

Beyond Greenwashing: ESG Disclosure Substance, Investor Flows, and Fund Behavior*

Da Chen

Lancaster University Management School

Tao Shu

Chinese University of Hong Kong, Shenzhen & ABFER

Chelsea Yaqiong Yao

Lancaster University Management School

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Da Chen, PhD candidate in Finance, Department of Accounting and Finance, Lancaster University Management School, Lancaster, LA1 4YX, UK. Email address: d.chen6@lancaster.ac.uk.

Tao Shu, Presidential Chair Professor of Finance, School of Management and Economics, Chinese University of Hong Kong, Shenzhen and ABFER. Email address: shutao@cuhk.edu.cn.

Chelsea Yao, Associate Professor, Department of Accounting and Finance, Lancaster University Management School, Lancaster, LA1 4YX, UK. Email address: chelsea.yao@lancaster.ac.uk.

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Abstract: We examine how the substance of ESG disclosures in mutual fund shareholder letters affects investor flows and fund behavior. ESG disclosure is associated with higher fund flows, despite no overall improvement in portfolio ESG scores, a pattern suggestive of greenwashing. However, the average effect masks sharp heterogeneity. Only *Opportunistic* ESG disclosures (those emphasizing financial value) attract flows, consistent with investors' value seeking preferences. By contrast, *Impact* (values-motivated) ESG disclosures do not increase flows but lead to genuine improvements in portfolio ESG scores, while *Opportunistic* disclosures are followed by declines in portfolio ESG scores. These results show that broad concerns about greenwashing are overstated once we account for disclosure content. Finally, we find that *Opportunistic* ESG disclosures amplify outflows if subsequent performance disappoints. Overall, our findings highlight that ESG disclosure content is central to understanding investor responses and equilibrium behavior of fund managers.

Keywords: ESG Disclosure Content, Shareholder Letters, Mutual Funds, Textual Analysis, Greenwashing

JEL classification: G12, G14, G23

“ESG” also encompasses a wide variety of investments and strategies ... I think investors should be able to drill down to see what’s under the hood of these funds.

—SEC Chair Gary Gensler, May 25, 2022

Fund managers increasingly highlight Environmental, Social, and Governance (ESG) considerations in their public communications, yet the economic meaning of those disclosures remains unclear. A common set of ESG terms may be used by managers who integrate ESG factors to improve risk-adjusted returns, impose values-driven portfolio constraints, or simply mention ESG themes without implementing any substantive strategy. This heterogeneity is not trivial: it reflects fundamentally different objective functions and should in turn elicit different investor responses and fund behaviors. However, much of the literature treats ESG disclosure as a binary indicator, without accounting for the underlying objectives it reveals.¹ If these disclosures convey different economic content, then pooling them together under a single “ESG” label obscures both why investors respond and how subsequent fund actions should be interpreted.

We argue that the variation in ESG disclosure reflects strategic communication choices made under economic incentives. Our paper builds on the voluntary disclosure literature, which emphasizes that managers disclose information when the expected benefits (e.g., attracted capital) exceed the potential costs (e.g., reputational losses or capital outflows if promises go unfulfilled) (Milgrom, 1981; Verrecchia, 1983). Applying this framework to ESG disclosure, we examine three central questions: 1) when asset managers discuss ESG, what objective functions are they revealing? 2) do investors respond differently to disclosures that reflect different ESG objectives? and 3) do asset managers subsequently take actions consistent with their stated ESG objectives?

¹ We summarize the literature in Section 1.

We believe that distinguishing among the content and objectives of ESG disclosures provides a more precise lens through which to understand fund disclosure incentives, investor behavior, and greenwashing.

We study these questions in the setting of mutual fund shareholder reports. These reports are a regulated communication channel delivered directly to investors, but the shareholder letter within the report provides fund managers with substantial discretion in describing investment strategy and portfolio decisions. Unlike fund prospectuses, shareholder letters are issued frequently and allow managers elaborate on the rationale behind investment decisions, offering insight into how ESG considerations are framed and conveyed in practice. Therefore, this setting enables us to observe discretionary narrative content inside a mandated investor communication. We begin by examining the relation between overall ESG disclosure and subsequent investor flows and fund behavior. More importantly, we then classify ESG disclosures into distinct content categories and test whether these relations vary systematically with stated objectives in the ESG disclosures.

We construct a dataset of 43,523 shareholder letters issued by 2,455 actively managed U.S. domestic equity mutual funds from 2006 to 2024. Applying a fine-tuned BERT model (FINBERT-ESG, Huang et al., 2023), we identify ESG-related content and show that 8,182 of the letters (about 19%) include ESG disclosures. Using event-based regressions with a rich set of controls and fund and time fixed effects, we find that at the aggregate level, ESG disclosure is associated with significantly higher subsequent flows: funds whose letters contain ESG-related content experience 0.4 percentage points higher cumulative flows over the next three months (t -statistic 2.72) and 0.6 percentage points (t -statistic 2.34) over the next six months. This effect corresponds to about 3.6% of the standard deviation of cumulative three-month flows (11.14 percentage points) and exceeds the absolute value of the sample average three-month flow of -0.3 percentage points. Our findings

remain consistent across alternative specifications, including propensity score matching (PSM), additional controls, alternative fixed effects, and falsification tests using pseudo ESG disclosures.

To complement the event-based regression analysis, we conduct a Difference-in-Differences (DID) analysis using the PSM-matched sample and the event window of five months before and after disclosure. To address the concerns with standard DID framework (Baker et al., 2022; Goodman-Bacon, 2021; Sun and Abraham, 2021), we apply the robust Local-Projection DID estimator of Dube et al. (2025).² The results support the parallel trends assumption: we find no evidence of differential pre-trends and observe significantly positive flow effects following the ESG disclosure.

Because prior literature documents widespread greenwashing, defined as a gap between firms' ESG claims and realized actions, we examine whether mutual funds' ESG disclosures are followed by realized ESG outcomes. Using both portfolio firms' ESG scores and emission control, we find no evidence that funds' portfolios become greener after ESG disclosures at the aggregate level, which *appears* to be consistent with concerns about greenwashing.

To understand why investors respond positively to mutual fund ESG disclosures and how fund behavior varies across stated objectives in ESG disclosures, we conduct a granular analysis that accounts for the substantive content of ESG disclosures. We distinguish among disclosures motivated by *value* (enhancing risk-adjusted returns), *values* (nonpecuniary preferences independent of financial outcomes), and no articulated strategy (Starks, 2023).³ Specifically, we classify the ESG content in shareholder letters into four categories: *Opportunistic*, *Exclusionary*,

² LP-DID from Dube et al. (2024) is well-suited for our non-absorbing setting and addresses recent critiques regarding negative weights and the use of already-treated units as controls.

³ For evidence on value- and values-based motivations, see also Edmans (2011), Renneboog et al. (2011), Lins et al. (2017), Krueger et al. (2020), Pedersen et al. (2021), Ilhan et al. (2023), Edmans et al. (2024), Gantchev et al. (2024).

Impact, and *Mention Only*, following the spirit of the SEC’s framework and Abis et al. (2024).⁴

Opportunistic disclosures (22% of ESG-related shareholder letters) emphasize the use of ESG factors to enhance risk-adjusted returns rather than to express intrinsic ESG preferences. *Exclusionary* disclosures (1.5%) emphasize the use of ESG criteria to impose investment constraints, excluding specific sectors or firms (Hong and Kacperczyk, 2009). *Impact* disclosures (8.5%) reflect a dual motivation, balancing financial goals with an explicit intent to create positive ESG outcomes. *Mention Only* disclosures refer to instances in which ESG terms are cited without substantive explanation of how they are integrated into the fund’s investment strategy. These four categories map to the framework of Pedersen et al. (2020), where *Opportunistic* disclosures reflect value-driven motives (“type-A” investors), while *Impact* and *Exclusionary* disclosures are more consistent with values-driven motives (“type-M” investors). The classification is conducted by two independent readers (the authors) who manually read through ESG disclosures in shareholder letters, with cross-checks to ensure consistency. Compared with machine-based methods, this manual approach allows for more accurate classification when a detailed understanding of ESG content and context is required.

Re-estimating our baseline flow regressions with indicators for the four disclosure categories, we find a striking divergence across stated objectives. *Opportunistic* ESG disclosure is followed by a significantly higher flows of 0.8% over the next three months and 1.1% over the next six months. In contrast, the other three types of ESG objectives are not associated with significantly positive subsequent flows. This heterogeneity suggests that the average “ESG disclosure” effect masks substantial variation across stated objectives: investor flows responses

⁴ Our classification is consistent with the three types of ESG funds outlined by the SEC (2022). Abis et al. (2024) adopt a similar categorization and study how ESG disclosures in prospectuses affect ESG ratings.

are motivated primarily by *value* considerations than *values* considerations.

If the observed flow effect is truly driven by ESG disclosure rather than confounding fund characteristics, it should be more pronounced when investor attention to ESG issues is higher. We test this prediction using the Paris Agreement (December 2015), which significantly elevates awareness of climate and sustainability issues among investors. We find that the flow effect of overall ESG disclosure is small and statistically insignificant in the pre-Paris period but becomes large and significant in the post-Paris period. Importantly, the post-Paris increase in flow effect is concentrated in *Opportunistic* disclosure (1.3% in the post-Paris period and essentially zero pre-Paris). These results are consistent with ESG becoming more salient and commercialized following broader market recognition.

We then revisit the interpretation of greenwashing based on overall ESG disclosure. Much of the existing literature infers greenwashing from the *presence* of ESG-related language and then tests whether funds “walk their talk” by examining subsequent portfolio ESG characteristics. Our content-based classification allows for a more precise test by linking each disclosure type with its implied ESG objective. We find sharply divergent patterns post-disclosure ESG outcomes across stated objectives. Funds making *Opportunistic* disclosures subsequently hold portfolios with *lower* ESG scores, whereas funds making *Impact* disclosures exhibit *improvement* in portfolio ESG scores. In contrast, *Mention Only* disclosures show no meaningful changes in ESG outcomes. *Exclusionary* disclosures also show little ESG improvements, likely due to their relative infrequency in our sample. For robustness, we replicate the analysis using portfolio firms’ carbon emissions as an alternative outcome measure and obtain consistent results.

Critically, these outcomes are largely *consistent* with the stated intent embedded in each disclosure type. *Opportunistic* letters explicitly frame ESG as an input to maximize risk-adjusted

returns, not as a commitment to “greening” the portfolio, while *Mention Only* disclosures reference ESG without specifying an implementable strategy. Accordingly, the absence of improved ESG outcomes following these two disclosure types is not necessarily evidence of greenwashing. *Impact* disclosures explicitly emphasize positive ESG outcomes, and the observed improvements in subsequent ESG scores suggest that these funds “walk their talk.” Overall, these results suggest that apparent greenwashing at the aggregate level becomes more nuanced, and likely less prevalent, once the substance of ESG disclosure is taken into account.

Finally, we propose an equilibrium explanation for why not all funds disclose ESG information despite its flow benefits. Managers make voluntary disclosures only when the perceived benefits exceed the proprietary costs (Verrecchia, 1983). As our results indicate, investors’ flow response to ESG disclosures is primarily financially motivated. As a result, if managers make false *Opportunistic* disclosure, it may expose funds to downside flow risk when subsequent financial performance disappoints. We test this mechanism by examining longer-term flows and allowing the flow response to depend on realized post-disclosure fund returns. Consistent with this mechanism, we find a significant moderating effect of fund performance: funds making *Opportunistic* ESG disclosures, relative to their peers, experience *larger* outflows when they deliver poor post-disclosure financial performance. These findings suggest that ESG disclosure can generate flow gains but also entails a state-contingent amplification of outflows when performance disappoints.

This study contributes to the literature on ESG investing and disclosure in several ways. First, we uncover the importance of distinguishing among types of ESG disclosure and show that their implications for fund flows and performance are heterogeneous. Prior studies largely assess the presence of ESG-related terminology in fund discourse (Andrikogiannopoulou et al., 2025;

Cao et al, 2025; Kim and Yoon, 2023), without distinguishing intent or substance. In contrast, we classify ESG disclosure into four categories—*Opportunistic*, *Impact*, *Exclusionary*, and *Mention Only*—and demonstrate that only financially motivated ESG discussions (*Opportunistic* disclosures) result in significant fund inflows. There is an ongoing debate in the sustainable finance literature about whether investor responses reflect value-based motives (e.g., Edmans, 2011; Lins et al., 2017; Pedersen et al., 2021; Edmans et al., 2024; Gantchev et al., 2024) or values-based motives (e.g., Krueger et al., 2020; Renneboog et al., 2011; Ilhan et al., 2023). By directly observing how flows respond to different types of ESG information, we provide evidence consistent with a predominantly value-based motivation.

Second, our content-based approach provides a new perspective on greenwashing. By linking each type of ESG disclosure to subsequent portfolio changes, we find that funds “walk their talk” when the disclosure emphasizes genuine ESG impact, as *Impact* disclosures are followed by measurable improvements in portfolio ESG scores, while *Opportunistic* ESG disclosure are followed by lower ESG scores. This nuanced evidence suggests that aggregate concerns about greenwashing could be overstated once we account for disclosure intent. *Opportunistic* ESG talk was never aimed at improving ESG performance, so lack of improvement is not misleading, while truly impact-focused claims tend to be backed up by action.

