	0.03***	-0.03***

Correlation coefficients of the key variables used in the empirical analysis. My sample includes 21,277 fund-quarter observations for 1,407 mutual funds between July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$) is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter. $\Delta_{3m}ESG$ is ESG score changes over the entire previous quarter. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, $Expense$, *Alpha* are winsorized at the 1 and 99 percentiles.

Table 3: Baseline Regression Results: Moral-licensing Effects

Variables	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$
$\Delta_{1m}ESG_{q-1}$	0.0169***	0.0117**	0.0225**
	(2.74)	(2.06)	(2.30)
ESG_{q-1}	-0.0054	-0.0169**	-0.0220
	(-0.53)	(-2.08)	(-1.12)
TNA_{q-1}	0.4120***	-0.0668*	-0.1870**
	(8.50)	(-1.69)	(-2.31)
$Flow_{q-1}$	-0.0095	0.0011	0.0044
	(-1.50)	(0.19)	(0.32)
$Turnover_{q-1}$	0.0814***	0.1006***	0.0141
	(4.86)	(4.67)	(0.39)
$Expense_{q-1}$	-0.0133	-0.0572*	-0.0006
	(-0.30)	(-1.92)	(-0.01)
$Alpha_{q-1}$	-0.0420***	0.0109	-0.0049
	(-8.08)	(1.51)	(-0.44)
$Load_{q-1}$	0.0048	0.0317***	-0.0058
	(0.36)	(2.78)	(-0.20)
$Rank\ Gap_{q-1}$	-0.8144***		
	(-110.42)		
$BHRG_{q-1}$		-0.8616***	
		(-33.98)	
$Kink_{q-1}$			-0.8411***
			(-50.50)
Constant	-0.0314***	-0.0050**	0.0918***
	(-12.75)	(-2.14)	(2.64)
Fund and Year FE	Yes	Yes	Yes
Observations	18,718	18,572	6,030
Adj. R^2	0.5082	0.5304	0.4657

Regressions of quarterly changes of window dressing measures (*Rank Gap* and $BHRG$) and avoiding reporting small losses measure ($Kink$) on prior ESG changes, controlling ESG rate, fund characteristics, and levels of M in previous quarter.

$$\Delta \mathrm{M}_{i,q} = \beta_0 + \beta_1 \Delta_{1m} ESG_{i,q-1} + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} + \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} + \beta_9\, M_{i,q-1} + \mu_i + \lambda_{year} + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return), percentage. $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 4: Baseline Regression Results: Moral-licensing Effects, Without Controlling M_{q-1}

Variables	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$
$\Delta_{1m}ESG_{q-1}$	0.0256***	0.0065	0.0341***
	(2.64)	(0.73)	(2.68)
ESG_{q-1}	0.0091	-0.0015	-0.0457***
	(1.17)	(-0.23)	(-2.95)
TNA_{q-1}	0.3428***	-0.2546***	0.0044
	(8.42)	(-6.33)	(0.06)
$Flow_{q-1}$	0.0083	-0.0500***	0.0303*
	(1.01)	(-3.96)	(1.70)
$Turnover_{q-1}$	0.0200	0.0106	0.0128
	(1.29)	(0.67)	(0.34)
$Expense_{q-1}$	0.0416	-0.0321	-0.0594
	(1.16)	(-0.99)	(-0.71)
$Alpha_{q-1}$	0.0831***	0.0019	-0.0285*
	(8.94)	(0.16)	(-1.77)
$Load_{q-1}$	-0.0093	0.0341*	0.0504
	(-0.48)	(1.88)	(1.39)
Constant	-0.0156***	0.0108***	-0.0243
	(-6.85)	(4.16)	(-0.71)
Fund and Year FE	Yes	Yes	Yes
Observations	18,718	18,572	6,030
Adj. R^2	-0.0436	-0.0362	-0.0968

Regressions of quarterly changes of window dressing measures (*Rank Gap* and $BHRG$) and avoiding reporting small losses measure ($Kink$) on prior ESG changes, controlling ESG rate and fund characteristics in previous quarter.

$$\Delta \mathrm{M}_{i,q} = \beta_0 + \beta_1\, \Delta_{1m} ESG_{i,q-1} + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} + \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} + \mu_i\ + \lambda_{year}\ + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return), percentage. $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. $Alpha$ is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. $Load$ is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, $Expense$, $Alpha$ are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 5: Regression Results: Moral-licensing Effects, Without Controlling ESG_{q-1}

Variables	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$
$\Delta_{1m}ESG_{q-1}$	0.0162***	0.0094*	0.0192**
	(2.72)	(1.71)	(2.06)
TNA_{q-1}	0.4123***	-0.0661*	-0.1850**
	(8.51)	(-1.66)	(-2.29)
$Flow_{q-1}$	-0.0095	0.0013	0.0044
	(-1.50)	(0.21)	(0.32)
$Turnover_{q-1}$	0.0814***	0.1005***	0.0154
	(4.85)	(4.66)	(0.43)
$Expense_{q-1}$	-0.0126	-0.0550*	0.0030
	(-0.28)	(-1.84)	(0.04)
$Alpha_{q-1}$	-0.0420***	0.0109	-0.0052
	(-8.08)	(1.51)	(-0.46)
$Load_{q-1}$	0.0048	0.0317***	-0.0058
	(0.36)	(2.78)	(-0.19)
$Rank\ Gap_{q-1}$	-0.8143***		
	(-110.51)		
$BHRG_{q-1}$		-0.8614***	
		(-33.95)	
$Kink_{q-1}$			-0.8413***
			(-50.47)
Constant	-0.0314***	-0.0050**	0.0911***
	(-12.75)	(-2.12)	(2.61)
Fund and Year FE	Yes	Yes	Yes
Observations	18,718	18,572	6,030
Adj. R^2	0.5082	0.5302	0.4656

Regressions of quarterly changes of window dressing measures (*Rank Gap* and $BHRG$) and avoiding reporting small losses measure ($Kink$) on prior ESG changes, controlling fund characteristics and levels of M in previous quarter.

$$\Delta \mathrm{M}_{i,q} = \gamma_0 + \gamma_1 \Delta_{1m} ESG_{i,q-1} + \gamma_2 TNA_{i,q-1} + \gamma_3 Flow_{i,q-1} + \gamma_4 Turnover_{i,q-1} + \gamma_5 Expense_{i,q-1} + \gamma_6 Alpha_{i,q-1} + \gamma_7 Load_{i,q-1} + \gamma_8 M_{i,q-1} + \mu_i + \lambda_{year} + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 6: Baseline Regression Results: Moral-licensing Effects, Levels of M_q

Variables	$Rank\ Gap_q$	$BHRG_q$	$Kink_q$
$\Delta_{1m}ESG_{q-1}$	0.0232***	0.0144*	0.0213**
	(2.80)	(1.95)	(2.01)
ESG_{q-1}	-0.0055	-0.0198**	-0.0086
	(-0.43)	(-2.03)	(-0.46)
TNA_{q-1}	0.5335***	-0.1082**	-0.2163***
	(8.71)	(-2.23)	(-2.65)
$Flow_{q-1}$	-0.0106	-0.0047	0.0079
	(-1.29)	(-0.63)	(0.59)
$Turnover_{q-1}$	0.1003***	0.1182***	0.0117
	(4.76)	(4.58)	(0.35)
$Expense_{q-1}$	-0.0116	-0.0704*	0.0128
	(-0.21)	(-1.94)	(0.19)
$Alpha_{q-1}$	-0.0418***	0.0128	-0.0076
	(-6.23)	(1.45)	(-0.72)
$Load_{q-1}$	0.0048	0.0409***	-0.0327
	(0.27)	(2.74)	(-1.18)
Constant	-0.0442***	-0.0079***	0.0926***
	(-14.25)	(-2.78)	(3.16)
Fund and Year FE	Yes	Yes	Yes
Observations	18,718	18,572	8,304
Adj. R^2	0.1231	0.2196	0.2651

Regressions of quarterly levels of window dressing measures (*Rank Gap* and $BHRG$) and avoiding reporting small losses measure ($Kink$) on prior ESG changes, controlling ESG rate and fund characteristics in previous quarter.