Third, we uncover an economic trade-off that helps explain selective ESG disclosure. Even though ESG disclosure (especially value-oriented disclosures) boosts inflows, we show that it comes with a state-contingent cost: funds that make ESG claims suffer significantly larger outflows when their subsequent performance is poor. This downside risk tempers managers’ incentives to tout ESG indiscriminately. Our evidence thus points to an equilibrium in which only certain funds choose to disclose ESG information. This insight connects to classic theories of

voluntary disclosure under uncertainty, where fund managers weigh the benefits of influencing investors against potential proprietary or reputational costs (Milgrom, 1981; Verrecchia, 1983). Our findings highlight how economic incentives drive both the prevalence and form of ESG disclosures in the mutual fund industry.

1. INSTITUTIONAL BACKGROUND

1.1 Mutual Fund ESG Disclosures

Despite extensive literature on sustainable finance and ESG disclosure, relatively little attention has been paid to the actual content of mutual funds' ESG disclosures. Investors increasingly rely on ESG information from asset managers to guide capital allocation, yet the specific content and nature of these disclosures remain unclear. This gap presents challenges for both academic researchers and practitioners seeking to assess the credibility, effectiveness, and implications of ESG-related claims in the asset management industry.

The Securities and Exchange Commission (SEC, 2022) highlights a growing challenge in the mutual fund industry: inconsistent ESG disclosures hinder investors' ability to interpret how funds incorporate ESG considerations into their investment strategies. Such ambiguity has raised concerns about greenwashing by asset managers (Cochardt et al., 2023; Dumitrescu et al., 2023; Kim and Yoon, 2023; Liang et al., 2022; Wu et al., 2020) and fueled ongoing debates over value-versus values-driven investing (Friedman and Ormazabal, 2024; Starks, 2023). Recent regulatory enforcement actions underscore the salience of these issues. For instance, in May 2022, the SEC fined BNY Mellon \$1.5 million for ESG-related misstatements and omissions; in November 2022, it fined Goldman Sachs \$4.0 million for misleading customers about ESG investments.⁵

⁵ For the details of these two cases, see “SEC fines BNY Mellon over ESG in first case of its kind” (*Financial Times*, May 2022) and “Goldman Sachs to pay \$4mn penalty over ESG fund claims” (*Financial Times*,

Prior literature generally analyzes mutual funds' ESG practices using observed actions such as PRI signatory status (Kim and Yoon, 2023; Gibson et al., 2022), ESG-related terminology in fund names (Cremers et al., 2025; van de Beck, 2025), or third-party sustainable ratings of funds and their holdings (Gantchev et al., 2024; Hartzmark and Sussman, 2019). More recently, two studies examine the specific content of mutual fund ESG disclosures. Andrikogiannopoulou et al., (2025) analyze ESG statements in fund prospectuses and identify potential greenwashing by detecting discrepancies between the extent of ESG disclosure and the ESG scores of portfolio holdings. Cao et al., (2025) analyze ESG discussions in fund shareholder letters to detect potential greenwashing and examine the costs and benefits for greenwashers. While both studies provide novel evidence on greenwashing by focusing on the presence of ESG-related terminology in mutual fund disclosures, we examine the substantive content of such disclosures and classify them by the specific ways funds incorporate ESG into their investment strategies. This deeper analysis improves our understanding of mutual fund ESG practices and their effects, as well as how and why investors respond to ESG disclosures.

1.2 Mutual Fund Shareholder Letters

Under section 30(e) of the Investment Company Act of 1940, the SEC requires all registered investment companies to provide semiannual financial reports to their shareholders. These reports, filed as N-CSR (annual) and N-CSRS (semiannual), include information on portfolio composition, fund performance, expenses, and statements of income and balance sheets.

November 2022). Similar concerns have been raised in Europe. The European Union's Sustainable Finance Disclosure Regulation (Regulation EU 2019/2088) states: "It is therefore necessary to address concerns about greenwashing, that is, in particular, the practice of gaining an unfair competitive advantage by recommending a financial product as environmentally friendly or sustainable, when in fact that financial products does not meet basic environmental or other sustainability-related standards." ([https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022R1288R\(01\)\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022R1288R(01))).

Notably, over 89% of these reports include a letter directly addressed to shareholders (Hillert et al., 2024). According to the ICI Shareholder Report Survey, 63% of mutual fund investors read at least some portion of these reports, and more than half read a substantial portion.⁶ Because shareholder letters typically appear at the beginning of the reports, a significant portion of investors are likely to notice and potentially be influenced by their content.

Compared with mutual fund prospectuses, shareholder letters offer several advantages for analyzing mutual funds' ESG disclosure. First, shareholder letters provide a direct communication channel between fund managers and investors and often contain more spontaneous information (Cao et al., 2024). Second, they are issued semiannually, providing more up-to-date insights. Third, their flexible format allows fund managers to elaborate on decisions, including the rationale for holding or divesting specific stocks. For example, the Aspiration Redwood Fund's December 2021 shareholder letter states: "*Research has shown that companies with stronger environmental, social, and governance practices may tend to overperform their peers. That's why the Redwood Fund seeks to marry value to values ...*" Taken together, shareholder letters constitute a valuable source for understanding how fund managers frame and communicate ESG considerations.

2. DATA AND SAMPLE CONSTRUCTION

2.1 Mutual Fund Shareholder Letters

We develop a web crawler to collect certified annual and semiannual shareholder reports — Forms N-CSR and N-CSRS — filed by U.S. mutual fund management companies in the SEC's EDGAR database from 2006 to 2024. Registered investment companies must electronically file Forms N-CSR and NCSRS to the SEC within 10 days of sending the corresponding reports to

⁶ See https://www.ici.org/pubfile_pdf/ppr_18_summary_shareholder.pdf.

shareholders. We obtain 111,009 reports in total. We apply a keyword-search method to extract key information for each document, including the series ID (fund identifier), ticker (share-class identifier), class ID (share-class identifier), Central Index Key (CIK, company identifier), filing date, reporting period end date, company name, and fund name (series name).

Next, we extract shareholder letters from the reports using a three-step approach. First, we identify the likely start and end points of each letter using common phrases. The most frequent markers are “Dear Shareholder” (start) and “Thank you” (end). We identify 26 start phrases and 14 end phrases in total.⁷ Additionally, to account for firm-specific writing styles, we construct firm-specific phrases, such as “Chairman’s letter” and “Management’s discussion”. Second, for reports in which a letter cannot be identified using these markers, we search for a section titled “Management’s Discussion and Analysis of Fund Performance”. Following Hillert et al. (2024), we treat this section as shareholder letter when no standalone letter is present, as some fund managers use it to discuss performance and market conditions. Third, neither of the above approaches yield a letter, we treat Item1 of the filing (i.e., the report to shareholders) as the shareholder letter.⁸ To address outliers from automatic extraction process, we exclude any texts with fewer than 30 words or more than 392,024 words, corresponding to the 1st and 99th-percentiles of letter length.

We merge the shareholder letters from SEC EDGAR with the Center for Research on Security Prices (CRSP) survivorship bias free mutual fund database using the “CRSP_cik_map”

⁷ Other examples of start and end phrases include “Dear investor”, “Dear fellow”, “Note to shareholder”, “Sincerely”, “Yours truly” and “Respectfully”.

⁸ An N-CSR filing typically includes the following items: a report to shareholders (Item 1); the company’s code of ethics (Item 2); the names of the financial experts in the company’s audit committee (Item 3); disclosure of principal accountant fees and services for the previous two fiscal years (Item 4); disclosure of listed registrants or the reason for exemption from the audit committee (Item 5), the firm’s security holdings (Item 6); and disclosure of proxy voting policies (Item 7).

table. We aggregate all share class data to the fund level and conduct our analysis at the fund-letter level, since a single shareholder letter may be associated with multiple funds. As we focus on actively managed domestic U.S. equity mutual funds, we delete ETFs, pensions, annuities, and index funds, following Bessembinder et al. (2023).⁹ Although mutual funds start to file Form N-CSR in 2003, series and class identifiers are not mandatory until 2006. Therefore, our sample period starts from January 2006.

2.2 Identifying ESG-Related Information in Shareholder Letters

To identify ESG-related content in shareholder letters, we employ FINBERT (Huang et al., 2022), a BERT-based model (Devlin et al., 2019) tailored to finance. BERT is a sentence-level language model that typically outperforms traditional NLP approaches, and recent studies have applied BERT-based methods in financial research (e.g., Rajan et al., 2023). Unlike the original BERT model, FINBERT is pretrained on financial disclosures (e.g., 10-Qs, analyst reports, earning call transcripts), generating better performance in financial contexts. We use a fine-tuned variant, FINBERT-ESG, which is trained on over 24,000 manually annotated sentences from firms' ESG and annual reports.¹⁰ This model is specifically designed to identify ESG-related information in financial disclosures and has been successfully applied in recent research (e.g., Campbell et al., 2025).

We process each sentence in the shareholder letter using FINBERT-ESG, which outputs

⁹ Specifically, we exclude exchange traded funds, exchange traded notes (those with CRSP et_flag equal to "F" or "N"), funds that take short positions (with CRSP fund style "EDYS"), commodity funds (with CRSP fund style "EDSC"), real estate funds (with CRSP fund style "EDSR"), hedged funds (with CRSP fund style "EDYH" or Lipper objective code "LSE"), market neutral funds (with CRSP fund style "EDYH" or Lipper objective code "EMN") and absolute return funds (with CRSP fund style "EDYH" or Lipper objective code "ABR"). Next, we exclude target date funds with names that contain a four-digit number between 1990 and 2050 and the word "target". Last, we manually check and exclude funds with names that contain "VIX", "Long/Short", "Long-Short", "OTC/Short", "ETF", "ETN", "1.25x", "1.5x", "2x", "2.5x", "3x", or "4x".

¹⁰ For detailed information on the training process, classification definitions, and examples, see: https://www.allenhuang.org/uploads/2/6/5/5/26555246/esg_9-class_descriptions.pdf.

four classification labels, *Environmental*, *Social*, *Governance*, and *None*, along with a score for each label indicating the likelihood that the sentence belongs to the category. A sentence is classified as ESG-related if FINBERT-ESG assigns it to one of the three ESG categories: Environmental, Social, or Governance.

2.3 Fund-Level Variables

Our fund-level variables are drawn from two sources. First, we obtain fund characteristics, including monthly returns, assets under management, and expense ratios from CRSP's Survivorship-Bias-Free U.S. Mutual Fund Database. Following standard practice in the literature (e.g., Sirri and Tufano, 1998), we compute monthly fund flows as growth in assets under management (AUM) net of reinvested returns:

$$Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} \times (1 + R_{i,t})}{TNA_{i,t-1}} \quad (1)$$

where $Flow_{i,t}$ is fund i 's flows in month t , $TNA_{i,t}$ is fund i 's total net assets at the end of month t , and $R_{i,t}$ is the fund's return in month t .

For the second source of fund-level variables, we obtain ESG self-label data from Morningstar. We define self-labelled ESG funds based on Morningstar Sustainable Funds U.S. Landscape Report and extract each fund's inception date and repurpose date. We then compare the shareholder letter's filing date to the fund's repurpose date (or, if unavailable, its inception date) to determine whether the fund is classified as ESG self-labeled at the time of disclosure.

Finally, we merge the two databases using fund tickers and aggregate all data at the fund level. Our final sample spans January 2006 to December 2024 and includes 43,523 events of shareholder letters for 2,455 actively managed domestic U.S. equity mutual funds. Among these shareholder letters, 8,182 (about 19%) contain ESG-related content. Table 1 presents summary

statistics for the characteristics of shareholder letters and associated funds. The variables are consistent with those in existing studies, and detailed definitions are provided in Appendix A.

3. ESG DISCLOSURES IN SHAREHOLDER LETTERS AND FUND FLOWS

Whether mutual funds disclose ESG information reflects a trade-off between the benefits and costs of voluntary disclosure (Verrecchia, 1983). On the benefit side, corporate voluntary disclosure can attract investor attention and increase institutional ownership (Healy, Hutton, and Palepu, 1999).¹¹ In mutual fund context, managers' compensation is primarily determined by the fees they generate, which are closely tied to the assets under management. This structure creates strong incentives for fund managers to attract inflows (Chevalier and Ellison, 1997). To the extent that ESG disclosure in shareholder letters can influence investor demand, managers may have an incentive to disclose ESG-related information to stimulate fund inflows. Consistent with this mechanism, prior research documents several ESG-related signals that are associated with increased fund inflows: becoming a PRI signatory (Kim and Yoon, 2023; Gibson, Glossner et al., 2022), earning high Morningstar Sustainability Ratings (Hartzmark and Sussman, 2019), including ESG disclosures in fund prospectuses (Andrikogiannopoulou et al., 2025), and using ESG-related terminology in fund names (Cremers et al., 2025; van de Beck, 2025).

On the other hand, ESG disclosure in shareholder letters may impose costs. Such disclosures could deter investors who oppose ESG investing or who prioritize short-term financial returns. Recent studies suggest that ESG engagement can negatively affect short-term financial performance (Raghunandan and Rajgopal, 2022), potentially shifting capital toward funds focused on immediate returns. Moreover, ESG disclosure may have no effect on flows if investors view

¹¹ Shareholder litigation against managers for inadequate or untimely disclosures can also encourage funds to increase voluntary disclosure (Skinner, 1994; Healy and Palepu, 2001).

the information as financially immaterial. Taken together, the net effect of ESG disclosure in shareholder letters on fund flows is theoretically ambiguous. Ultimately, whether such ESG disclosure influence investor behavior is an empirical question.