$$\mathrm{M}_{i,q} = \beta_0 + \beta_1\,\Delta_{1m}ESG_{i,q-1} + \beta_2\,ESG_{i,q-1} + \beta_3\,TNA_{i,q-1} + \beta_4\,Flow_{i,q-1} + \beta_5\,Turnover_{i,q-1} + \beta_6\,Expense_{i,q-1} + \beta_7\,Alpha_{i,q-1} + \beta_8\,Load_{i,q-1} + \mu_i\ + \lambda_{year}\ + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return), percentage. $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 7: Regression Results: Moral-licensing Effects, Quarter FE

Variables	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$
$\Delta_{1m}ESG_{q-1}$	0.0173***	0.0111*	0.0230**
	(2.80)	(1.95)	(2.34)
ESG_{q-1}	-0.0054	-0.0162**	-0.0216
	(-0.53)	(-2.02)	(-1.10)
TNA_{q-1}	0.4114***	0.0607	-0.1447*
	(8.05)	(1.53)	(-1.74)
$Flow_{q-1}$	-0.0096	0.0022	0.0027
	(-1.51)	(0.37)	(0.20)
$Turnover_{q-1}$	0.0821***	0.0956***	0.0160
	(4.89)	(4.52)	(0.45)
$Expense_{q-1}$	-0.0143	-0.0302	0.0036
	(-0.32)	(-1.01)	(0.05)
$Alpha_{q-1}$	-0.0440***	0.0105	-0.0084
	(-8.35)	(1.44)	(-0.73)
$Load_{q-1}$	-0.0158	0.0086	-0.0105
	(-0.81)	(0.50)	(-0.31)
$Rank\ Gap_{q-1}$	-0.8148***		
	(-109.91)		
$BHRG_{q-1}$		-0.8500***	
		(-32.25)	
$Kink_{q-1}$			-0.8396***
			(-49.98)
Constant	-0.0301***	-0.0099***	0.0747**
	(-11.12)	(-4.04)	(2.08)
Fund and Quarter FE	Yes	Yes	Yes
Observations	18,718	18,572	6,030
Adj. R^2	0.5083	0.5429	0.4663

Regressions of quarterly changes of window dressing measures (*Rank Gap* and *BHRG*) and avoiding reporting small losses measure (*Kink*) on prior ESG changes, controlling ESG rate, fund characteristics, and levels of M in previous quarter.

$$\Delta \mathrm{M}_{i,q} = \beta_0 + \beta_1\, \Delta_{1m} ESG_{i,q-1} + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} + \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} + \beta_9\, M_{i,q-1} + \mu_i\ + \lambda_{quarter}\ + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). *Kink* is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and *Kink* over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. *Flow* is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 8: Regression Results: Moral-licensing Effects, $\Delta_{3m}ESG$

Variables	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$
$\Delta_{3m}ESG_{q-1}$	0.0145**	0.0096*	0.0202*	0.0125**	0.0067	0.0144
	(2.52)	(1.97)	(1.95)	(2.31)	(1.51)	(1.52)
ESG_{q-1}	-0.0110	-0.0157*	-0.0318			
	(-1.03)	(-1.95)	(-1.45)			
TNA_{q-1}	0.4196***	-0.0927**	-0.1743*	0.4204***	-0.0917**	-0.1698*
	(8.22)	(-2.28)	(-1.95)	(8.25)	(-2.24)	(-1.92)
$Flow_{q-1}$	-0.0118*	0.0069	0.0054	-0.0117*	0.0071	0.0051
	(-1.81)	(1.13)	(0.38)	(-1.80)	(1.15)	(0.36)
$Turnover_{q-1}$	0.0737***	0.0931***	0.0236	0.0737***	0.0931***	0.0258
	(4.61)	(4.48)	(0.63)	(4.61)	(4.47)	(0.68)
$Expense_{q-1}$	0.0106	-0.0560*	0.0132	0.0120	-0.0539*	0.0193
	(0.22)	(-1.86)	(0.16)	(0.25)	(-1.79)	(0.24)
$Alpha_{q-1}$	-0.0414***	0.0151**	-0.0061	-0.0413***	0.0152**	-0.0062
	(-7.99)	(2.05)	(-0.55)	(-7.98)	(2.06)	(-0.55)
$Load_{q-1}$	0.0034	0.0307**	-0.0048	0.0035	0.0307**	-0.0047
	(0.26)	(2.81)	(-0.16)	(0.26)	(2.81)	(-0.16)
$\Delta Rank\ Gap_{q-1}$	-0.8076***			-0.8075***		
	(-116.07)			(-116.13)		
$\Delta BHRG_{q-1}$		-0.8425***			-0.8424***	
		(-34.76)			(-34.73)	
$\Delta Kink_{q-1}$			-0.8432***			-0.8434***
			(-48.54)			(-48.63)
Constant	-0.0389***	0.0061**	0.0901**	-0.0389***	0.0061**	0.0886**
	(-13.35)	(2.36)	(2.36)	(-13.36)	(2.35)	(2.32)
Fund and Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,642	17,505	5,653	17,642	17,505	5,653
Adj. R^2	0.5075	0.5247	0.4598	0.5074	0.5246	0.4596

Regressions of quarterly changes of window dressing measures (*Rank Gap* and *BHRG*) and avoiding reporting small losses measure (*Kink*) on prior ESG changes over the entire previous quarter, controlling ESG rate, fund characteristics, the levels of M in previous quarter.

$$\Delta \mathrm{M}_{i,q} = \beta_0 + \beta_1\, \Delta_{3m} ESG_{i,q-1} + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} + \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} + \beta_9\, M_{i,q-1} + \mu_i\ + \lambda_{year}\ + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{3m}ESG$ is ESG score changes over the entire previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, $Expense$, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 9: Regression Results: Temporal Dynamics of Moral-licensing Effects

Variables	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$
$\Delta_{1m}ESG_{q-1}$	0.0106*	0.0065	0.0207**	0.0105*	0.0067	0.0219**
	(1.67)	(1.41)	(1.98)	(1.68)	(1.49)	(2.08)
$lag_{1m}\Delta_{1m}ESG_{q-1}$	0.0074	0.0015	-0.0094	0.0077	0.0021	-0.0082
	(1.40)	(0.38)	(-0.95)	(1.47)	(0.53)	(-0.81)
$lag_{2m}\Delta_{1m}ESG_{q-1}$				0.0081	0.0045	0.0154
				(1.47)	(1.10)	(1.19)
ESG_{q-1}	-0.0099	-0.0135*	-0.0225	-0.0121	-0.0151*	-0.0268
	(-0.91)	(-1.72)	(-1.06)	(-1.12)	(-1.94)	(-1.23)
TNA_{q-1}	0.4111***	0.0585	-0.1264	0.4192***	0.0542	-0.1313
	(7.59)	(1.42)	(-1.39)	(7.73)	(1.33)	(-1.42)
$Flow_{q-1}$	-0.0102	0.0080	0.0024	-0.0122*	0.0085	0.0034
	(-1.54)	(1.32)	(0.17)	(-1.87)	(1.39)	(0.24)
$Turnover_{q-1}$	0.0807***	0.0943***	0.0177	0.0732***	0.0902***	0.0173
	(4.60)	(4.53)	(0.48)	(4.54)	(4.33)	(0.47)
$Expense_{q-1}$	0.0086	-0.0285	0.0190	0.0094	-0.0290	0.0185
	(0.18)	(-0.93)	(0.23)	(0.20)	(-0.95)	(0.22)
$Alpha_{q-1}$	-0.0435***	0.0160**	-0.0087	-0.0436***	0.0157**	-0.0090
	(-8.32)	(2.12)	(-0.76)	(-8.33)	(2.09)	(-0.78)
$Load_{q-1}$	-0.0208	0.0084	-0.0098	-0.0191	0.0088	-0.0115
	(-1.07)	(0.52)	(-0.29)	(-0.98)	(0.54)	(-0.34)
$\Delta Rank\ Gap_{q-1}$	-0.8075***			-0.8079***		
	(-115.10)			(-115.38)		
$\Delta BHRG_{q-1}$		-0.8408***			-0.8385***	
		(-27.27)			(-26.90)	
$\Delta Kink_{q-1}$			-0.8418***			-0.8422***
			(-48.45)			(-48.51)
Constant	-0.0343***	0.0006	0.0674*	-0.0379***	0.0001	0.0698*
	(-11.30)	(0.23)	(1.73)	(-12.05)	(0.03)	(1.77)
Fund and Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,665	17,523	5,650	17,603	17,466	5,639
Adj. R^2	0.5066	0.5639	0.4606	0.5083	0.5622	0.4609

Regressions of quarterly changes of window dressing measures (*Rank Gap*, *BHRG*) and avoiding reporting small losses measure (*Kink*) on prior $\Delta_{1m}ESG$ lagged for one or two more additional months,controlling ESG rate, fund characteristics, the levels of M in previous quarter.

$$\Delta \mathrm{M}_{i,q} = \beta_0 + \beta_1\, lag_{1m}\Delta_{1m}ESG_{i,q-1} + \omega' \mathbf{X}_{i,q} + \mu_i\ + \lambda_q\ + \varepsilon_{i,q},$$

$$\Delta \mathrm{M}_{i,q} = \beta_0 + \beta_1\, lag_{1m}\Delta_{1m}ESG_{i,q-1} + \beta_2\, lag_{2m}\Delta_{1m}ESG_{i,q-1} + \omega' \mathbf{X}_{i,q} + \mu_i\ + \lambda_q\ + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap (*BHRG*), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). *Kink* is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, *BHRG* and *Kink* over the previous quarter, respectively. *ESG* is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $lag_{1m}\Delta_{1m}ESG$ is the change in ESG score during the second month of the previous quarter ($\Delta_{1m}ESG$ lagged for one additional months), standardized by subtracting the mean and dividing by the standard deviation. $lag_{2m}\Delta_{1m}ESG$ is the change in ESG score during the first month of the previous quarter ($\Delta_{1m}ESG$ lagged for two additional month), standardized by subtracting the mean and dividing by the standard deviation. *Flow* is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets *Turnover* is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. *BHRG*, *TNA*, *Flow*, *Turnover*, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 10: Reverse Moral Licensing Test $\Delta_{1m}ESG_{t+1}$

	$\Delta_{1m}ESG_{t+1}$					
Rank Gap	-0.0006			0.0002		
	(-0.31)			(0.10)		
BHRG		-0.0017			-0.0009	
		(-0.74)			(-0.38)	
Kink			0.0020			0.0018
			(0.76)			(0.67)
ESG	-0.0772***	-0.0772***	-0.0722***			
	(-17.89)	(-17.90)	(-11.02)			
TNA	0.0034	0.0035	0.0372*	0.0079	0.0080	0.0425**
	(0.26)	(0.27)	(1.86)	(0.59)	(0.60)	(2.15)
Flow	0.0018	0.0019	0.0010	0.0025	0.0026	0.0019
	(0.85)	(0.90)	(0.22)	(1.16)	(1.17)	(0.44)
Turnover	0.0035	0.0036	-0.0019	0.0027	0.0029	0.0027
	(0.72)	(0.75)	(-0.23)	(0.56)	(0.58)	(0.32)
Expense	-0.0252**	-0.0253**	-0.0212	-0.0149	-0.0149	-0.0081
	(-2.13)	(-2.14)	(-1.34)	(-1.24)	(-1.24)	(-0.52)
Alpha	-0.0029	-0.0028	-0.0030	-0.0028	-0.0028	-0.0031
	(-1.62)	(-1.59)	(-1.06)	(-1.53)	(-1.57)	(-1.08)
Load	-0.0027	-0.0027	-0.0003	-0.0026	-0.0026	-0.0009
	(-0.47)	(-0.45)	(-0.04)	(-0.43)	(-0.43)	(-0.10)
Constant	-0.0000	-0.0001	-0.0164**	0.0002	0.0002	-0.0177**
	(-0.03)	(-0.03)	(-2.02)	(0.09)	(0.08)	(-2.19)
Fund and Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,789	18,789	8,389	18,789	18,789	8,389
Adj. R^2	0.0350	0.0350	0.0463	-0.0049	-0.0049	0.0108

Regressions of quarterly window dressing measures (*Rank Gap* and $BHRG$) and avoiding reporting small losses measure ($Kink$) on prior ESG changes, controlling ESG rate and fund characteristics in previous quarter.

$$\Delta_{1m}ESG_{i,q} = \beta_0 + \beta_1 \mathrm{M}_{i,q-1} + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} + \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} + \mu_i\ + \lambda_q\ + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return), percentage. $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. $Alpha$ is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. $Load$ is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, $Expense$, $Alpha$ are winsorized at the 1 and 99 percentiles. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 11: Reverse Moral Licensing Test $\Delta_{3m}ESG_{t+1}$

	$\Delta_{3m}ESG_{t+1}$					
Rank Gap	0.0022			0.0093		
	(0.24)			(0.95)		
BHRG		-0.0158			-0.0095	
		(-1.51)			(-0.85)	
Kink			0.0174			0.0155
			(1.51)			(1.22)
ESG	-0.6788***	-0.6790***	-0.6680***			
	(-34.97)	(-34.99)	(-22.59)			
TNA	-0.0131	-0.0110	-0.0114	0.0270	0.0292	0.0391
	(-0.23)	(-0.19)	(-0.13)	(0.44)	(0.48)	(0.41)
Flow	-0.0041	-0.0032	-0.0208	0.0023	0.0027	-0.0111
	(-0.50)	(-0.39)	(-1.36)	(0.27)	(0.31)	(-0.67)
Turnover	0.0149	0.0168	-0.0436	0.0090	0.0108	0.0000
	(0.71)	(0.81)	(-1.19)	(0.41)	(0.49)	(0.00)
Expense	-0.0994*	-0.1001*	-0.0678	-0.0141	-0.0151	0.0454
	(-1.88)	(-1.90)	(-0.83)	(-0.25)	(-0.27)	(0.55)
Alpha	-0.0131*	-0.0134*	-0.0156	-0.0121	-0.0136*	-0.0164
	(-1.82)	(-1.88)	(-1.36)	(-1.60)	(-1.80)	(-1.34)
Load	-0.0079	-0.0075	-0.0336	-0.0061	-0.0062	-0.0394
	(-0.34)	(-0.32)	(-0.92)	(-0.25)	(-0.25)	(-1.03)
Constant	-0.0018	-0.0020	0.0072	-0.0007	-0.0010	-0.0060
	(-0.24)	(-0.27)	(0.22)	(-0.09)	(-0.12)	(-0.17)
Fund and Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,744	18,744	8,383	18,744	18,744	8,383
Adj. R^2	0.1369	0.1370	0.1331	-0.0277	-0.0277	-0.0278

Regressions of quarterly window dressing measures (*Rank Gap* and $BHRG$) and avoiding reporting small losses measure ($Kink$) on prior ESG changes, controlling ESG rate and fund characteristics in previous quarter.

$$\Delta_{3m}ESG_{i,q} = \beta_0 + \beta_1 \mathrm{M}_{i,q-1} + \beta_2\, ESG_{i,q-1} + \beta_3\, TNA_{i,q-1} + \beta_4\, Flow_{i,q-1} + \beta_5\, Turnover_{i,q-1} + \beta_6\, Expense_{i,q-1} + \beta_7\, Alpha_{i,q-1} + \beta_8\, Load_{i,q-1} + \mu_i\ + \lambda_q\ + \varepsilon_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return), percentage. $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{3m}ESG$ is the change in ESG score during the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. *Flow* is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, *Flow*, $Turnover$, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 12: Regression Results: Investor Respond to portfolio characteristics over and above a fund's past performance

	$Flow_q$
$Winner\ Proportion_{q-1}$	0.0571***
	(5.25)
$Loser\ Proportion_{q-1}$	-0.0436***
	(-3.38)
ESG_{q-1}	-0.0166
	(-1.29)
TNA_{q-1}	-1.3779***
	(-12.07)
$Flow_{q-1}$	0.1434***
	(7.12)
$Turnover_{q-1}$	0.0294
	(0.74)
$Expense_{q-1}$	0.0412
	(0.57)
$Alpha_{q-1}$	0.0299***
	(3.85)
$Load_{q-1}$	0.0166
	(0.84)
Constant	0.0723***
	(9.28)
Fund and Quarter FE	Yes (Fund and Report Date)
Observations	19,348
Adj. R^2	0.2391

Regressions of quarterly flow on *Winner Proportion* and*Loser Proportion*, controlling ESG changes, and fund characteristics in previous quarter.