3.1 Baseline Results

We examine how fund flows respond to ESG disclosure in shareholder letters by estimating the following event-level regression:

$$Flow_{i,t+1 \rightarrow t+T} = \beta \times ESG_{i,t} + \gamma \times Controls_{i,t-1} + FE + \varepsilon_{i,t} \quad (2)$$

where the dependent variable is cumulative fund flows over the subsequent three- or six-month period ($T=3$ or 6) following shareholder letter t issued by fund i . The key independent variable, $ESG_{i,t}$, is an indicator equal to 1 if fund i includes ESG-related content in the shareholder letter in month t , and zero otherwise. *Controls* include past six-month performance (cumulative raw return, market-adjusted return, or Carhart alpha), fund risk (squared cumulative raw return over the prior six months), past six-month fund flows, and fund characteristics (fund size, fund age, expense ratio, fund family size, and fund family age). We also include a dummy indicating whether the fund is self-labelled as an ESG in Morningstar's Sustainable Funds U.S. Landscape Report, as well as the length of the shareholder letter. Fund and year-month fixed effects are included to account for fund- and time-specific unobserved heterogeneity, respectively. Detailed definitions of all variables are provided in Appendix A.

Table 2 presents the regression results. Columns (1) to (3) use cumulative flows over the subsequent three months as the dependent variable. The coefficient on *ESG* is positive and significant at the 1% levels across all specifications, indicating that ESG disclosure in shareholder letters is associated with higher subsequent inflows. Economically, funds that disclose ESG information in shareholder letters experience a 0.4 percentage-point increase in cumulative flows

over the following three months, relative to funds that do not. This effect is economically significant: it corresponds to about 3.6% of the standard deviation of cumulative three-month flows (11.14 percentage points) and exceeds the absolute value of the sample average three-month flow of -0.33 percentage points. Columns (4) to (6) use cumulative six-month flows as the dependent variable, showing a 0.6 percentage-point increase in fund flows following ESG-related shareholder letters.

The estimates for the control variables are consistent with prior studies. For example, the coefficient on cumulative Carhart Alpha is positive and statistically significant, in line with the well-documented positive relation between past performance and fund flows (Chevalier and Ellison, 1997). The coefficient on expense ratio is negative and significant, consistent with Barber et al. (2005).

3.2 Robustness Tests

We conduct a series of robustness tests to address the concern that the observed flow effect may be driven by factors unrelated to ESG disclosures. First, funds may use shareholder letters to discuss prior actions or changes in investment strategy, which could independently influence subsequent flows. To control for such effects, we construct a measure of pre-letter portfolio adjustment, defined as the cosine similarity between portfolio weights in quarter $q - 1$ (the most recent portfolio holdings before the letter) and quarter $q - 2$. In Panel A of Table 3, Column (1) adds this measure to the baseline regression. The coefficient on *ESG* remains similar in magnitude and significance, indicating that the flow effect is unlikely to be driven by prior changes in portfolio strategy.

Second, we consider whether the changes in the overall content of shareholder letters beyond ESG disclosures may influence fund flows. Column (2) of Table 3 Panel A adds a control

for content change in shareholder letter, measured as the textual cosine similarity between the focal letter and the previous shareholder letter. This variable captures the degree of textual change and thus reflects the extent of information updating between reporting periods. Including this control in the baseline regression does not materially affect the coefficient on *ESG*, indicating that the flow response is specifically attributable to ESG disclosures rather than general changes in shareholder letters.

Third, we examine whether the flow effect of ESG disclosure is incremental to the overall sentiment of shareholder letters. Prior research shows that fund investors respond to negative tone of shareholder letters (Hillert et al., 2024). Column (3) of Table 3 Panel A adds two sentiment measures: the percentage of positive and negative words in each letter, based on Loughran and McDonald's (2011) dictionary. The coefficient on *ESG* remains positive and significant at the 1% level, suggesting that the flow effect of ESG disclosure is robust after controlling for letter sentiment. For brevity, we do not report the coefficients of control variables. In untabulated results, we find that the average negativity in our sample shareholder letters is 1.95%, and the coefficient on *Negativity* is negative and statistically significant, consistent with Hillert et al.'s (2024) finding that more negative tone predicts lower future flows.

Fourth, we address potential selection and endogeneity concerns using a propensity score matching (PSM) approach, following Hartzmark and Sussman (2019). We implement one-to-one nearest-neighbour matching without replacement to improve covariate balance. For each fund that discloses ESG information in a shareholder letter, we identify a matched fund that issues a shareholder letter in the same quarter but without ESG content. Propensity scores are estimated via logistic regression using Carhart four-factor loadings, cumulative Carhart alpha over the prior six months, cumulative flow over the prior six months, expense ratio, fund size, and fund age.

Treated funds are matched to control funds with the closest propensity scores. Table C1 in Appendix C reports differences in fund characteristics between treated and control funds before and after matching. The results show that after matching, the two groups are well balanced on fund characteristics.

Before conducting regression analysis, we first plot the differences in abnormal fund flows between treated and matched funds surrounding the disclosure dates (Figure 1).¹² The visual evidence supports our baseline results, showing a positive flow response following ESG disclosure in shareholder letters. We then re-estimate Equation (2) using the matched sample with the same set of control variables as our baseline analysis (Column (3) of Table 2). In Panel B of Table 3, Column (1) presents the regression results. The coefficient on *ESG* remains positive and significant at the 1% level, providing further support for our main finding.¹³

Finally, we conduct robustness tests that incorporate additional fixed effects. In Panel B of Table 3, Column (2) adds style fixed effects based on Lipper objective codes from CRSP to mitigate the concern that the ESG flow effect may be driven by style-specific dynamics. Column (3) includes reporting-date fixed effects to account for potential time-specific factors associated with disclosure timing. In Table C3, Panel A of Appendix C, we further introduce fund family fixed effect alongside fund and style fixed effects. The results remain consistent across these alternative specifications, reinforcing the robustness of the ESG flow effect.

3.3 Falsification Tests

To assess whether the observed ESG flow effect could arise from random variation rather

¹² Abnormal fund flows are calculated by taking the regression residuals when regressing flows on fund characteristics and other controls used in Column (3) of Table 2.

¹³ Because PSM estimates can be sensitive to the choice of matching variables (Heckman et al., 1998), we use an alternative set of matching variables to construct the control group. As shown in Table C2 of Appendix C, the results are robust.

than meaningful disclosure content, we implement a placebo test using randomly reassigned *ESG* indicators. Specifically, we randomly permute the *ESG* indicator across fund-month observations within our sample period, generating a variable we refer to as *Placebo ESG*. We then re-estimate the baseline specification from Column (3) of Table 2, replacing *ESG* with *Placebo ESG*. We repeat this procedure 500 times, and the resulting distribution of coefficient estimates are summarized in Figure 2. The red dotted line marks the coefficient estimate on the actual *ESG* indicator in the baseline regression. The placebo estimates are centered around zero and exhibit no systematic relation with subsequent fund flows. Notably, the baseline ESG coefficient lies far to the right of the entire distribution of placebo estimates, confirming that the observed ESG flow effect is unlikely to be driven by chance.

We conduct a falsification test to examine whether the ESG flow effect reflects genuine investor response to ESG content rather than a broader reaction to attention-grabbing language. Specifically, we test whether disclosures on unrelated trending topics, such as AI or crypto, elicit similar flow responses. Specifically, we construct two indicator variables: *AI*, equal to one if a shareholder letter contains AI-related content, and zero otherwise, and *Crypto*, equal to one if a shareholder letter contains crypto-related content, and zero otherwise.¹⁴ In Table C4 of Appendix C, we replace *ESG* with *AI* or *Crypto* in the baseline regression. In both cases, the estimated coefficients are statistically insignificant. In Table C5 of Appendix C, we include *AI* and *Crypto* alongside *ESG* in the baseline model. The coefficient on *ESG* remains positive and statistically significant, while *AI* and *Crypto* remain insignificant. These results

¹⁴ The AI-related key words include artificial intelligence, algorithm, generative AI, deep learning, large language model, robotics, quantum, machine learning, supervised learning, unsupervised learning, neural network, reinforcement learning, automation, data mining, and training data. The crypto-related key words include cryptocurrency, Bitcoin, blockchain, Ethereum, and stablecoin.

suggest that our main findings are not driven by funds’ general propensity to reference trending or attention-grabbing topics in shareholder communications.

3.4 DID Analysis: Parallel Trends and Dynamic Effects

To complement our baseline event-based regression analysis, we conduct a Difference-in-Differences (DID) analysis using the PSM-matched sample. Specifically, we examine a window spanning five months before and after the disclosure date.¹⁵ Our setting differs from the standard DID framework in two important ways. First, ESG disclosure occurs at varying times across funds, resulting in a staggered adoption design. Staggered DID implementations have two well-documented issues: (1) already-treated units may serve as controls, and (2) conventional two-way fixed effects estimators can assign negative or biased weights (Baker et al., 2022; Goodman-Bacon, 2021; Sun and Abraham, 2021). To address these concerns, we use the Local-Projection DID (LP-DID) estimator of Dube et al. (2024), which is specifically designed for staggered adoption settings. Second, ESG disclosure is non-absorbing: a fund may enter, exit, or alternate between treated and untreated states over time.¹⁶ Our empirical strategy explicitly accommodates this dynamic treatment structure.

To assess the parallel trends assumption and evaluate dynamic effects, we report LP-DID estimates at the fund-month level in Table 4. The dependent variable is monthly fund flow. ESG^{Pre} and ESG^{Post} denote pooled estimates for the pre- and post-disclosure periods, respectively, while ESG is an indicator for treated funds. Pre (5) through Pre (2) are indicators for five to two months before disclosure, with Pre (1) excluded to avoid collinearity. Post (1) through Post (5) denote the

¹⁵ This ensures that each event period contains only one shareholder letter for each mutual fund, thereby mitigating the potential influence of subsequent shareholder letter on the current one. Our results remain consistent with longer event windows.

¹⁶ Many studies assume that treatment effects are permanent, which is not applicable in our setting (see Assumption 1 in Callaway and Sant’Anna, 2021, and Section 2 in Sun and Abraham, 2021).

corresponding monthly indicators after disclosure. Columns (1) and (2) present pooled estimates without and with controls, respectively, while Columns (3) and (4) report the corresponding event-study estimates. Across all specifications, the results support the parallel trends assumption. The post-disclosure interaction terms, $ESG \times Post(0)$ through $ESG \times Post(5)$, are consistently positive and significant, consistent with the notion that ESG disclosures attract investor inflows. Figure 3 plots the estimated coefficients for the five months before and after ESG disclosure. Consistent with the parallel trend assumption, there are no statistically significant differences in fund flows between treated and control funds prior to disclosure.

3.5 Greenwashing? Evidence from Post-Disclosure Portfolio Holdings

Greenwashing is widely documented in the literature and is typically defined as a discrepancy between firms' ESG-related claims ("talk") and their actual behavior ("walk"). Following this framework, we examine potential greenwashing by constructing fund-level ESG scores based on portfolio holdings. We then examine how these scores change over the three months following shareholder letters that do or do not include *ESG* content. To implement this test, we re-estimate Equation (2), replacing the dependent variable with the fund-level ESG score.

Table 5 presents the regression results using the overall ESG scores (Column (1)) and the E, S, and G component scores (Columns (2) to (4)). The coefficient on the *ESG* disclosure indicator is statistically insignificant across all specifications, suggesting that funds' portfolios do not become greener after ESG disclosure. In Column (5), we replace the ESG score with average emission reduction score of portfolio firms, which measures a firm's commitment to and effectiveness in reducing environmental emissions. The coefficient on *ESG* remains statistically insignificant. Overall, these results seem to suggest that, at the aggregate level, ESG disclosures in shareholder letters are not associated with subsequent improvements in portfolio ESG

performance, consistent with concerns about greenwashing. However, we revisit this conclusion in Section 5 by conducting a more granular analysis based on the substantive content of mutual funds' ESG disclosures.

4. ESG DISCLOSURE CONTENT: A CLOSER LOOK

We examine the specific content of mutual fund ESG disclosures in shareholder letters to understand why investors respond positively to such disclosures and how fund behavior varies across disclosure types. Investor attention to ESG can be conceptualized along two distinct dimensions: *value* and *values* (Starks, 2023; Friedman and Ormazabal, 2024). On the *value* dimension, investors view ESG integration as a means to enhance risk-adjusted returns (Edmans et al., 2024; Gantchev et al., 2024; Pedersen et al., 2021; Lins et al., 2017; Edmans, 2011). On the *values* dimension, investors may recognize that fund managers are motivated by non-pecuniary preferences or moral considerations that influence investment decisions independently of financial outcomes (Ilhan et al., 2023; Krueger et al., 2020; Renneboog et al., 2011). Therefore, we classify ESG disclosures in shareholder letters into value- and values-oriented categories and investigate their respective effects on fund flows.

4.1 Classifying ESG Disclosures

Anecdotal evidence suggests that ESG disclosure in the investment management industry lacks consistency, making it difficult for investors to assess what ESG-labelled strategies entail. Discrepancies between ESG disclosure and realized outcome have prompted heightened regulatory scrutiny.¹⁷ In 2022, the SEC proposed enhanced ESG disclosure requirements for registered investment companies to protect investors, facilitate efficient capital allocation, and

¹⁷ BNY Mellon was the first mutual fund company fined by the U.S. Securities and Exchange Commission (SEC) for ESG disclosure deficiencies, followed by a similar enforcement action against Goldman Sachs.

ensure alignment between stated ESG strategies and investor expectations. As former SEC Chair Gary Gensler emphasized, investors should be able to “*drill down to see what’s under the hood*” of ESG disclosures, given the substantial heterogeneity in their content and scope.¹⁸

The SEC proposal requires funds to disclose the extent to which ESG factors are incorporated into the investment decision-making process, relative to other considerations. In some cases, ESG considerations are central, such as when funds exclude investments based on explicit ESG criteria and actively engage with portfolio companies to pursue specific ESG objectives. In other cases, ESG considerations play a more limited role, with portfolio construction driven primarily by traditional financial metrics (e.g., price-to-earnings ratios). In line with the spirit of the SEC’s framework, we classify ESG disclosures into four categories, following Abis et al. (2024). These categories are economically distinct in terms of the role ESG information plays in the fund’s objective function.¹⁹

Specifically, we classify ESG disclosure into four categories: *Opportunistic*, *Exclusionary*, *Impact*, and *Mention Only*.²⁰ These categories differ in the extent to which ESG considerations shape the fund’s objective function and investment process:

- *Opportunistic*: ESG factors are used to enhance risk-adjusted returns rather than to express intrinsic ESG preferences. ESG considerations serve as supplemental inputs and may be disregarded when financial performance dominates. Managers may accept ESG risks or negative externalities if they are sufficiently compensated by expected returns.
- *Exclusionary*: ESG criteria are used to impose investment constraints, excluding specific

¹⁸ See the 2022 Statement on ESG Disclosures Proposal by former SEC Chair Gary Gensler at: <https://www.sec.gov/newsroom/speeches-statements/gensler-statement-esg-disclosures-proposal>.