$$\text{Flow}_{i,q} = \phi_0 + \phi_1 Winner\ Proportion_{i,q-1} + \phi_2 Loser\ Proportion_{i,q-1} + \phi_3 \Delta_{1m} ESG_{i,q-1} + \omega' \mathbf{M}_{i,q-1} + \mu_i + \lambda_q + \varepsilon_{i,q},$$

The sample period is from July 2018 and September 2023. *Winner*(*loser*) *proportion* is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. *ESG* is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. *TNA* is the total net assets at the end of the quarter. *Flow* is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets *Turnover* is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. *TNA*, *Flow*, *Turnover*, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. *t*-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 13: Regression Results: Investor Respond to reported losses

	$Flow_{t+1}$			
$NPOS$	0.1233***	0.1678***		
	(4.23)	(5.94)		
$NPOS_frac$			0.1228***	0.0980***
			(10.13)	(8.25)
$Return$	0.1995***	0.1842***	0.1779***	0.1691***
	(12.85)	(11.82)	(11.39)	(10.75)
TNA		-1.3672***		-1.3327***
		(-25.46)		(-24.83)
$Turnover$		-0.0672***		-0.0658***
		(-4.23)		(-4.14)
$Expense$		0.0007		0.0008
		(0.02)		(0.02)
$Alpha$		0.0443***		0.0453***
		(6.47)		(6.64)
$Load$		0.0158		0.0223
		(0.67)		(0.95)
Constant	-0.0139**	0.0158**	-0.0144**	0.0191***
	(-2.38)	(2.45)	(-2.49)	(3.00)
Fund and Time FE	Yes	Yes	Yes	Yes
Observations	21,549	20,575	21,549	20,575
Adj. R^2	0.2592	0.3071	0.2630	0.3087

Regressions of quarterly flow on $NPOS$ ($NPOS_frac$), the number (fraction) of positive daily returns, controlling returns and fund characteristics in previous quarter.

$$\text{Flow}_{i,q+1} = \phi_0 + \phi_1 NPOS + \omega' \mathbf{M}_{i,q} + \mu_i \ + \lambda_q \ + \varepsilon_{i,q},$$

The sample period is from July 2018 and September 2023. $NPOS$ ($NPOS_frac$) is the number (fraction) of negative daily returns. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. $Alpha$ is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. $Load$ is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. TNA, $Flow$, $Turnover$, $Expense$, $Alpha$ are winsorized at the 1 and 99 percentiles. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 14: Regression Results: $F_{ME} \leq 0 : \Delta TNA$

	ΔTNA_q		
$\Delta Rank\ Gap_{q-1} \times \Delta_{1m} ESG_{q-1}$	-0.0082		
	(-1.27)		
$\Delta BHRG_{q-1} \times \Delta_{1m} ESG_{q-1}$		0.0022	
		(0.29)	
$\Delta Kink_{q-1} \times \Delta_{1m} ESG_{q-1}$			0.0033
			(0.40)
$\Delta_{1m} ESG_{q-1}$	-0.0081	-0.0076	-0.0004
	(-1.26)	(-1.18)	(-0.04)
$\Delta Rank\ Gap_{q-1}$	0.1344		
	(1.52)		
$\Delta BHRG_{q-1}$		-0.8078**	
		(-2.51)	
$\Delta Kink_{q-1}$			0.0034
			(0.47)
ESG_{q-1}	-0.0077	-0.0093	-0.0038
	(-0.61)	(-0.75)	(-0.20)
TNA_{q-1}	-1.8837***	-1.8810***	-2.1303***
	(-18.61)	(-18.68)	(-13.60)
$Turnover_{q-1}$	-0.0122	-0.0155	-0.0172
	(-0.54)	(-0.68)	(-0.34)
$Expense_{q-1}$	-0.2044***	-0.2030***	-0.3920***
	(-2.74)	(-2.73)	(-3.01)
$Alpha_{q-1}$	0.0521***	0.0511***	0.0818***
	(8.12)	(8.01)	(6.63)
$Load_{q-1}$	0.0954***	0.0954***	0.0419*
	(8.41)	(8.33)	(1.93)
$Rank\ Gap_{q-1}$	0.0001		
	(0.01)		
$BHRG_{q-1}$		0.0102	
		(0.59)	
$Kink_{q-1}$			-0.0334**
			(-2.18)
Constant	0.0614***	0.0639***	0.7706***
	(11.17)	(11.43)	(11.10)
Fund and Year FE	Yes	Yes	Yes
Observations	18,699	18,652	6,099
Adj. R^2	0.2529	0.2527	0.2924

Regressions of quarterly funds' TNA on prior ESG changes, misconduct changes(*Rank Gap*, $BHRG$ and $Kink$), and their interactions, controlling ESG rate, fund characteristics, the levels of M in previous quarter.

$$\Delta TNA_{i,q} = \psi_0 + \psi_1 \Delta_{1m} ESG_{i,q-1} \times \mathrm{M}_{i,q-1} + \psi_2 \Delta_{1m} ESG_{i,q-1} + \psi_3 \mathrm{M}_{i,q-1} + \omega' \mathbf{X}_{i,q-1} + \mu_i + \tau_{year} + \delta_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m} BHRG$ and $\Delta_{3m} Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m} ESG$ is ESG score changes over the entire previous quarter, standardized by subtracting the mean and dividing by the standard deviation. $lag_{1m}\Delta_{1m} ESG$ is the change in ESG score during the second month of the previous quarter ($\Delta_{1m} ESG$ lagged for one additional months), standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. $Alpha$ is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. $Load$ is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, $Expense$, $Alpha$ are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 15: Regression Results: $F_{ME} \leq 0 : Flow$

	$Flow_q$		
$\Delta Rank\ Gap_{q-1} \times \Delta_{1m} ESG_{q-1}$	-0.0110*		
	(-1.80)		
$\Delta BHRG_{q-1} \times \Delta_{1m} ESG_{q-1}$		-0.0090	
		(-1.17)	
$\Delta Kink_{q-1} \times \Delta_{1m} ESG_{q-1}$			-0.0049
			(-0.77)
$\Delta_{1m} ESG_{q-1}$	-0.0012	-0.0012	0.0038
	(-0.18)	(-0.18)	(0.42)
$\Delta Rank\ Gap_{q-1}$	0.5373***		
	(6.26)		
$\Delta BHRG_{q-1}$		-0.4173	
		(-1.07)	
$\Delta Kink_{q-1}$			0.0122*
			(1.90)
ESG_{q-1}	-0.0214	-0.0208	-0.0111
	(-1.42)	(-1.38)	(-0.50)
TNA_{q-1}	-1.2119***	-1.2045***	-1.1991***
	(-10.79)	(-10.73)	(-7.74)
$Turnover_{q-1}$	-0.0090	-0.0192	0.0375
	(-0.35)	(-0.75)	(0.65)
$Expense_{q-1}$	0.0196	0.0294	-0.1028
	(0.25)	(0.37)	(-0.96)
$Alpha_{q-1}$	0.0480***	0.0538***	0.0647***
	(6.27)	(7.22)	(4.74)
$Load_{q-1}$	0.0140	0.0136	0.0026
	(0.97)	(0.93)	(0.12)
$Rank\ Gap_{q-1}$	-0.0855***		
	(-6.91)		
$BHRG_{q-1}$		0.0213	
		(1.00)	
$Kink_{q-1}$			-0.0131
			(-1.01)
Constant	0.0325***	0.0342***	0.4800***
	(5.26)	(5.41)	(7.09)
Fund and Year FE	Yes	Yes	Yes
Observations	18,692	18,645	6,096
Adj. R^2	0.2145	0.2073	0.2173

Regressions of quarterly funds' TNA on prior ESG changes, suspicious behavior(*Rank Gap*, $BHRG$ and $Kink$), and their interactions, controlling ESG rate, fund characteristics, the levels of M in previous quarter.

$$Flow_{i,q} = \psi_0 + \psi_1 \Delta_{1m} ESG_{i,q-1} \times \mathrm{M}_{i,q-1} + \psi_2 \Delta_{1m} ESG_{i,q-1} + \psi_3 \mathrm{M}_{i,q-1} + \omega' \mathbf{X}_{i,q-1} + \mu_i + \tau_{year} + \delta_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. $\Delta_{3m} Rank\ Gap$, $\Delta_{3m} BHRG$ and $\Delta_{3m} Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m} ESG$ is ESG score changes over the entire previous quarter, standardized by subtracting the mean and dividing by the standard deviation. $lag_{1m} \Delta_{1m} ESG$ is the change in ESG score during the second month of the previous quarter ($\Delta_{1m} ESG$ lagged for one additional months), standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. $Alpha$ is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. $Load$ is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, $Expense$, $Alpha$ are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 16: Regression Results: $F_{ME} \leq 0 : Return$

	$Return_q$		
$\Delta Rank\ Gap_{q-1} \times \Delta_{1m} ESG_{q-1}$	-0.0107**		
	(-2.10)		
$\Delta BHRG_{q-1} \times \Delta_{1m} ESG_{q-1}$		0.0046	
		(0.74)	
$\Delta Kink_{q-1} \times \Delta_{1m} ESG_{q-1}$			0.0025
			(0.31)
$\Delta_{1m} ESG_{q-1}$	-0.0072	-0.0069	-0.0109
	(-1.39)	(-1.32)	(-1.28)
$\Delta Rank\ Gap_{q-1}$	-0.1367		
	(-1.48)		
$\Delta BHRG_{q-1}$		-0.8077**	
		(-2.87)	
$\Delta Kink_{q-1}$			-0.0047
			(-0.52)
ESG_{q-1}	-0.0016	-0.0019	-0.0031
	(-0.16)	(-0.19)	(-0.15)
TNA_{q-1}	-1.5812***	-1.6040***	-1.9697***
	(-15.06)	(-15.04)	(-11.01)
$Turnover_{q-1}$	0.0047	0.0097	-0.0484
	(0.27)	(0.56)	(-1.13)
$Expense_{q-1}$	-0.2950***	-0.3041***	-0.3392**
	(-4.37)	(-4.47)	(-2.80)
$Alpha_{q-1}$	0.0443***	0.0363***	0.0658***
	(7.02)	(5.56)	(4.60)
$Load_{q-1}$	0.1410***	0.1415***	0.0793***
	(13.09)	(12.67)	(3.41)
$Rank\ Gap_{q-1}$	0.0679***		
	(5.90)		
$BHRG_{q-1}$		-0.0071	
		(-0.53)	
$Kink_{q-1}$			-0.0402**
			(-2.26)
Constant	0.0518***	0.0550***	0.6803***
	(9.31)	(9.42)	(8.92)
Fund and Year FE	Yes	Yes	Yes
Observations	18,693	18,646	6,097
Adj. R^2	0.2613	0.2622	0.2770

Regressions of quarterly funds' TNA on prior ESG changes, suspicious behavior(*Rank Gap*, $BHRG$ and $Kink$), and their interactions, controlling ESG rate, fund characteristics, the levels of M in previous quarter.

$$Return_{i,q} = \psi_0 + \psi_1 \Delta_{1m} ESG_{i,q-1} \times \mathrm{M}_{i,q-1} + \psi_2 \Delta_{1m} ESG_{i,q-1} + \psi_3 \mathrm{M}_{i,q-1} + \omega' \mathbf{X}_{i,q-1} + \mu_i + \tau_{year} + \delta_{i,q}.$$

The sample period is from July 2018 and September 2023. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. $\Delta_{3m} Rank\ Gap$, $\Delta_{3m} BHRG$ and $\Delta_{3m} Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m} ESG$ is ESG score changes over the entire previous quarter, standardized by subtracting the mean and dividing by the standard deviation. $lag_{1m} \Delta_{1m} ESG$ is the change in ESG score during the second month of the previous quarter ($\Delta_{1m} ESG$ lagged for one additional months), standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. $Expense$ is the annual expense ratio. $Alpha$ is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. $Load$ is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, $Expense$, $Alpha$ are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 17: Regression Results: Evidence for Performance Pressure

	$Return_q$					
$\Delta_{1m}ESG_{q-1}$	-0.0129***	-0.0133***	-0.0188***			
	(-4.35)	(-4.43)	(-3.85)			
$\Delta_{3m}ESG_{q-1}$				-0.0061**	-0.0063**	-0.0129**
				(-2.09)	(-2.18)	(-2.63)
$\Delta Rank\ Gap_{q-1}$	-0.1450***			-0.1218**		
	(-3.33)			(-2.69)		
$\Delta BHRG_{q-1}$		-0.1128			-0.2134	
		(-0.59)			(-1.23)	
$\Delta Kink_{q-1}$			-0.0024			-0.0025
			(-0.59)			(-0.57)
ESG_{q-1}	0.0025	0.0027	0.0027	0.0027	0.0033	0.0031
	(0.43)	(0.48)	(0.26)	(0.42)	(0.52)	(0.26)
TNA_{q-1}	-0.5148***	-0.5217***	-0.5419***	-0.5424***	-0.5519***	-0.6119***
	(-11.85)	(-11.92)	(-7.23)	(-11.20)	(-11.27)	(-7.19)
$Flow_{q-1}$	0.0037	0.0012	0.0101	0.0087	0.0061	0.0210
	(0.79)	(0.25)	(0.91)	(1.82)	(1.27)	(1.83)
$Turnover_{q-1}$	-0.0280**	-0.0268**	-0.0445**	-0.0232**	-0.0237**	-0.0375
	(-2.55)	(-2.42)	(-1.97)	(-2.11)	(-2.15)	(-1.51)
$Expense_{q-1}$	-0.0512**	-0.0557**	-0.0401	-0.0667**	-0.0699**	-0.0439
	(-1.98)	(-2.14)	(-0.85)	(-2.44)	(-2.53)	(-0.87)
$Alpha_{q-1}$	0.0363***	0.0303***	0.0296***	0.0363***	0.0319***	0.0287***
	(7.97)	(6.90)	(3.52)	(7.00)	(6.47)	(3.26)
$Load_{q-1}$	0.0153	0.0132	0.0091	0.0187	0.0167	0.0110
	(1.25)	(1.07)	(0.69)	(1.73)	(1.54)	(0.84)
$Rank\ Gap_{q-1}$	0.0491***			0.0387***		
	(8.30)			(6.16)		
$BHRG_{q-1}$		0.0270***			0.0343***	
		(3.13)			(4.16)	
$Kink_{q-1}$			0.0060			0.0048
			(0.71)			(0.52)
Constant	0.0123***	0.0132***	0.1153***	0.0976***	0.0991***	0.2542***
	(5.18)	(5.39)	(3.76)	(33.90)	(33.36)	(7.09)
Fund & Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,685	18,640	6,097	17,618	17,578	5,659
Adj. R^2	0.8414	0.8407	0.8716	0.8287	0.8285	0.8601

Regressions of subsequent quarterly fund return on ESG changes, controlling ESG rate, fund characteristics, the changes and levels of M in previous quarter.

$$\text{Return}_{i,q} = \theta_0 + \theta_1\, \Delta_{1m}ESG_{i,q-1} + \theta_2\, \Delta \text{M}_{i,q-1} + \gamma' \mathbf{X}_{i,q-1} + \phi_i\ + \rho_q\ + \epsilon_{i,q},$$

The sample period is from July 2018 and September 2023. *Return* is the fund quarterly return.*Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). $Kink$ is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. $\Delta_{3m}Rank\ Gap$, $\Delta_{3m}BHRG$ and $\Delta_{3m}Kink$ are the changes in *Rank Gap*, $BHRG$ and $Kink$ over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. $\Delta_{3m}ESG$ is ESG score changes over the entire previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. $Flow$ is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, $Flow$, $Turnover$, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