¹⁹ This classification is also consistent with the 2022 Presidential Address of the American Finance Association, which emphasizes the importance of distinguishing between financially motivated considerations and nonpecuniary “values” (Starks, 2023).

²⁰ For detailed information, see <https://www.sec.gov/files/rules/proposed/2022/ia-6034.pdf>.

sectors or firms based on ESG considerations, and portfolio optimization occurs within the restricted investable universe (Hong and Kacperczyk, 2009).

- *Impact*: ESG preferences are directly integrated into portfolio management. Investment decisions reflect both financial objectives and explicit ESG goals, such as reducing carbon emissions or advancing social outcomes
- *Mention Only*: ESG terminology is referenced without any substantive explanation of how it is implemented or incorporated into the investment practice.

These four categories map to the framework of Pedersen et al. (2020).²¹ Funds providing *Opportunistic* ESG disclosures resemble the behavior of type-A (ESG-aware) investors, who have mean-variance preferences and incorporate ESG information solely to improve risk-return tradeoffs. By contrast, funds with *Exclusionary* or *Impact* disclosures are more closely aligned with type-M (ESG-motivated) investors, who not only consider ESG factors but also exhibit a preference for high-ESG assets. *Mention Only* disclosures, by comparison, may reflect mere references to ESG or related market developments, without signaling any preferences or implementation strategy.

Based on these definitions, two independent readers (the authors) manually classify ESG disclosures in shareholder letters into four categories, with cross-checks to ensure consistency.²² The manual approach has several advantages. First, existing textual models are not yet sufficiently developed to generate nuanced classifications of ESG disclosures, particularly when contextual interpretation is required. Second, the flexible and unstructured format of shareholder letters

²¹ Abis et al. (2024) and Yang and Yasuda (2025) employ a similar categorization. They examine the strategy sections of fund prospectuses and investigate how differences in these ESG strategies affect fund-level ESG outcomes.

²² Note that our labels are not mutually exclusive. In a few cases, a letter contains multiple types of ESG disclosures. For example, *impact* disclosure is sometimes accompanied by *exclusionary* disclosure. In this case, both the exclusionary and impact dummies are set to one. As a robustness check, we also construct a mutually exclusive categorization following Abis et al. (2024), and our results remain consistent.

introduces substantial variation in language and style, increasing the risk of bias or misclassification in automated methods.²³ Third, human readers are better equipped to interpret disclosures in a manner consistent with how investors interpret ESG content, making manual classification particularly well suited for studying investor responses to different types of ESG narratives.

Among ESG-related shareholder letters, approximately 22% are classified as *Opportunistic*, 1.5% as *Exclusionary*, 8.5% as *Impact*, and the remainder provide vague ESG references without detailed information (*Mention Only*). Examples for each category are provided in Appendix B. This classification captures heterogeneity in ESG communication, enabling us to identify which types of disclosure are most strongly associated with subsequent investor flows.

4.2 Value or Values? The Flow Effects of Different ESG Information

We explore whether investor responses to ESG disclosure are primarily driven by value-based (risk-return) or values-based (non-pecuniary) motivation. In our classification, *Opportunistic* ESG disclosure represents a value-driven motive because it centers on the risk-return implication of ESG factors. By contrast, *Exclusionary* and *Impact* disclosures reflect values-driven motives, as they explicitly incorporate non-pecuniary ESG preferences into investment decision-making process.

We re-estimate Equation (2) using dummy variables for the four disclosure categories as independent variables. Table 6 presents the regressions of subsequent three-month flows (Columns (1) to (3)) and six-month flows (Columns (4) to (6)). We find a striking divergence across disclosure types. The coefficient on the *Opportunistic* dummy is positive and statistically

²³ For example, some shareholder letters include statements like “The weather is not good”, which do not refer to actual weather but rather to overall market conditions.

significant in all specifications, suggesting that *Opportunistic* ESG disclosure is associated with significantly higher subsequent inflows. In contrast, the *Exclusionary* and *Impact* dummies are largely insignificant across models, with *Impact* negative and only marginally significant in two of the six specifications.²⁴ Taken together, these results suggest that investor flow responses are motivated primarily by *value* considerations rather than *values* considerations. This interpretation is consistent with previous literature arguing that investors incorporate ESG information to improve risk-adjusted returns rather than to express non-pecuniary preferences (Chen et al., 2025; Gantchev et al., 2024). We contribute to this burgeoning literature by providing the first direct evidence that investors respond to value-based ESG disclosures rather than values-based ESG disclosures. Additionally, the coefficient on *Mention* is statistically insignificant across all specifications, suggesting that ESG disclosures without a specific discussion of implementation do not trigger significant investor flow responses.²⁵

4.3 Flow Effects of ESG Disclosure Before and After the Paris Agreement

To further validate that the observed flow effects are attributable specifically to ESG disclosure rather than to other contemporaneous factors or compounding events, we examine whether the flow effects intensify after the Paris Agreement (December 2015). The Paris Agreement marks a pivotal global milestone that significantly elevates awareness of climate and sustainability issues among investors, regulators, and other market participants. If investor flows

²⁴ In Panel B of Table C3 (Appendix C), we include fund style and fund family fixed effects in addition to fund and time fixed effects. The coefficient on the ESG (Opportunistic) dummy remains positive and statistically significant, with a magnitude comparable to that in the baseline specification. These results confirm that our inference is robust to alternative fixed effects structures.

²⁵ One alternative explanation is that the observed effects are driven by ESG-designated funds rather than ESG disclosure per se. To address this concern, we repeat the analyses reported in Tables 2 and 6 after excluding funds identified as self-labelled ESG funds, based on the Morningstar Sustainable Funds U.S. Landscape Report. As shown in Table C6 of Appendix C, the results remain qualitatively unchanged: the coefficient on the ESG (Opportunistic) dummy remains positive and statistically significant. These findings indicate that our main results are not attributable to funds with an explicit ESG mandate.

are indeed driven by ESG disclosure, we would expect the flow effects to be more pronounced in the post-Paris Agreement period.

We divide the sample into pre- and post-Paris Agreement periods and re-estimate Equation (2) using either the *ESG* dummy or the four category dummies as the key independent variables. Table 7 reports the results, where Columns (1) and (2) show that *ESG* is small and statistically insignificant in the pre-Paris Agreement period but becomes large and significant in the post-Paris Agreement period, suggesting that the flow effects of ESG disclosures strengthens in the post-Paris Agreement period.

More importantly, Columns (3) and (4) show that this increase is concentrated in *Opportunistic* ESG disclosure, which attracts significantly more flows in the post-Paris Agreement period, whereas the other three categories remain insignificant. The χ^2 tests confirm that the difference in coefficients between pre- and post-Paris Agreement periods is statistically significant, consistent with ESG disclosures becoming more salient to investors after the Paris Agreement.

5. REVISIT GREENWASHING AND FUND INCENTIVES

5.1 Revisit Greenwashing: ESG Disclosure Categories and Future ESG Performance

In Section 3.5, the results based on overall ESG disclosures suggest potential greenwashing in mutual funds' ESG disclosures. In this section, we examine greenwashing more granularly by evaluating realized ESG outcomes across the four disclosure categories. Specifically, we test whether funds' realized ESG outcomes are consistent with the substantive content of their ESG disclosures.

We repeat the analysis in Table 5, replacing the overall *ESG* indicator with indicator variables for the four disclosure categories. Table 8 shows sharply divergent patterns across disclosure categories. First, the coefficient on *Opportunistic* is negative and statistically significant

in the ESG score regression (Column (1)), suggesting that funds' portfolios become *less* ESG-oriented following value-motivated ESG disclosure. Columns (2) to (4) further show that this decline is driven by lower in E and S scores rather than G scores. Using the portfolio firms' emission control as an alternative outcome (Column (5)), we continue to find a decline in ESG performance following *Opportunistic* ESG disclosures.

Second, the coefficient on *Impact* is positive and marginally insignificant (t -statistic 1.63) in the ESG score regression, and significantly positive in the regressions of E and S scores. These results suggest that funds become more ESG-oriented following values-motivated ESG disclosures. Third, the coefficient on *Mention* is statistically insignificant across all specifications, consistent with the lack of substantive changes in portfolio ESG characteristics when ESG considerations are referenced without meaningful elaboration. Finally, the coefficient on *Exclusionary* is insignificant across all specifications, probably due to the rarity of Exclusionary disclosures in our sample.

Overall, Table 8 shows that realized ESG outcomes vary systematically with the content of funds' ESG disclosures. *Opportunistic* disclosures do not entail commitments to improving ESG outcomes, in line with a primary objective of maximizing financial returns rather than advancing ESG performance. In contrast, *Impact* disclosures are associated with realized improvements in ESG outcomes, consistent with the stated objectives in shareholder letters. Additionally, the muted ESG actions after *Mention Only* ESG disclosures are consistent with the fact that these disclosures do not describe any specific ESG strategies. These divergences underscore the importance of distinguishing among ESG disclosure types when assessing greenwashing, suggesting that greenwashing may be more nuanced, and potentially less pervasive, than indicated by previous studies that do not differentiate disclosure content.

5.2 Benefits and Costs of Voluntary ESG Disclosure

We have shown that ESG-related disclosures in shareholder letters, especially value-motivated ESG disclosures, can generate positive flow effects. This raises a natural question: why don't all mutual funds disclose such information to attract inflows? ESG disclosures can be viewed through the lens of a persuasion game (Diamond, 1985; Milgrom, 1981), in which fund managers selectively release information to influence investor beliefs. Managers make voluntary disclosures only when the perceived benefits exceed the proprietary costs (Verrecchia, 1983). This cost-benefit tradeoff creates incentives for selective or exaggerated disclosure, including greenwashing.

In addition to potential litigation and reputational risks arising from SEC scrutiny,²⁶ managers may face investor backlash when disclosed ESG information fails to translate into realized financial performance, given our earlier evidence that investor responses are financially motivated. Specifically, if a fund signals how to use private ESG information to exploit investment opportunities by making *Opportunistic* ESG disclosure, subsequently investors can verify whether what the “talented” manager’s signal is truthful, that is to say, whether he can deliver superior returns. If the fund subsequently underperforms, the disclosure would involve costs in sense that investors may revise their expectations downward, potentially resulting in outflows. To explore this idea, we construct a dummy variable, $I(Performance_{i,t,t+3} < Med)$, which equals one if the fund’s three-month cumulative performance post-shareholder-letter falls below the sample median, and zero otherwise. We then estimate the following regression:

²⁶ BNY Mellon has been fined \$1.5 million for ESG misstatements and omissions by the US Securities and Exchange Commission (SEC) in May 2022. Goldman Sachs has also been fined \$4.0 million for misleading customers about ESG investment in November 2022.

$$\begin{aligned}
Flow_{i,t+4} = & \beta_1 \times Opportunistic_{i,t} \times I(Performance_{i,t,t+3} < Med) \\
& + \beta_2 \times Exclusionary_{i,t} \times I(Performance_{i,t,t+3} < Med) \\
& + \beta_3 \times Impact_{i,t} \times I(Performance_{i,t,t+3} < Med) \\
& + \beta_4 \times Mention_{i,t} \times I(Performance_{i,t,t+3} < Med) \\
& + \beta_5 \times Opportunistic_{i,t} + \beta_6 \times Exclusionary_{i,t} + \beta_7 \times Impact_{i,t} + \beta_8 \times Mention_{i,t} \\
& + \beta_9 \times I(Performance_{i,t,t+3} < Med) + \gamma Controls_{i,t-1} + FE + \varepsilon_{i,t}
\end{aligned} \tag{3}$$

where the dependent variable is fund flows in the fourth month following the shareholder events. The key independent variables are the interactions of $I(Performance_{i,t,t+3} < Med)$ and the four category indicators of ESG disclosures. The interaction terms capture flow responses in the fourth month conditional on both disclosure type and subsequent performance realization. For robustness, we measure fund performance using raw return, market-adjusted return, and Carhart alpha.

Table 9 reports the regression results. The coefficient on *Opportunistic* is positive and statistically significant, consistent with our previous findings of the flow benefit from Opportunistic ESG disclosure (Table 6). The coefficient on $I(Performance_{i,t,t+3} < Med)$ is significantly negative, consistent with the well-documented relation between poor fund performance and lower subsequent flows. Importantly, the interaction term $Opportunistic \times I(Performance_{i,t,t+3} < Med)$ is negative and statistically significant across all specifications, indicating that funds making *Opportunistic* ESG disclosure experience *larger* outflows when subsequent fund performance falls short of expectations. In other words, *Opportunistic* ESG disclosure amplifies investor sensitivity to underperformance. Taken together, the results are consistent with an equilibrium in which *Opportunistic* disclosure can attract inflows but also expose funds to heightened downside risk when performance disappoints. This tradeoff may help explain why not all funds voluntarily disclose ESG information despite of its potential inflow benefits: fund managers may rationally weight the risk of future outflows against the short-term

gains from disclosure.