Table 18: Regression Results: Rule out Performance Pressure Explanation

Variables	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$	$\Delta Rank\ Gap_q$	$\Delta BHRG_q$	$\Delta Kink_q$
$\Delta_{1m}ESG_{q-1}$	0.0157**	0.0124**	0.0227**			
	(2.66)	(2.16)	(2.32)			
$\Delta_{3m}ESG_{q-1}$				0.0140**	0.0096**	0.0201*
				(2.50)	(1.99)	(1.94)
$Return_q$	-0.1657***	0.0778***	0.0158	-0.1556***	0.0836***	0.0150
	(-27.76)	(8.28)	(1.23)	(-26.20)	(9.09)	(1.16)
$Return_{q-1}$	-0.0439***	-0.0269***	-0.0073	-0.0387***	-0.0278***	-0.0081
	(-8.65)	(-4.58)	(-0.58)	(-7.66)	(-4.81)	(-0.64)
ESG_{q-1}	-0.0058	-0.0164**	-0.0214	-0.0117	-0.0151*	-0.0311
	(-0.59)	(-2.05)	(-1.08)	(-1.12)	(-1.90)	(-1.41)
TNA_{q-1}	0.1968***	0.0836**	-0.1523*	0.1944***	0.0871**	-0.1369
	(4.36)	(2.31)	(-1.82)	(4.03)	(2.30)	(-1.47)
$Flow_{q-1}$	-0.0070	0.0023	0.0045	-0.0084	0.0074	0.0053
	(-1.14)	(0.40)	(0.33)	(-1.34)	(1.24)	(0.37)
$Turnover_{q-1}$	0.0828***	0.0990***	0.0139	0.0763***	0.0908***	0.0231
	(4.94)	(4.69)	(0.39)	(4.69)	(4.48)	(0.62)
$Expense_{q-1}$	-0.0544	-0.0278	0.0050	-0.0335	-0.0219	0.0185
	(-1.31)	(-0.93)	(0.07)	(-0.76)	(-0.73)	(0.22)
$Alpha_{q-1}$	-0.0287***	0.0123*	-0.0048	-0.0295***	0.0166**	-0.0056
	(-5.42)	(1.75)	(-0.42)	(-5.57)	(2.30)	(-0.49)
$Load_{q-1}$	0.0279**	0.0207*	-0.0067	0.0254*	0.0188*	-0.0060
	(2.13)	(1.84)	(-0.23)	(1.93)	(1.74)	(-0.20)
$Rank\ Gap_{q-1}$	-0.8145***			-0.8086***		
	(-108.68)			(-113.31)		
$BHRG_{q-1}$		-0.8531***			-0.8335***	
		(-32.42)			(-33.17)	
$Kink_{q-1}$			-0.8404***			-0.8422***
			(-50.22)			(-48.23)
Constant	-0.0255***	-0.0109***	0.0793**	-0.0188***	-0.0094***	0.0748*
	(-11.16)	(-5.19)	(2.22)	(-6.59)	(-3.88)	(1.88)
Fund and Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,718	18,572	6,019	17,642	17,505	5,646
Adj. R^2	0.5303	0.5398	0.4656	0.5283	0.5366	0.4597

Regressions of quarterly window dressing measures (*Rank Gap*, *BHRG*) and avoiding reporting small losses measure (*Kink*) on ESG changes, controlling performance(*Return*), ESG rate, fund characteristics, and levels of M in previous quarter.

$$\Delta \mathrm{M}_{i,q} = \beta_0 + \beta_1 \Delta ESG_{i,q-1} + \beta_2 \,\mathrm{Return}_{i,q} + \beta_3 \,\mathrm{Return}_{i,q-1} + \omega' \mathbf{X}_{i,q-1} + \tau_i + \eta_{year} + \delta_{i,q}$$

The sample period is from July 2018 and September 2023. *Return* is the fund quarterly return. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap ($BHRG$), in percentage terms, is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). *Kink* is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. Δ_{3m}*Rank Gap*, $\Delta_{3m}BHRG$ and Δ_{3m}*Kink* are the changes in *Rank Gap*, $BHRG$ and *Kink* over the previous quarter, respectively. ESG is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter, standardized by subtracting the mean and dividing by the standard deviation. $\Delta_{3m}ESG$ is ESG score changes over the entire previous quarter, standardized by subtracting the mean and dividing by the standard deviation. TNA is the total net assets at the end of the quarter. *Flow* is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets $Turnover$ is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. $BHRG$, TNA, *Flow*, *Turnover*, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles. t-statistics are shown in parentheses, with standard errors clustered by fund. *, **, and *** denote significant differences from zero at the 10%, 5%, and 1% levels, respectively.

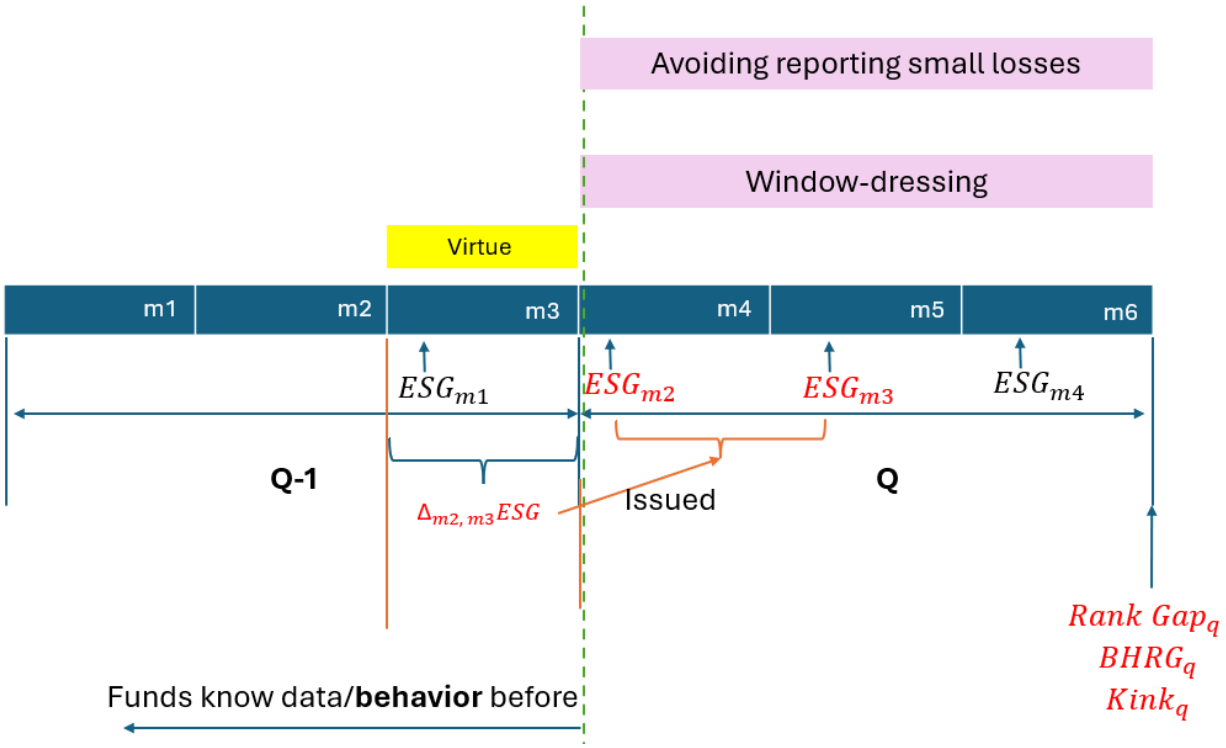
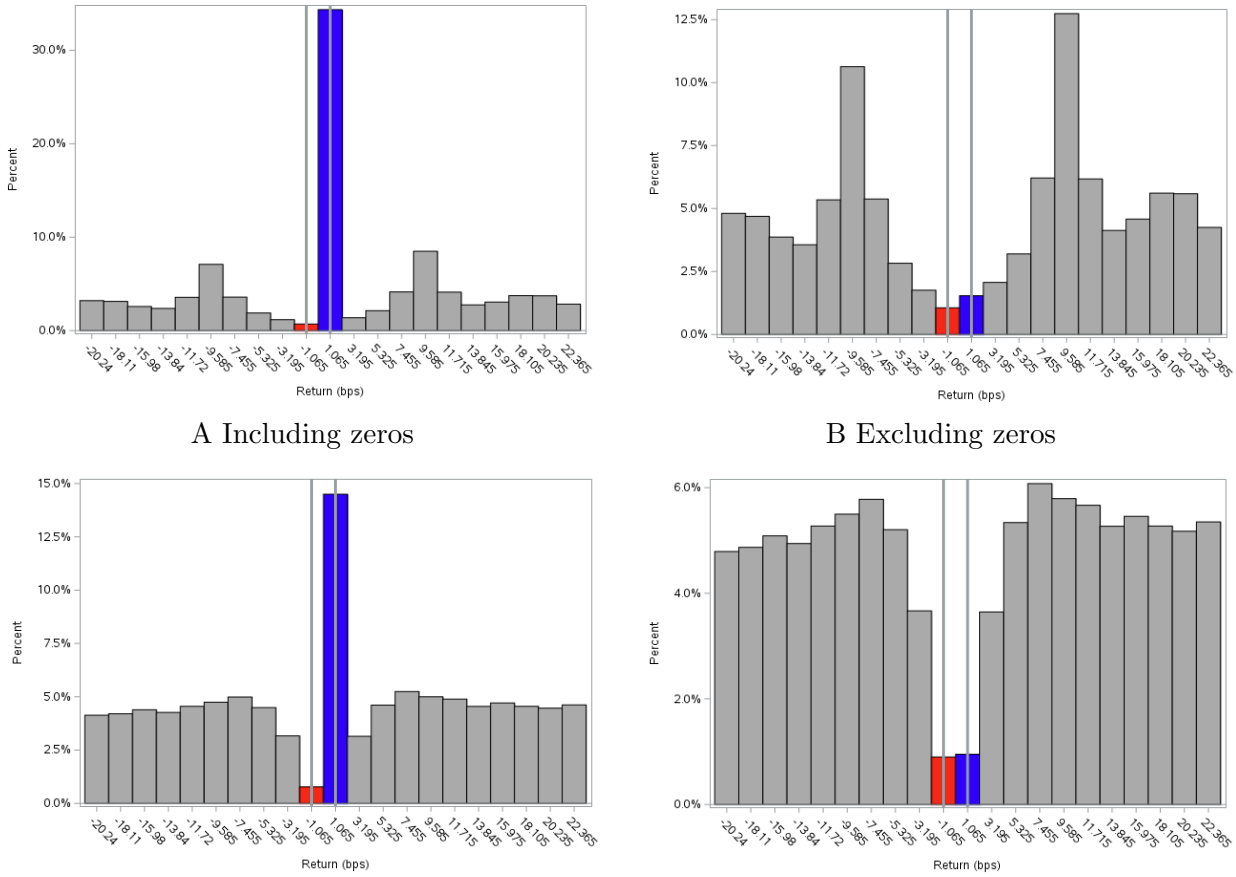


Figure 1: **Timeline.** The figure shows the timing of ESG changes (*virtue* signal), window dressing, and avoiding reporting small losses. I define the virtue signal as the last-month ESG change in the fund's ESG rating prior to each quarter, (e.g., $\Delta_{\text{m2,m3}}ESG$ prior to quarter Q comprising $m4$, $m5$ and $m6$). Before each quarter, managers already know their own portfolio actions and any ESG adjustments, whereas investors do not learn the updated Morningstar rating until *one month and six business days after* quarter end. Thus virtue signal is known to managers but not to investors at the beginning of quarter Q. Window dressing (measured by $RankGap_q$ and $BHRG_q$) and avoiding reporting small losses (measured by $Kink_q$) are then evaluated over the subsequent quarter.



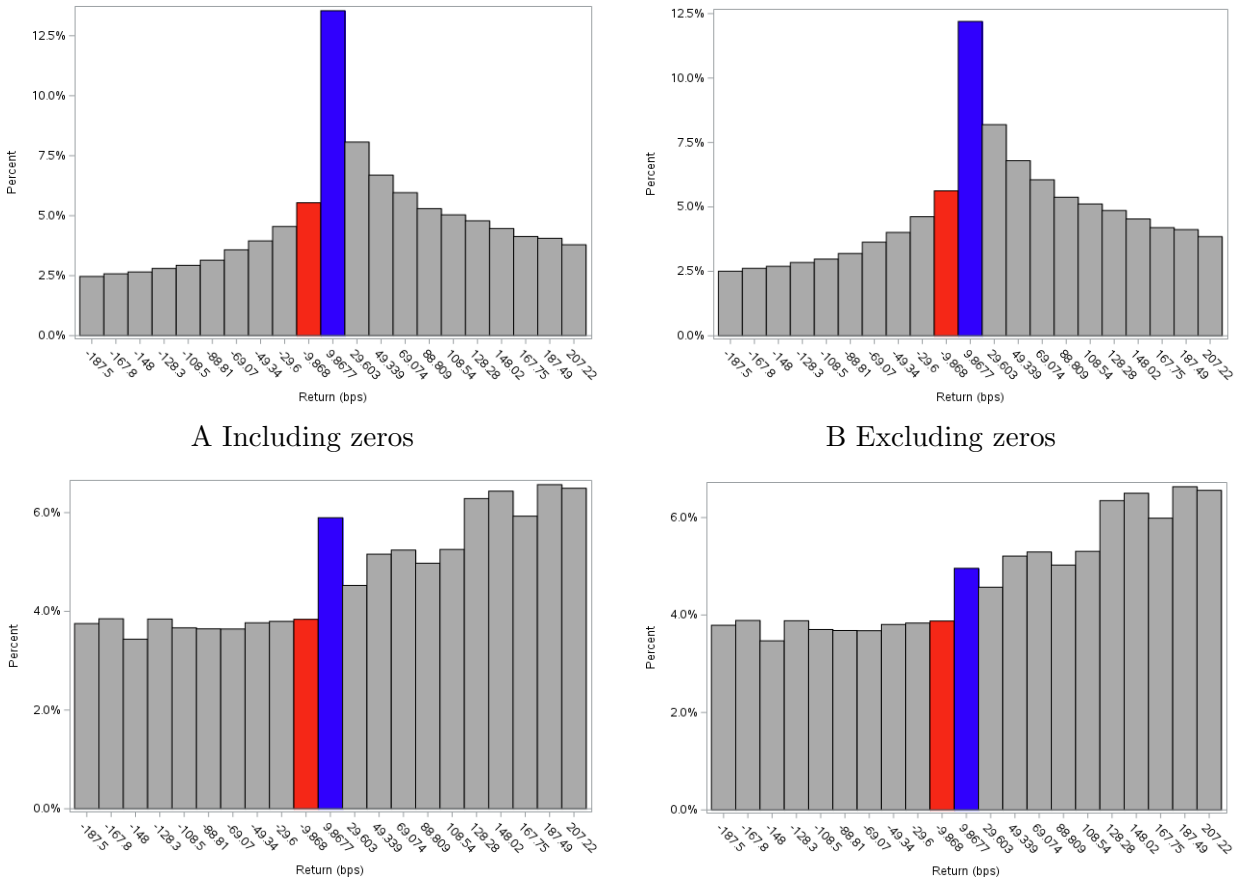
A Including zeros

B Excluding zeros

C Sample incl. zeros

D Sample excl. zeros

Figure 2: **Distribution of daily return at the share-class level, July 2018 - September 2023.** Depicted are four histograms of daily mutual fund share-class level returns using 21 equal-width bins (bin width = 2.13 basis points). Bin are centered on the first bin to the right of zero. Red and blue vertical bars indicate the two bins bracketing zero. Panel A: Full universe (10,298 funds), July 2018–September 2023, including exact zeros. Panel B: Same universe and period, excluding exact zeros. Panel C: Estimation sample (1,407 funds), July 2018–September 2023, including exact zeros. Panel D: Estimation sample, same period, excluding exact zeros. I exclude exactly zero returns for calculating *kink*.



A Including zeros

B Excluding zeros

C Sample incl. zeros

D Sample excl. zeros

Figure 3: **Distribution of monthly return at the share-class level, July 2018 - September 2023.** Depicted are four histograms of monthly mutual fund share-class level returns using 21 equal-width bins (bin width = 19.74 basis points). Bin are centered on the first bin to the right of zero. Red and blue vertical bars indicate the two bins bracketing zero. Panel A: Full universe (10,298 funds), July 2018–September 2023, including exact zeros. Panel B: Same universe and period, excluding exact zeros. Panel C: Estimation sample (1,407 funds), July 2018–September 2023, including exact zeros. Panel D: Estimation sample, same period, excluding exact zeros.