Finally, we extend the analysis beyond the one-month window (month $t + 4$) to longer horizons, examining cumulative flows over two-month (months $t + 4$ to $t + 5$), three-month (months $t + 4$ to $t + 6$), and four-month (months $t + 4$ to $t + 7$) windows. Re-estimating the specification from Table 9 over these extended windows, we continue to find that the interaction term, $Opportunistic \times I(Performance_{i,t,t+3} < Med)$, remains negative and statistically significant across all specifications, as shown in Table C7 of Appendix C. These results reinforce the conclusion that *Opportunistic* ESG disclosure increases funds' exposure to performance-related outflow risk over multiple subsequent periods.

6. CONCLUSION

This paper analyzes ESG-related content in mutual fund shareholder letters and its effects on investor capital flows and fund behavior. We find that, on average, funds disclosing ESG information in their shareholder letters subsequently experience higher inflows relative to non-ESG-reporting funds. In the aggregate, these ESG disclosures are not followed by any improvements in the funds' actual portfolio ESG outcomes, which appears consistent with concerns about greenwashing.

However, our deeper analysis reveals important heterogeneity behind the average. When we classify ESG disclosure into different stated objectives, we show that investors respond primarily to ESG messages framed as value-enhancing. Funds making *Opportunistic* ESG disclosures (emphasizing risk-adjusted returns) attract the bulk of the inflows, consistent with investors prioritizing financial performance. In contrast, ESG disclosures driven by non-pecuniary motives (Impact disclosures) do not produce excess inflows, but they are associated with higher subsequent ESG scores in fund portfolios. Meanwhile, *Opportunistic* disclosures are associated

with lower subsequent ESG scores of portfolio firms. This divergence in real outcomes implies that much of that might superficially be labeled as greenwashing at the aggregate level is in fact aligned with the stated objectives of the disclosure: value-oriented ESG talk does not aim to improve ESG metrics, while values-oriented talk does and succeeds.

Finally, we highlight a trade-off that underpins fund managers' disclosure choices. While *Opportunistic* ESG disclosure attracts inflows and boosts asset under management in the short run, it also exposes the fund to greater outflow risk if future performance disappoints, as investors quickly withdraw when expectations are not met. This state-contingent downside risk helps explain why not all funds engage in ESG disclosure despite its flow benefits. In sum, our findings underscore how economic incentives and market feedback loops shape ESG disclosure behavior. The content of ESG communication plays a decisive role in driving investor capital and actual fund actions, indicating that regulatory and investor scrutiny should go beyond generic ESG labels to consider the substance and credibility of ESG claims.

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Figure 1
Residual Flow Difference Before and After Disclosure Date

The figures below show the average difference in residual flows between treated funds (funds with ESG shareholder letters) and their matched controls five months before and after disclosure dates. Residual flows are the regression residuals after regressing flow on fund characteristics used in Column (3) of Table 2. For each event period, differences in residual flows are calculated by subtracting the residual flows of control funds from the residual flows of their treated funds. The dots indicate the average of these differences at each event date. The linear plots and the 95% confidence intervals are obtained by fitting these dots before and after disclosing shareholder letters.

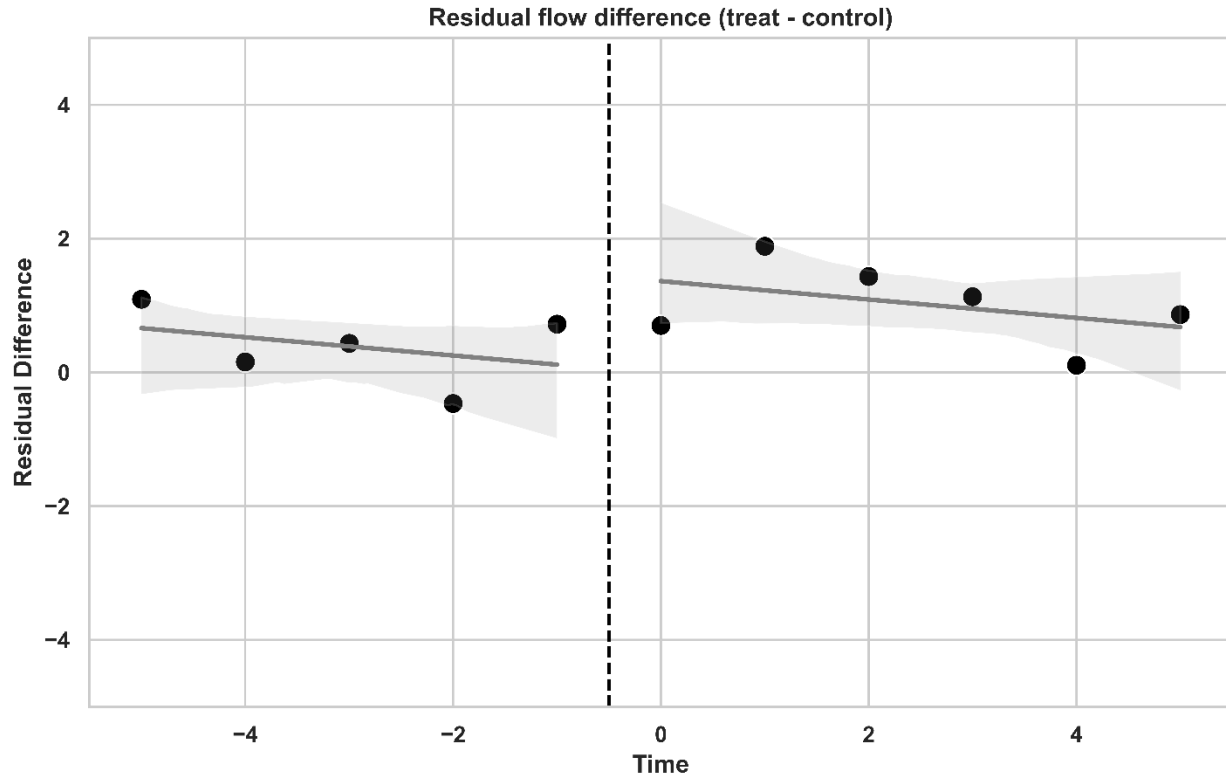


Figure 2
Distribution of Estimated Coefficients from Placebo Tests

This figure plots the distribution of the estimated coefficients on *Placebo ESG*. For each fund-month during our sample period, we randomly shuffle *ESG* and label resulting variable as *Placebo ESG*. We then re-estimate the baseline specification from Column (3) of Table 2, replacing *ESG* with *Placebo ESG*. After repeating this procedure 500 times, we plot the estimates of *Placebo ESG*. The red dashed vertical line represents the true coefficient of 0.004 from the baseline regression, and the superimposed normal density curve is provided for reference.

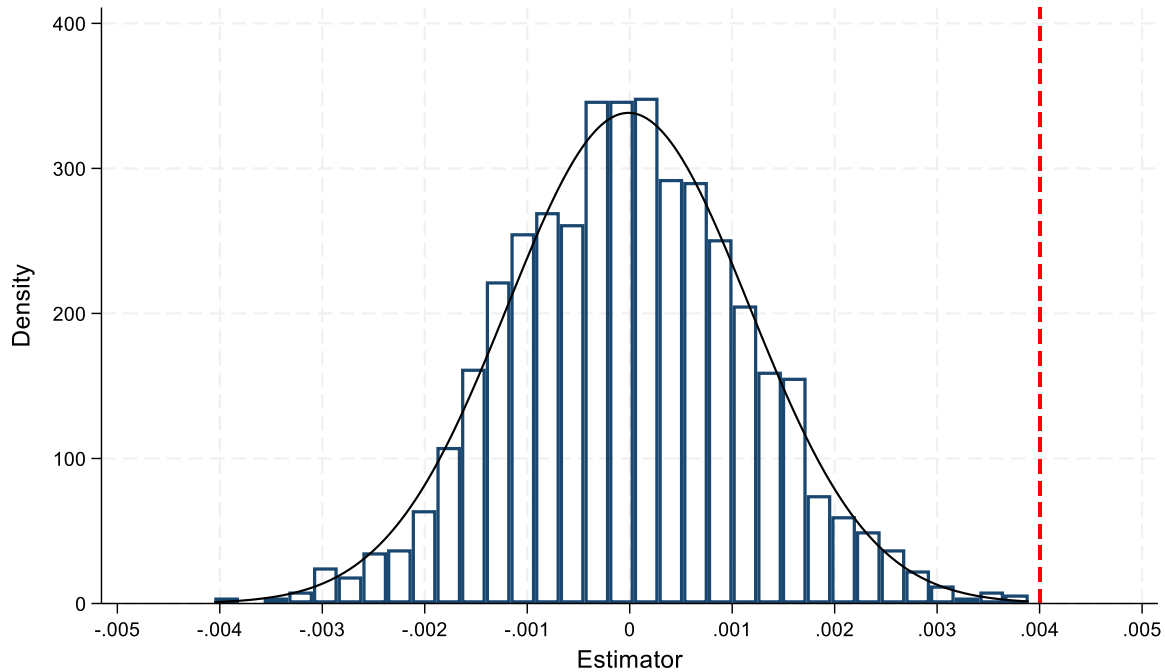


Figure 3
The Dynamic Impact of the ESG Disclosure on Fund Flows

This figure illustrates the dynamic effects of ESG shareholder letters on mutual fund monthly flows using the LP-DID approach of Dube, Girardi, Jorda, and Taylor (2024). The solid dots represent the estimated coefficients, with one month before disclosure ($t = -1$) serving as the reference period. The vertical bars represent two-sided 90% confidence intervals. Panel A presents the dynamic effects without control variables, while panel B presents the results with control variables. In panels C and D, we use not-yet treated and never-treated units as comparison groups respectively. Control variables are the same as used in Column (3) of Table 2. Detailed definitions of all variables are provided in Appendix A. All regressions control for fund and year-month fixed effects, with standard errors clustered at the fund level.

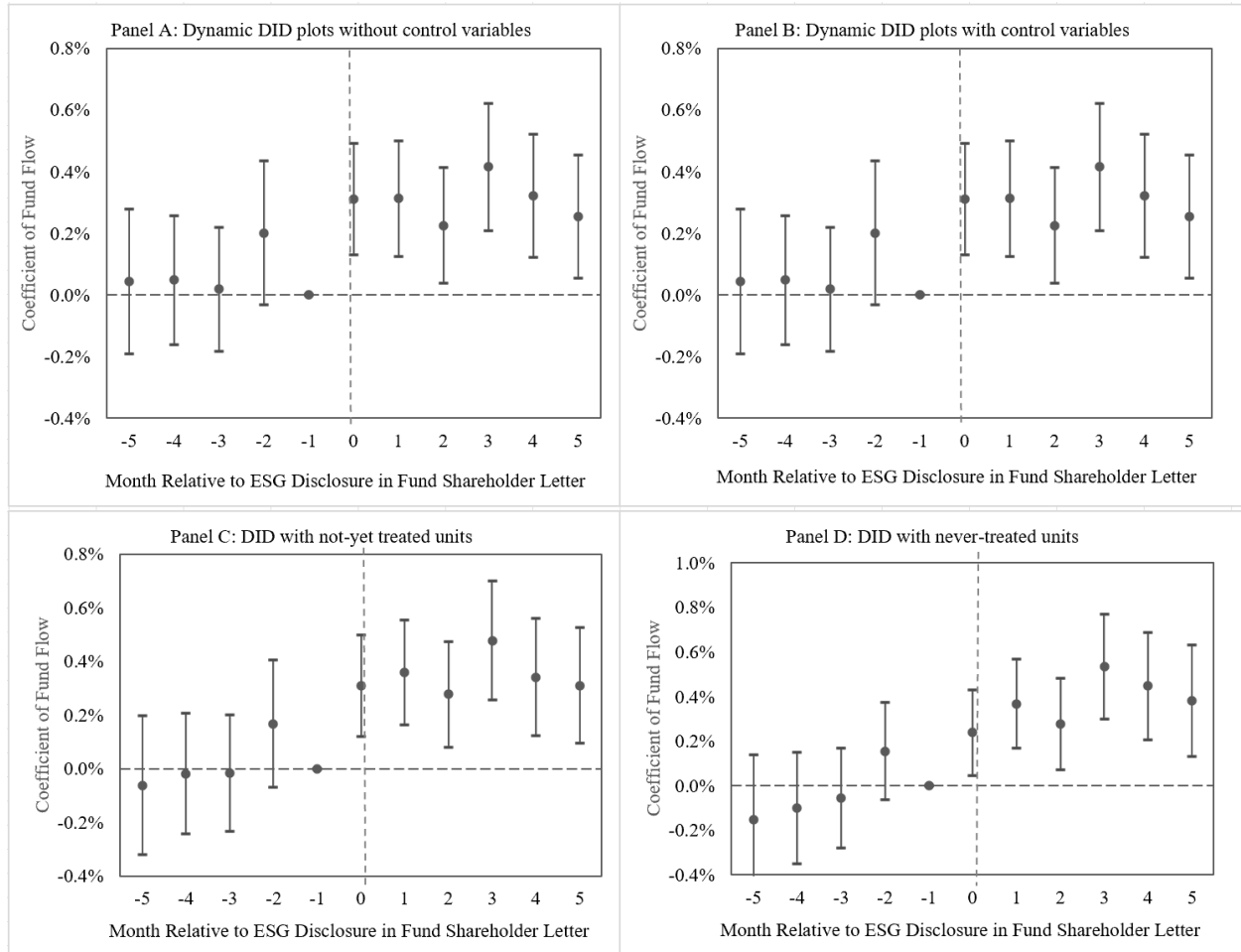


Table 1
Summary Statistics

This table presents the summary statistics of our sample. The sample consists of 43,523 events of shareholder letters from 2,455 U.S. actively managed equity mutual funds, covering the period from January 2006 to December 2024. We report the mean, standard deviation, 25th percentile (Q25), median (Q50), and 75th percentile (Q75) for each variable. Detailed definitions of all variables are provided in Appendix A.

Variables	Obs.	Mean	SD	Q25	Median	Q75
Shareholder Letter Variables						
ESG	43,523	0.19	0.39	0.00	0.00	0.00
Opportunistic	43,523	0.03	0.17	0.00	0.00	0.00
Exclusionary	43,523	0.00	0.04	0.00	0.00	0.00
Impact	43,523	0.01	0.11	0.00	0.00	0.00
Mention	43,523	0.10	0.30	0.00	0.00	0.00
Letter Length	43,523	8.16	1.89	6.72	7.83	9.45
Fund Variables						
Flow _{i,t} (%)	43,523	-0.29	4.03	-1.49	-0.53	0.50
Flow _{i,t+1,t+3} (%)	43,185	-0.33	11.14	-4.36	-1.70	1.44
Flow _{i,t+1,t+6} (%)	43,126	0.57	22.74	-8.50	-3.42	3.10
Ret _{i,t+1,t+6} (%)	43,155	5.01	13.62	-1.50	5.88	12.28
Mkt-adjusted Ret _{i+1,t,t+6} (%)	43,155	-0.71	6.06	-3.56	-0.75	2.05
Carhart Alpha _{i+1,t,t+6} (%)	42,788	-0.87	4.01	-3.02	-0.81	1.31
Risk (%)	43,155	2.11	3.96	0.20	0.76	2.16
Expense Ratio (%)	43,523	1.05	0.36	0.85	1.02	1.25
Fund Size (log)	43,523	5.86	1.97	4.50	5.93	7.25
Fund Age (log)	43,523	2.72	0.70	2.34	2.83	3.20
Family Size (log)	42,767	8.86	2.38	7.55	8.97	10.41
Family Age (log)	42,889	3.31	0.56	3.02	3.35	3.77
Holding similarity	35,729	0.91	0.09	0.89	0.94	0.97
ESG Variables						
ESG Self-Label	43,523	0.02	0.13	0.00	0.00	0.00
Fund-level ESG Score	37,495	0.52	0.14	0.41	0.54	0.64
Fund-level E Score	37,495	0.44	0.19	0.27	0.47	0.60
Fund-level S Score	37,495	0.55	0.14	0.43	0.56	0.66
Fund-level G Score	37,495	0.56	0.10	0.49	0.57	0.64
Fund-level Emission Control	37,495	0.47	0.23	0.27	0.51	0.66

Table 2
ESG Disclosure and Fund Flows

This table presents the baseline results on the flow effects of ESG disclosures in mutual fund shareholder letters. The dependent variables are the three- or six-month cumulative fund flows following shareholder letters. The main independent variable, *ESG*, equals one if the shareholder letter contains ESG-related information, and zero otherwise. Control variables include past performance – measured as raw return (Columns (1) and (4)), market-adjusted return (Columns (2) and (5)), and Carhart four-factor alpha (Columns (3) and (6)) – as well as past risk, past flow, expense ratio, fund size, fund age, family size, family age, ESG self-label, and letter length. Detailed definitions are in Appendix A. The sample period starts from January 2006 to December 2024. All specifications include fund fixed effects and year-month fixed effects. The *t*-statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Future 3-Month Flows			Future 6-Month Flows		
	Raw	Mkt-adj	Alpha	Raw	Mkt-adj	Alpha
	(1)	(2)	(3)	(4)	(5)	(6)
ESG	0.004^{***}	0.004^{***}	0.004^{***}	0.006^{**}	0.006^{**}	0.006^{**}
	(2.71)	(2.69)	(2.72)	(2.36)	(2.34)	(2.34)
Performance	0.192 ^{***}	0.193 ^{***}	0.299 ^{***}	0.380 ^{***}	0.382 ^{***}	0.611 ^{***}
	(11.37)	(11.27)	(16.45)	(16.03)	(15.43)	(19.08)
Risk	0.018	0.063 [*]	0.146 ^{***}	-0.077	0.013	0.177 ^{***}
	(0.48)	(1.80)	(5.09)	(-1.54)	(0.27)	(3.68)
Flow	0.128 ^{***}	0.128 ^{***}	0.127 ^{***}	0.227 ^{***}	0.227 ^{***}	0.226 ^{***}
	(20.69)	(20.67)	(19.89)	(17.03)	(17.03)	(16.38)
Expense	-3.086 ^{***}	-3.090 ^{***}	-3.124 ^{***}	-8.059 ^{***}	-8.068 ^{***}	-8.094 ^{***}
	(-4.92)	(-4.93)	(-4.97)	(-5.78)	(-5.78)	(-5.81)
Fund Size	-0.023 ^{***}	-0.023 ^{***}	-0.022 ^{***}	-0.067 ^{***}	-0.067 ^{***}	-0.065 ^{***}
	(-17.61)	(-17.58)	(-17.14)	(-22.68)	(-22.66)	(-22.13)
Fund Age	-0.024 ^{***}	-0.024 ^{***}	-0.021 ^{***}	-0.052 ^{***}	-0.052 ^{***}	-0.044 ^{***}
	(-5.34)	(-5.35)	(-4.47)	(-4.59)	(-4.59)	(-3.78)
Family Size	0.004 ^{***}	0.004 ^{***}	0.004 ^{***}	0.008 ^{***}	0.008 ^{***}	0.008 ^{***}
	(3.11)	(3.12)	(3.21)	(2.67)	(2.68)	(2.71)
Family Age	0.001	0.001	0.001	0.016	0.016	0.013
	(0.22)	(0.23)	(0.09)	(1.07)	(1.07)	(0.88)
ESG Fund	0.001	0.001	-0.000	0.016	0.017	0.016
	(0.07)	(0.11)	(-0.05)	(0.57)	(0.60)	(0.57)
Letter Length	-0.001 [*]	-0.001 [*]	-0.001 [*]	-0.002 ^{***}	-0.002 ^{***}	-0.002 ^{**}
	(-1.95)	(-1.94)	(-1.84)	(-2.62)	(-2.61)	(-2.45)
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	42,169	42,169	41,849	40,666	40,666	40,333
Adj. R ²	0.22	0.22	0.21	0.25	0.25	0.25

Table 3
ESG Disclosure and Fund Flows: Robustness Check

This table reports robustness tests for the baseline results in Table 2. The dependent variable is the cumulative flow over the subsequent three months. The key independent variable, *ESG*, equals one if fund *i*'s shareholder letter at time *t* contains ESG-related information, and zero otherwise. Panel A includes additional control variables. Column (1) adds a measure of pre-letter holding changes, calculated as the cosine similarity of portfolio weights between quarter *q* - 2 and quarter *q* - 1, where *q* - 1 is the most recent portfolio holdings before the shareholder letter, and *q* - 2 is the prior quarter's holdings. Column (2) adds a measure of change in shareholder letter's content relative to the prior letter, calculated as the textual cosine similarity between the focal letter and the previous shareholder letter. Column (3) adds two measures of the positive and negative sentiment of shareholder letter, calculated as the percentage of positive and negative words based on Loughran and McDonald's (2011) dictionary, respectively. Panel B uses alternative specifications. Column (1) uses a propensity score matching sample, constructed using logistic regressions with the following matching variables: Carhart four-factor loadings, cumulative Carhart alpha over the prior six months, cumulative flow over the prior six months, expense ratio, fund size, and fund age. Column (2) imposes category fixed effect and Column (3) includes reporting date fixed effect. Control variables are the same as used in Column (3) of Table 2. The sample period is 2006 to 2024. All specifications include fund fixed effects and year-month fixed effects. The *t*-statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Panel A: Controls for Text and Holding Changes			
Dep. Var	Future 3-Month Flows		
Added Controls	Holding Changes	Letter Content Changes	Control for Sentiment
	(1)	(2)	(3)
ESG	0.004^{***}	0.004^{***}	0.004^{***}
	(2.66)	(2.83)	(2.74)
Controls	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	34,603	40,877	41,849
Adj. R ²	0.21	0.21	0.21
Panel B: Alternative Specifications			
Dep. Var	Future 3-Month Flows		
	Propensity Score Matching	Include Style FE	Use Alternative Time FE
	(1)	(2)	(3)
ESG	0.005^{***}	0.004^{***}	0.004^{***}
	(2.83)	(2.65)	(2.72)
Controls	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Style FE	No	Yes	Yes
Observations	14,860	41,846	41,846
Adj. R ²	0.24	0.21	0.21

Table 4

DiD Analysis: Parallel Trends and Dynamic effects

This table presents dynamic effects of ESG disclosure in shareholder letters on mutual fund flows, using the estimation approach in Dube, Girardi, Jordà and Taylor (2025). The dependent variable is fund i 's flow in month t . ESG^{Pre} and ESG^{Post} are the pooled estimates before and after disclosing ESG shareholder letters respectively. ESG is an indicator variable for mutual funds with ESG-related shareholder letters (treatment group). Pre5 through Pre2 are indicator variables for observations that fall during two through five months prior to the event date. Post1 through Post5 are indicator variables for observations that fall during one through five months after disclosing ESG-related shareholder letter. Columns (1) and (2) report the pooled estimates without and with control variables respectively. Columns (3) and (4) report the event study estimates without and with control variables respectively. Control variables are the same as those used in Column (3) of Table 2. The sample period is from January 2006 to December 2024. Both fund and year-by-month fixed effects are imposed. The t -statistics are based on standard errors clustered at fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Monthly Flows			
	Pooled Estimates		Event Study Estimates	
	(1)	(2)	(3)	(4)
ESG^{Pre}	0.001 (0.66)	0.000 (0.35)		
ESG^{Post}	0.003^{***} (2.92)	0.003^{***} (2.93)		
$ESG \times Pre5$			0.000 (0.30)	-0.000 (-0.10)
$ESG \times Pre4$			0.000 (0.37)	0.000 (0.23)
$ESG \times Pre3$			0.000 (0.15)	0.000 (0.15)
$ESG \times Pre2$			0.002 (1.42)	0.002 (1.35)
$ESG \times Post0$			0.003^{***} (2.82)	0.003^{***} (2.78)
$ESG \times Post1$			0.003^{***} (2.72)	0.003^{***} (2.63)
$ESG \times Post2$			0.002^{**} (1.97)	0.002[*] (1.82)
$ESG \times Post3$			0.004^{***} (3.32)	0.004^{***} (3.26)
$ESG \times Post4$			0.003^{***} (2.63)	0.003^{**} (2.34)
$ESG \times Post5$			0.003^{**} (2.10)	0.003^{**} (2.28)
Controls	No	Yes	No	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	143,319	143,319	143,319	143,319

Table 5
Fund ESG Disclosure and Future ESG Performance

This table presents the regression results for fund-level ESG scores three months after the disclosure of ESG-related shareholder letters. The dependent variables are the future three-month overall ESG score (Column (1)), E score (Column (2)), S score (Column (3)), and G score (Column (4)), and Emission control score (Column (5)), all calculated based on portfolio holding weights. The main independent variable is *ESG*, an indicator variable which equals 1 if the shareholder letter contains ESG-related content. Control variables are the same as those in Column (3) of Table 2. The sample period is from January 2006 to December 2024. All regressions include fund and year-month fixed effects. Standard errors are clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	ESG Score	E Score	S Score	G Score	Emission Control
	(1)	(2)	(3)	(4)	(5)
ESG	-0.001 (-1.00)	-0.001 (-1.31)	-0.000 (-0.53)	-0.001 (-0.90)	-0.002 (-1.46)
Controls	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Observations	36,230	36,230	36,230	36,230	36,230
Adj. R ²	0.93	0.92	0.92	0.83	0.92

Table 6

The Flow Effect of Mutual Fund ESG Disclosure: Subcategory Analysis

This table reports the flow effects of different categories of ESG information disclosed in shareholder letters. ESG content is manually classified into four categories: *Opportunistic*, where ESG information is used primarily as a tool to enhance the risk-return profile; *Exclusionary*, where ESG criteria are applied to restrict trading strategies; *Impact*, where both financial performance and ESG outcomes are emphasized; and *Mention*, where ESG-related terms are mentioned without further explanation. The dependent variables are the cumulative flows over the subsequent three and six months. The key independent variables are the four category indicators. Control variables are the same as those used in Column (3) of Table 2, where past performance is measured as raw return in Columns (1) and (4), market-adjusted return in Columns (2) and (5), and Carhart four-factor alpha in Columns (3) and (6). The sample period is from January 2006 to December 2024. All regressions include fund and year-month fixed effects. The *t*-statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Future 3-month flows			Future 6-month flows		
	Raw	Mkt-adj	Alpha	Raw	Mkt-adj	Alpha
	(1)	(2)	(3)	(4)	(5)	(6)
Opportunistic	0.008*** (2.86)	0.008*** (2.85)	0.008*** (2.81)	0.011** (2.15)	0.011** (2.13)	0.011** (2.15)
Exclusionary	0.008 (0.80)	0.008 (0.78)	0.006 (0.58)	0.012 (0.62)	0.011 (0.60)	0.007 (0.36)
Impact	-0.007* (-1.69)	-0.007* (-1.70)	-0.006 (-1.62)	-0.010 (-1.23)	-0.010 (-1.25)	-0.009 (-1.17)
Mention	0.002 (1.10)	0.002 (1.09)	0.001 (0.94)	0.004 (1.29)	0.004 (1.29)	0.003 (1.09)
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	42,169	42,169	41,849	40,666	40,666	40,333
Adj. R ²	0.22	0.22	0.21	0.25	0.25	0.25