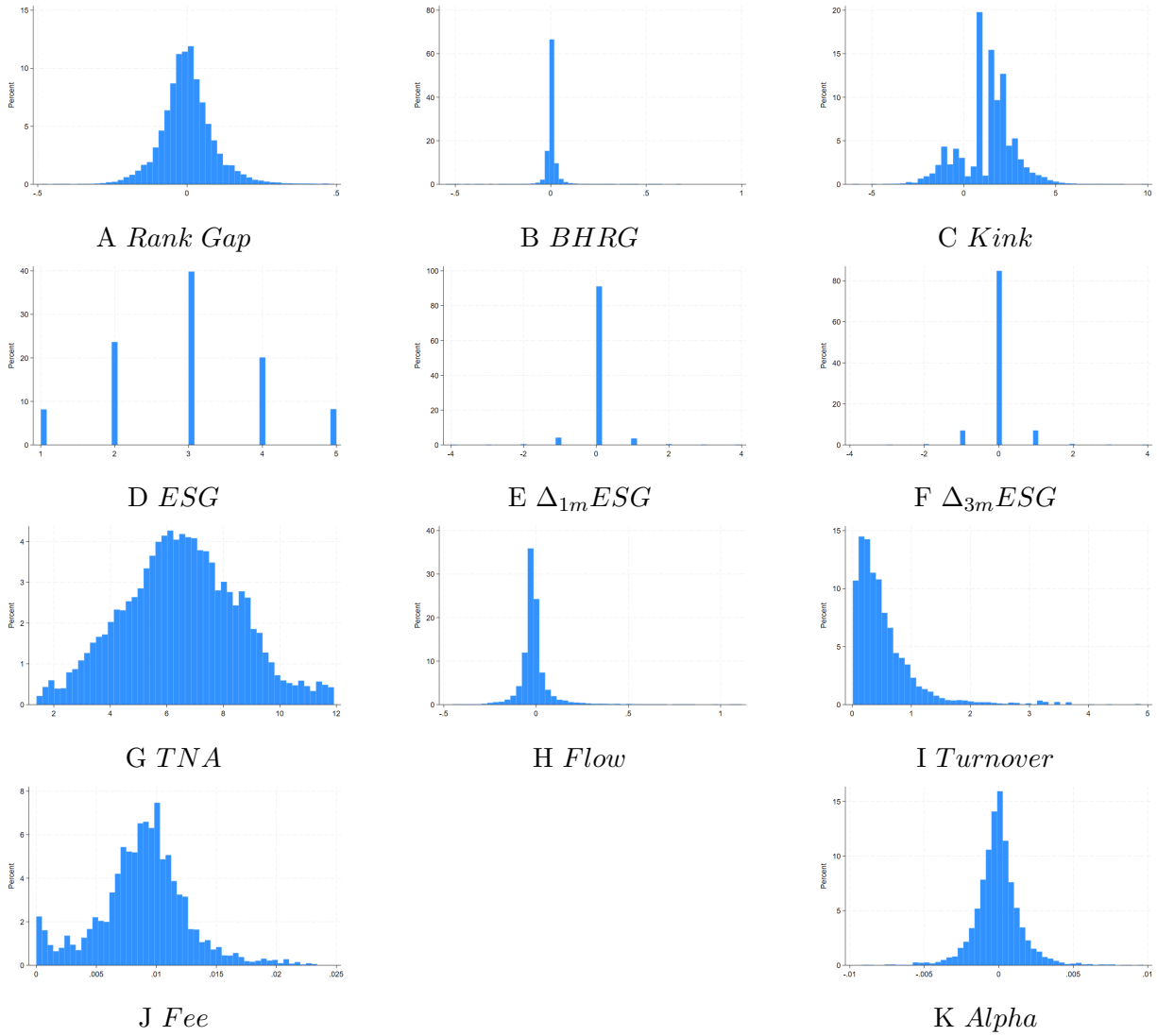
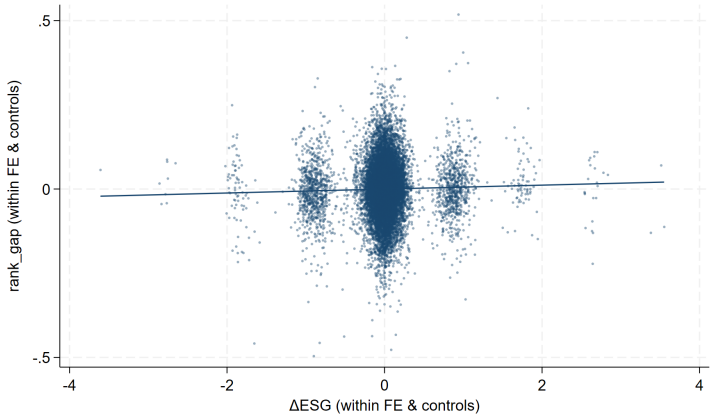
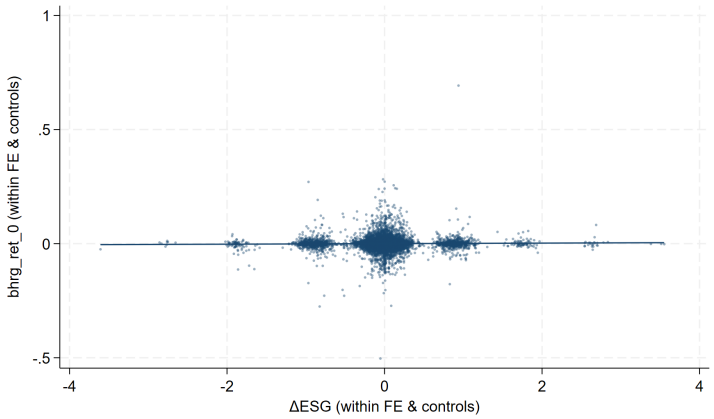


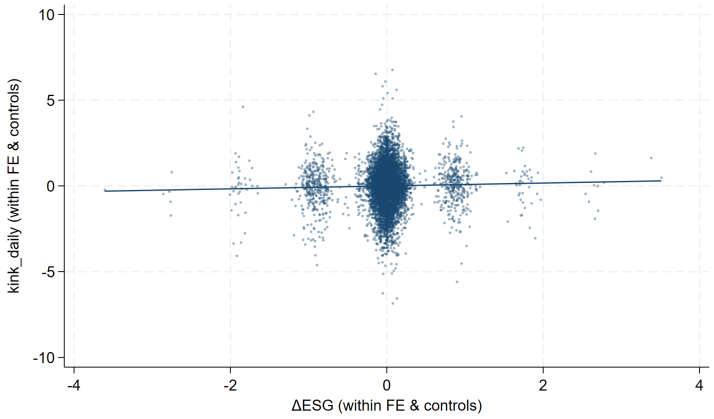
Figure 4: Distribution of key variables, July 2018 - September 2023. My sample includes 21,277 fund-quarter observations for 1,407 mutual funds. *Rank Gap* is defined as the percentile rank of fund performance (performance rank) over a quarter minus the average of the winner rank based on winner proportion and loser rank based on loser proportion over the same quarter. Winner (loser) proportion is the proportion of the fund's assets invested in winning (losing) stocks that achieve good (poor) performance over the quarter, where winning (losing) stocks are those that have returns in the top (bottom) 20% of all stocks in that quarter. Rank Gap is scaled to lie between –0.495 and 0.495, for which I divide the difference in performance rank and the average of the ranks based on winner and loser proportions by 200. Backward holding return gap (*BHRG*) is defined as the quarterly return of a hypothetical portfolio that is assumed to have been invested at the beginning of the quarter in the fund's disclosed end-of quarter holdings after subtracting the expenses (backward holding return, BHR), minus the fund's reported return (actual return). *Kink* is the z-score of a test for a discontinuity at zero in the distribution of a mutual fund share-class's returns measuring avoiding reporting small losses. *ESG* is the ESG score at the end of previous quarter sourced from Morningstar's Sustainability Rating. $\Delta_{1m}ESG$ is the change in ESG score during the last month of the previous quarter. $\Delta_{3m}ESG$ is ESG score changes over the entire previous quarter. TNA is the total net assets at the end of the quarter. *Flow* is dollar fund flows over a quarter scaled by beginning-of-the-quarter assets *Turnover* is the annual turnover ratio. *Expense* is the annual expense ratio. *Alpha* is computed after summing the daily six-factor alphas computed each quarter using daily fund returns. *Load* is a dummy variable defined as 1 if there is any front-end or back-end load and 0 otherwise. *BHRG*, TNA, *Flow*, *Turnover*, *Expense*, *Alpha* are winsorized at the 1 and 99 percentiles.



A *Rank Gap*



B *BHRG*



C *Kink*

Figure 5: **Partial Plots.** Each panel plots the residual of the M (*Rank Gap*, $BHRG$, or $Kink$) against the residual of the $\Delta_{1m}ESG$. Residuals are obtained from regressions that absorb fund and quarter fixed effects and include the standard controls, including ESG, TNA, $Flow$, $Turnover$, $Expense$, $Alpha$, and $Load$ in previous quarter. The solid line in each panel is the OLS fit.