Table 7
ESG Flow Effects Before and After the Paris Agreement

This table reports subsample regressions before and after the Paris Agreement (December 2015). The sample is divided into the pre-Paris Agreement period (before 2016) and the post-Paris Agreement period (2016 onward), and the baseline regressions are re-estimated for each subsample. The dependent variable is the cumulative flow over the subsequent three months. In Columns (1) and (2), the main independent variable is *ESG*, which equals one if fund *i*'s shareholder letter at time *t* contains ESG-related information, and zero otherwise. Columns (3) and (4) report results where the independent variables are indicators for the four categories of ESG information. The χ^2 statistics testing the difference of coefficients on the *ESG* dummy (Columns (1) and (2)) and on the *Opportunistic* dummy (Columns (3) and (4)) are also reported. Control variables are the same as those in Column (3) of Table 2. All regressions include fund and year-month fixed effects. The *t*-statistics are reported in parenthesis which are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Future 3-month flows			
	Pre-Paris	Post-Paris	Pre-Paris	Post-Paris
	(1)	(2)	(3)	(4)
ESG	0.001 (0.27)	0.006*** (3.32)		
Opportunistic			0.000 (0.02)	0.013*** (3.32)
Exclusionary			-0.006 (-0.35)	0.001 (0.14)
Impact			-0.012 (-1.60)	-0.006 (-0.98)
Mention			0.002 (0.54)	0.002 (0.93)
χ^2 test: <i>p</i> -value	0.077		0.024	
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	20,494	19,726	20,494	19,726
Adj. R ²	0.23	0.23	0.23	0.23

Table 8**Fund ESG Disclosure and Future ESG Performance: Subcategory Analysis**

This table presents the regression results for the fund-level ESG scores three months after the disclosure of ESG-related shareholder letters. The sample period is from January 2006 to December 2024. The dependent variables are the future three-month overall ESG score (Column (1)), E score (Column (2)), S score (Column (3)), and G score (Column (4)), and Emission control score (Column (5)), all calculated based on portfolio holding weights. The main independent variables are the four category indicators. Control variables are the same as those in Column (3) of Table 2. All regressions include fund and year-month fixed effects. Standard errors are clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	ESG Score	E Score	S Score	G Score	Emission Control
	(1)	(2)	(3)	(4)	(5)
Opportunistic	-0.003** (-2.08)	-0.005** (-2.36)	-0.004*** (-2.78)	0.000 (0.31)	-0.007*** (-2.76)
Exclusionary	-0.006 (-1.49)	-0.006 (-1.17)	-0.009 (-1.59)	-0.006 (-0.94)	-0.003 (-0.36)
Impact	0.004 (1.63)	0.007* (1.94)	0.006** (2.25)	-0.000 (-0.01)	0.005 (1.27)
Mention	-0.001 (-0.62)	-0.001 (-0.89)	-0.000 (-0.42)	-0.001 (-0.54)	-0.001 (-0.64)
Controls	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Observations	33,911	33,911	33,911	33,911	33,911
Adj. R ²	0.93	0.92	0.92	0.84	0.92

Table 9

Interactive Effects of ESG Disclosures and Fund Performance on Long-Term Flows

This table presents the interactive effects of ESG disclosure and fund performance on long-term fund flows. The sample period is from January 2006 to December 2024. The dependent variable, $Flow_{i,t+4}$, denotes the monthly flow in the fourth month after disclosure. The independent variables are indicators for the four categories of ESG information; $I(Ret_{i,t,t+3} < median)$, an indicator variable equal to one if fund i 's financial performance over the subsequent three months falls below the median, and zero otherwise; and their interaction terms, which capture whether funds with a specific type of ESG disclosure experience larger outflows in the fourth month when their three-month post-disclosure performance is poor. Financial performance over the three months following disclosure is measured by raw return (Column (1)), market-adjusted return (Column (2)), and Carhart alpha (Column (3)). Control variables are the same as in Column (3) of Table 2. All regressions include fund and year-by-month fixed effects. The t -statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Flow _{<i>i,t</i>+4}		
	Raw	Mkt-adj	Alpha
Performance	(1)	(2)	(3)
Opportunistic × $I(Ret_{i,t,t+3} < median)$	-0.003^{***} (-3.36)	-0.003^{***} (-3.07)	-0.002^{**} (-2.13)
Exclusionary× $I(Ret_{i,t,t+3} < median)$	-0.004 (-1.45)	-0.004 (-1.41)	-0.001 (-0.67)
Impact× $I(Ret_{i,t,t+3} < median)$	-0.001 (-0.90)	-0.001 (-0.81)	0.001 (0.93)
Mention× $I(Ret_{i,t,t+3} < median)$	-0.000 (-0.48)	-0.000 (-0.32)	0.001 (1.10)
$I(Ret_{i,t,t+3} < median)$	-0.002 ^{***} (-5.75)	-0.002 ^{***} (-5.66)	-0.001 ^{**} (-2.01)
Opportunistic	0.003 ^{***} (3.14)	0.002 ^{***} (2.99)	0.002 ^{**} (2.42)
Exclusionary	0.001 (0.68)	0.001 (0.63)	-0.000 (-0.16)
Impact	-0.001 (-0.83)	-0.001 (-0.89)	-0.002 [*] (-1.89)
Mention	0.000 (0.87)	0.000 (0.77)	-0.000 (-0.09)
Controls	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	66,658	66,658	66,658
Adj. R ²	0.21	0.21	0.21

Appendix A

Variable Definitions

Variable Name	Definition
ESG Disclosure Data (Source: Edgar)	
ESG	An indicator variable that equals one if a shareholder letter contains at least one ESG-related sentence and zero otherwise. We classify a sentence as ESG-related if FINBERT-ESG assigns it to one of the three ESG labels – Environmental, Social, or Governance.
Opportunistic	An indicator variable, which takes a value of one if shareholder letter contains opportunistic ESG information. Opportunistic ESG information refers to the use of ESG considerations to maximize risk-return profiles rather than any intrinsic ESG preferences
Exclusionary	An indicator variable, which takes a value of one if shareholder letter contains exclusionary ESG information. Exclusionary ESG information refers to optimizing risk-return profiles subject to ESG-related constraints.
Impact	An indicator variable, which takes a value of one if shareholder letter contains impact ESG information. Impact ESG information refers to considering both financial performance and ESG performance.
Mention	An indicator variable, which takes a value of one if shareholder letter contains ESG terms but does not provide any further explanation how they will incorporate such information.
Letter Length	The logarithm of number of words in each shareholder letter
Fund-level data (Source: CRSP, Morningstar, Thomson Reuters)	
Fund size	Fund size is the aggregate value of total net assets (mnav) across all share classes of the same fund. We take the logarithm of fund size. Source: CRSP
Fund returns	The weighted-average of monthly returns (mret) across all share classes. Source: CRSP
Fund risk	Fund risk is calculated as the squared raw return of past six months. Source: CRSP
Flow flows	Fund i's flow at month t is calculated as: $Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} \times (1 + R_{i,t})}{TNA_{i,t-1}}.$ Source: CRSP
Fund age	Fund age is calculated based on the inception date of the oldest fund share class. We take the logarithm of fund age plus 1. Source: CRSP
Expense ratio	The weighted-average of expense ratios (exp_ratio) across all share classes. Source: CRSP
Family Size	Family size is the sum of total net assets of all the managed funds in the family. We take the logarithm of family size. Source: CRSP
Family Age	Family age in months, estimated as the age of the oldest fund in the family. Source: CRSP

Holding Similarity	Holding similarity is measured by the cosine similarity of portfolio weights between quarters t and $t-1$ within the same fund. Source: CRSP and Thomson Reuters
ESG data (Source: Morningstar, Refinitiv, Thomson Reuters)	
ESG Scores	Firm-level ESG scores, which measures the company's ESG performance. We construct fund-level ESG scores by calculating the value-weighted ESG scores of holding stocks. Source: Refinitiv
E/S/G Scores	Firm-level E/S/G pillar scores. We construct fund-level E/S/G scores by calculating the value-weighted E/S/G scores of holding stocks. Source: Refinitiv and Thomson Reuters
Emission Control	Firm-level emission reduction score, which measures a company's commitment and effectiveness towards reducing environmental emissions. We construct fund-level emission scores by calculating the value-weighted emission scores of holding stocks. Source: Refinitiv and Thomson Reuters
ESG Self-Label	An indicator variable which equals one if the fund is labeled as an ESG fund in Morningstar Sustainable Funds U.S. Landscape Report, and zero otherwise. Source: Morningstar
Fama–French and Carhart factors (Source: CRSP and Kenneth French data library)	
MKT	MKT is the monthly return to the market portfolio minus the monthly return of 30-day Treasury bills.
RF	RF is the monthly return of 30-day Treasury bills
SMB	SMB is the difference between the monthly returns on diversified portfolios of small and large stocks.
HML	HML is the difference between the monthly returns on a diversified portfolio of high and low B/M stocks.
UMD	UMD is the difference between the monthly returns on diversified portfolios of winners and losers.
$\beta_{\text{MKT}}, \beta_{\text{HML}}, \beta_{\text{SMB}}, \beta_{\text{MOM}}$	To estimate the fund's monthly betas, we regress the prior 36 months (i.e., month $t - 36$ to month $t - 1$) of fund excess returns (fund returns minus risk-free rate RF) on the factors (MKT, SMB, HML, UMD) to obtain factor loadings. We require at least 12 months of non-missing returns.
CAPM alpha	To estimate the fund's CAPM alpha, we regress the prior 36 months (i.e., month $t-36$ to month $t-1$) of fund excess returns (fund returns minus the risk-free rate) on the market excess return (MKT) to obtain the market beta. We require at least 12 months for non-missing returns. Monthly CAPM alphas are the difference between fund excess returns and the product of market excess return and the estimated market beta obtained over the prior 36 months.

Fama-French 3-factor alpha	To estimate the fund's Fama-French 3-factor alpha, we regress the prior 36 months of fund excess returns on the Fama-French three factors (MKT, SMB and HML) to obtain factor loadings. We require at least 12 months for non-missing returns. Monthly Fama-French 3-factor alpha is the difference between fund excess returns and the product of factor returns and the corresponding estimated factor loadings obtained over the prior 36 months.
Carhart 4-factor Alpha	To estimate the fund's Carhart 4-factor alpha, we regress the prior 36 months of fund excess returns on the Carhart four factors (MKT, SMB, HML, UMD) to obtain factor loadings. We require at least 12 months of non-missing returns. Monthly alphas are the difference between fund excess returns, and the product of factor returns and the corresponding estimated factor loadings estimated over the prior 36 months.

Appendix B

Examples of ESG-Related Shareholder Letters

Fund Name	Filing Date	Type	Content
Capital Advisors Growth Fund	2006-06-30	Opportunistic	The same can be said of alternative energy sources like wind, solar, and conversion technologies (gas-to-liquids; coal-to-liquids and ethanol and bio-diesel produced from agricultural feed stocks). Each of these technologies may hold merit in the long-run , but none represents a near-term solution to the reality that global demand for oil is dangerously close to exceeding the available supply of annual production. ... For now we believe the right side of this trade is to be "long" energy by owning companies who control existing production and reserves of oil, natural gas, and coal , and by avoiding industries whose profitability is most vulnerable to rising fuel costs.
VP capital Appreciation Fund	2021-02-24	Opportunistic	Declining technology costs and growing environmental concerns have created opportunities for utilities to transition power generation from traditional energy sources to renewable sources such as solar and wind. ... However, these transitions will take time and may provide good investment opportunities in the interim in both traditional energy sources and new power technologies .
Schwartz Value Fund	2007-03-02	Exclusionary	We screen out companies based on the guidelines established by our Catholic advisory board. This eliminates from consideration companies related to abortion, pornography, and those that offer their employees non-marital partner benefits, among others.
Epiphany FFV Fund	2015-07-06	Exclusionary	The focus of the screening is to protect the dignity of human life, support and protect employees and their families, and to reasonably safeguard the environment. The screening is consistent with the USCCB Socially Responsible Investment Guidelines . Business practices are screened in four major areas : Life and Family Exclusions, Social Justice, Environmental Record, and Corporate Governance Practices. The screening process first excludes companies with business activities that are prohibited in the life and family exclusions.
Trillium Small Mid Cap Fund	2018-09-06	Impact	We believe this benefits investors, society, and the environment. ... One particular strategy we used this year to hold companies accountable was asking them to set science-based greenhouse gas (GHG) reduction targets We are pleased to report that we have had successful dialogue with Minerals Technologies, whereby the company initiated a formal review of its greatest environmental impacts, and we expect the company to set GHG reduction targets as one outcome of this process.

Boston Common U.S. Equity Fund	2015-12-07	Impact	For the first time in over 20 years of UN negotiations, the upcoming 2015 Paris Climate Conference undertakes an aggressive goal: to achieve a legally binding and universal agreement on climate, with the aim of keeping global warming below 2°C. As you will see in the next section, on this “Road to Paris,” Boston Common is collaborating with others to support a strong climate agreement , one that will include robust goals for targeting greenhouse gas reduction. ... Closer to home, Boston Common became an early signatory to the Montreal Carbon Pledge , a commitment to annually measure and disclose the carbon footprint of our portfolios.
GMO Quality Series Fund	2019-11-01	Mention Only	Pollution control which could in turn affect these companies such companies also may be significantly affected by technological changes in industries focusing on energy pollution control and mitigation of global warming because society s focus on climate change is relatively new the emphasis and direction of governmental policies is subject to significant change and rapid technological change could render even new approaches and products.
Wells Fargo Endeavor Select Fund	2020-09-30	Mention Only	The global spread of the coronavirus led country after country to clamp down on social and business-related activity in order to contain the virus from causing even greater devastation and overwhelming health care systems . This abrupt stoppage of economic activity led to the sharp deceleration of global output, sending economies into a deep contraction.

Appendix C Supplemental Results

Table C1
Effectiveness of Propensity Score Matching

This table reports fund characteristics before and after propensity-score matching using one-to-one neighbor matching without replacement. Panels A and B show mean differences for the matching covariates of treated funds and control funds, before and after the matching, respectively. Treated funds are those funds with ESG information in their shareholder letters, while control funds are defined as issuing a shareholder letter in the same quarter but without ESG content. The sample period is from January 2006 to December 2024. Detailed variable definitions are provided in Appendix A. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Panel A: Before Matching			
	Treated Funds	Control Funds	Difference
β_{MK}	0.994	0.997	-0.003 [*]
β_{SMB}	0.247	0.232	0.014 ^{***}
β_{HML}	0.019	-0.011	0.030 ^{***}
β_{MOM}	-0.003	0.002	-0.004 ^{**}
Carhart Alpha _{i,t-1,t-6}	-0.011	-0.008	-0.003 ^{***}
Flow _{i,t-1,t-6}	0.004	0.006	-0.002
Expense Ratio	0.010	0.011	-0.001 ^{***}
Log(Age)	2.758	2.710	0.049 ^{***}
Log(Size)	5.998	5.830	0.168 ^{***}
Panel B: After Propensity Score Matching			
	Treated Funds	Control Funds	Difference
β_{MK}	0.993	0.992	0.001
β_{SMB}	0.240	0.242	-0.002
β_{HML}	0.015	0.017	-0.002
β_{MOM}	-0.002	-0.003	0.001
Carhart Alpha _{i,t-1,t-6}	-0.010	-0.010	0.000
Flow _{i,t-1,t-6}	-0.000	-0.004	0.004
Expense Ratio	0.010	0.010	0.000
Log(Age)	2.778	2.775	0.003
Log(Size)	6.023	6.004	0.018

Table C2

DID Analysis with Alternative Propensity Score Matching Sample

This table presents the DID analyses using an alternative propensity-score-matched sample. We construct the control group using logistic regressions based on the following matching variables: Carhart four-factor loadings, cumulative Carhart alpha and raw return over the prior six months, cumulative flow over the prior six months, expense ratio, turnover ratio, fund size, and fund age. The dependent variable is fund i 's flow in month t . ESG^{Pre} and ESG^{Post} are the pooled estimates before and after the disclosure of ESG-related shareholder letters, respectively. ESG is an indicator variable for mutual funds with ESG-related shareholder letters (treatment group). Pre5 through Pre2 are indicator variables for observations falling two to five months prior to the event date. Post1 through Post5 are indicator variables for observations falling one to five months after the disclosure of ESG-related shareholder letters. Control variables are the same as those used in Column (3) of Table 2. The sample period is from January 2006 to December 2024. Both fund and year-by-month fixed effects are imposed. The t -statistics are based on standard errors clustered at fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Monthly Flows			
	Pooled Estimates		Event Study Estimates	
	(1)	(2)	(3)	(4)
ESG^{Pre}	0.001 (0.65)	0.000 (0.22)		
ESG^{Post}	0.002** (1.98)	0.002** (2.24)		
$ESG \times Pre5$			-0.000 (-0.17)	-0.001 (-0.63)
$ESG \times Pre4$			0.001 (0.58)	0.000 (0.35)
$ESG \times Pre3$			0.001 (0.62)	0.001 (0.52)
$ESG \times Pre2$			0.002 (1.33)	0.002 (1.22)
$ESG \times Post0$			0.002* (1.76)	0.002* (1.70)
$ESG \times Post1$			0.003** (2.42)	0.003*** (2.68)
$ESG \times Post2$			0.002** (2.04)	0.002** (2.15)
$ESG \times Post3$			0.003** (2.15)	0.003** (2.30)
$ESG \times Post4$			0.002* (1.79)	0.002* (1.94)
$ESG \times Post5$			0.002 (1.34)	0.002* (1.74)
Controls	No	Yes	No	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	141,106	141,106	141,106	141,106

Table C3
ESG Disclosure and Fund Flows with Alternative Fixed Effects

This table reports robust tests using alternative fixed-effects specifications for our baseline regression in Panel A and subcategory regression in Panel B. Column (1) includes fund and category-by-year-month fixed effects 1, while Column (2) includes family and category-by-year-month fixed effects. Column (3) include all fixed effects. The dependent variables are cumulative flows over the subsequent three and six months. In Panel A, the main independent variable is *ESG*, which equals one if fund *i*'s shareholder letter at time *t* contains ESG-related information, and zero otherwise. Panel B reports results using indicator variables for the four categories of ESG information. Control variables are the same as those used in Column (3) of Table 2. The sample period is from January 2006 to December 2024. The *t*-statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level respectively.

Panel A: Overall ESG Disclosure						
Dep. Var.	Future 3-Month Flows			Future 6-Month Flows		
	(1)	(2)	(3)	(4)	(5)	(6)
ESG	0.004*** (3.09)	0.004*** (3.08)	0.004*** (3.05)	0.007** (2.43)	0.007** (2.58)	0.006** (2.32)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	No	Yes	Yes	No	Yes
Family FE	No	Yes	Yes	No	Yes	Yes
Style × Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,305	41,373	41,282	39,807	39,900	39,783
Adj. R ²	0.25	0.23	0.24	0.29	0.25	0.28
Panel B: ESG Disclosure by Category						
Dep. Var.	Future 3-Month Flows			Future 6-Month Flows		
	(1)	(2)	(3)	(4)	(5)	(6)
Opportunistic	0.009*** (2.94)	0.007** (2.45)	0.009*** (2.97)	0.011** (2.06)	0.008 (1.46)	0.012** (2.16)
Exclusionary	0.011 (1.08)	0.015 (1.40)	0.012 (1.07)	0.019 (0.94)	0.029 (1.32)	0.018 (0.88)
Impact	-0.003 (-0.61)	-0.003 (-0.64)	-0.001 (-0.25)	-0.005 (-0.57)	-0.002 (-0.26)	-0.003 (-0.31)
Mention	0.002 (1.07)	0.002 (1.27)	0.002 (1.10)	0.003 (1.01)	0.005 (1.56)	0.004 (1.20)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	No	Yes	Yes	No	Yes
Family FE	No	Yes	Yes	No	Yes	Yes
Style × Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,305	41,373	41,282	39,807	39,900	39,783
Adj. R ²	0.25	0.23	0.24	0.29	0.25	0.28

Table C4
AI and Crypto Disclosure and Fund Flows

This table reports a falsification regression using AI- and crypto-related content as placebo tests. The dependent variables are three- or six-month cumulative fund flows following shareholder letters. In Columns (1) and (3), the main independent variable is *AI*, which equals one if fund *i*'s shareholder letter at time *t* contains AI-related key words—artificial intelligence, algorithm, generative AI, deep learning, large language model, robotics, quantum, machine learning, supervised learning, unsupervised learning, neural network, reinforcement learning, automation, data mining, training data—and zero otherwise. Columns (2) and (4) report results using an indicator variable equal to one if the shareholder letter contains crypto-related key words, including cryptocurrency, Bitcoin, blockchain, Ethereum, stablecoin. Control variables are the same used in Column (3) of Table 2. Detailed definitions are in Appendix A. The sample period is from January 2006 to December 2024. All specifications include fund fixed effects and year-month fixed effects. The *t*-statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Future 3-Month Flows		Future 6-Month Flows	
	(1)	(2)	(3)	(4)
AI	0.001 (0.62)		0.004 (1.22)	
Crypto		0.004 (1.22)		0.010 (1.49)
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	41,849	41,849	40,333	40,333
Adj. R ²	0.21	0.21	0.25	0.25

Table C5

ESG Disclosure and Fund Flows: with the Control for AI and Crypto Disclosure

This table presents regression results on the flow effects of ESG disclosures with additional content controls. The dependent variables are three- or six-month cumulative fund flows following shareholder letters. In Columns (1) and (3), the main independent variable is *ESG*, which equals one if fund *i*'s shareholder letter at time *t* contains ESG-related information, and zero otherwise. Columns (2) and (4) report results using indicator variables for the four categories of ESG information. In addition to the control variables used in Column (3) of Table 2, we include two additional indicator variables that equal to one if the shareholder letter contains AI-related or crypto-related key words, respectively. Detailed definitions are in Appendix A. The sample period is from January 2006 to December 2024. All specifications include fund fixed effects and year-month fixed effects. The *t*-statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Future 3-Month Flows		Future 6-Month Flows	
	(1)	(2)	(3)	(4)
ESG	0.004*** (2.70)		0.006** (2.31)	
Opportunistic		0.008*** (2.80)		0.011** (2.13)
Exclusionary		0.006 (0.58)		0.007 (0.35)
Impact		-0.007 (-1.63)		-0.009 (-1.18)
Mention		0.001 (0.92)		0.003 (1.09)
AI	0.001 (0.52)	0.001 (0.53)	0.004 (1.12)	0.004 (1.15)
Crypto	0.004 (1.18)	0.004 (1.18)	0.010 (1.41)	0.010 (1.40)
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	41,849	41,849	40,333	40,333
Adj. R ²	0.21	0.21	0.25	0.25

Table C6

ESG Disclosure and Fund Flows: Excluding ESG Funds

This table presents regression results on the flow effects of ESG disclosures, by excluding ESG funds based on Morningstar self-labeling. The dependent variables are three- or six-month cumulative fund flows following shareholder letters. In Columns (1) and (3), the main independent variable is *ESG*, which equals one if fund *i*'s shareholder letter at time *t* contains ESG-related information, and zero otherwise. Columns (3) and (4) report results using indicator variables for the four categories of ESG information. Control variables are the same as those used in Column (3) of Table 2. Detailed definitions are in Appendix A. The sample period is from January 2006 to December 2024. All specifications include fund fixed effects and year-month fixed effects. The *t*-statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Future 3-Month Flows		Future 6-Month Flows	
	(1)	(2)	(3)	(4)
ESG	0.004*** (3.01)		0.007*** (2.62)	
Opportunistic		0.008*** (2.91)		0.012** (2.37)
Exclusionary		-0.006 (-0.57)		-0.014 (-0.72)
Impact		-0.006 (-1.22)		-0.007 (-0.80)
Mention		0.002 (1.16)		0.004 (1.16)
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	41,106	41,106	39,626	39,626
Adj. R ²	0.21	0.21	0.24	0.24

Table C7

ESG Disclosures and Fund Performance on Long-Term Flows with Alternative Windows

This table presents robustness tests for the interactive effects of ESG disclosure and fund performance on long-term fund flows using alternative windows. The dependent variable, $Flow_{i,t+4,t+T}$, denotes the cumulative flow from month $t + 4$ through month $t + T$ following the disclosure. The independent variables are indicators for the four categories of ESG information; $I(Ret_{i,t,t+3} < median)$, an indicator variable equal to one if fund i 's financial performance over the subsequent three months falls below the median, and zero otherwise; and their interaction terms, which capture whether funds with a specific type of ESG disclosure experience larger outflows from the fourth month onward when their three-month post-disclosure performance is poor. Financial performance over the three months following disclosure is measured by raw return, market-adjusted return, and Carhart alpha. Control variables are the same as in Column (3) of Table 2. The sample period is from January 2006 to December 2024. All regressions include fund and year-by-month fixed effects. For brevity, only the interaction terms are reported. The t -statistics are based on standard errors clustered at the fund level. Superscripts *, **, and *** indicate statistical significance at 10%, 5% and 1% level (two-tailed), respectively.

Dep. Var.	Flow _{i,t+4,t+5}			Flow _{i,t+4,t+6}			Flow _{i,t+4,t+7}		
Performance	Raw	Mkt-adj	Alpha	Raw	Mkt-adj	Alpha	Raw	Mkt-adj	Alpha
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Opportunistic × $I(Ret_{i,t,t+3} < median)$	-0.004**	-0.004**	-0.003*	-0.006**	-0.005**	-0.005**	-0.012**	-0.012**	-0.010*
	(-2.56)	(-2.19)	(-1.94)	(2.50)	(-2.23)	(-2.12)	(-2.24)	(-2.18)	(-1.89)
Exclusionary× $I(Ret_{i,t,t+3} < median)$	-0.007	-0.006	-0.004	-0.007	-0.006	-0.008	-0.009	-0.009	-0.012
	(-1.12)	(-1.11)	(-0.99)	(-0.80)	(-0.79)	(-1.24)	(-0.82)	(-0.85)	(-1.24)
Impact× $I(Ret_{i,t,t+3} < median)$	-0.003	-0.004	0.002	-0.006	-0.006	0.002	-0.006	-0.006	-0.001
	(-1.27)	(-1.42)	(0.86)	(-1.55)	(-1.58)	(0.42)	(-1.08)	(-1.08)	(-0.21)
Mention× $I(Ret_{i,t,t+3} < median)$	-0.001	-0.001	0.001	-0.001	-0.001	0.001	-0.001	-0.002	-0.000
	(-0.48)	(-0.47)	(0.50)	(-0.72)	(-0.74)	(0.46)	(-0.58)	(-0.80)	(-0.13)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	66,470	66,470	66,470	66,470	66,470	66,470	66,467	66,467	66,467
Adj. R ²	0.30	0.30	0.30	0.35	0.35	0.35	0.24	0.24	0.24