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ESG Everywhere

Michael J. Cooper, Michael Halling, and Bharat Raj Parajuli *

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Abstract

Our findings reveal that ESG is one of the key determinants of mutual fund investment decisions—playing an important role not only for ESG-designated funds but across all categories of mutual funds, i.e. everywhere,—ranking ahead of traditional factors such as momentum and book-to-market ratios. The importance of ESG scores has grown substantially since the adoption of the Paris Agreement in December 2015, reached a peak in 2020, and has dropped since then, most likely in response to rising anti-ESG sentiment. We find that ESG scores have an even greater impact on the portfolio weights of firms from "brown" industries and of funds whose managers exhibit Democratic party leanings. The latter result suggests that our findings are preference-driven. Finally, we document that the return consequences of this reliance on ESG scores have been significantly negative, albeit small in economic terms for the average fund.

JEL classification: G11, G23

Keywords: ESG integration, Mutual Funds, Portfolio Allocation

*Michael J. Cooper (Mike.cooper@utah.edu) is with the David Eccles School of Business, University of Utah, Michael Halling (michael.halling@uni.lu) is with the Department of Finance, University of Luxembourg, and, Bharat Raj Parajuli (raj.parajuli@monash.edu) is with Monash Business School, Monash University.

Total assets under management of the Mutual Fund (MF) industry in the US reached $22.21 trillion at the end of Q4 2021.[1] As MFs allocate a significant amount of capital in the economy, researchers have long been trying to answer what drives their portfolio allocation decisions. Grinblatt, Titman, and Wermers (1995) find that 77 percent of MFs in their sample were momentum investors while Chan, Chen, and Lakonishok (2002) show that MFs prefer growth stocks. Falkenstein (1996) documents that MFs have a significant preference for stocks with high visibility and low transaction costs. In the more recent Literature, Barber, Huang, and Odean (2016) arrive at the conclusion that MF investors are mainly concerned with market beta which is challenged by Li and Rossi (2020) who examine 94 firm characteristics Using machine learning and find that the most critical attributes for MF holdings are momentum and trading frictions.

Traditionally, MF managers made portfolio decisions in the two-dimensional space of risk and return. Maximizing returns while keeping risk tolerable for investors was a typical goal for MF managers. The post-2000s popularity of environment, social, and governance (ESG) considerations and the related push towards requiring businesses to act as responsible citizens arguably added a third dimension into the MF portfolio decision-making process. With the emergence of investors' preference for ESG, many MF managers wanted to incorporate the ESG dimension, in addition to risk and return, into their selection criteria[2]. However, recently (post-2017; increasingly post-2021) an anti-ESG attitude emerged, characterized by state-level legislative bans on ESG investing, such as a Texas' 2021 law prohibiting state pension funds from doing business with financial firms that "boycott" fossil fuel companies and Florida's 2022 decision to ban ESG considerations in state investments.[3]

[1] https://fred.stlouisfed.org/series/BOGZ1LM654090000Q

[2] Of course, ESG characteristics can also be related to or correlated with risk and return considerations. As a consequence, we control for these alternative channels in the empirical analysis using a comprehensive set of variables previously shown to explain the cross-section of returns. For example, Pástor, Stambaugh, and Taylor (2022) show that firms' ESG characteristics are systematically related to traditional risk factors, implying that ESG scores embed exposures that correlate with both expected returns and risk.

[3] Other examples include West Virginia's blacklisting of banks that restrict lending to coal companies. Additionally, the Department of Labor's 2020 rule under the Trump administration sought to limit the use of ESG factors in retirement plan investments (later reversed under Biden), while conservative political figures and think tanks have framed ESG as "woke capitalism," arguing that it prioritizes ideological agendas over

With the rise of pro-ESG investing followed by a growing anti-ESG backlash, it becomes arguably important to examine how characteristics—both traditional cross-sectional predictors and ESG attributes—shape mutual funds' portfolio allocations in this expanded three-dimensional decision space. The related literature offers mixed evidence on the extent to which firm-level ESG ratings influence mutual fund holdings. [4] In this paper, we take a comprehensive look at the relevance of ESG scores relative to the most common firm characteristics known to predict returns—such as momentum, book-to-market, and size—in shaping mutual funds' portfolio allocation decisions.

The advantages of our empirical tests are the considerable sample size relative to the literature, a very granular empirical specification, and a unique way to define ESG vs non-ESG funds. We use Refinitiv for our stock-level ESG data.[5] We choose to use Refinitiv scores as it has one of the most comprehensive ESG databases in the industry, covering 90% of the global market cap (Refinitiv, 2024). It uses a data-driven methodology to avoid subjectivity in the ESG score. It is also widely used in academia. By 2020, the Refinitiv ESG data were referenced in more than 1,200 articles (Muck and Schmidl (2024)). Refinitiv is also one of the ESG score providers that provides a very high level of transparency on the specific weights or the number of indicators that drive the category and pillar scores (OECD (2020)). To study the prevalence of ESG investing, we analyze the universe of funds rather

financial returns. More recently, congressional hearings and state attorney general investigations into asset managers like BlackRock and Vanguard have escalated scrutiny, reflecting a broader push to curb the ESG influence in corporate governance and financial markets.

[4]Some studies find that mutual funds incorporate ESG scores into their allocations (Statman and Glushkov (2016); Petridis, Kiosses, Tampakoudis, and Ben Abdelaziz (2023); Lalthanliana, Singh, Lalzuithangi, et al. (2024); Steen, Moussawi, and Gjolberg (2020); Ceccarelli, Ramelli, and Wagner (2024)). These studies document ESG tilts, particularly among ESG-designated funds or in response to new ESG ratings. Other research questions whether ESG is systematically incorporated, citing weak or inconsistent ESG alignment in mutual fund portfolios (Raghunandan and Rajgopal (2022); Kim and Yoon (2021); Gibson Brandon, Glossner, Krueger, Matos, and Steffen (2022); Gantchev, Giannetti, and Li (2024); Chen, Chen, Kumar, and Leung (2024)). Findings suggest ESG funds may hold firms with poor ESG compliance, engage in greenwashing, or adjust ESG holdings temporarily for ratings purposes.

[5]Refinitiv ESG data offers broad coverage, tracking thousands of global firms with granular ESG metrics across environmental, social, and governance dimensions. It provides structured, standardized data with historical records dating back to the early 2000s. Unlike subjective ESG ratings, Refinitiv's objective, metric-based approach enhances transparency and comparability.

than only certain types of funds, such as ESG funds or pure equity funds. Our final sample consists of 11,901 funds and about 29 million quarterly mutual fund holding observations (i.e., MF-Firm-Quarter observations).

Empirically, we study what changes in firm characteristics, including a firm's ESG score, determine the change in MFs' portfolio holdings of a firm. This implies that our results are conditional on an MF deciding to invest in a given firm. Exclusionary or negative screening strategies that exclude firms from entire industries or firms with ESG scores below thresholds are not the focus of our empirical tests. To be very clear, our empirical analysis studies the drivers of portfolio weights conditional on the MF deciding to invest in a given firm; we do not study the initial firm selection decision.

In our tests, we are careful to control as comprehensively as possible for firm characteristics that may drive MF allocations, such as characteristics related to future firm returns and controls for contemporaneous changes in returns that may mechanically lead to changes in portfolio allocations.[6] We further enrich the empirical specification with fund times firm fixed effects which allow us to estimate model coefficients from changes in portfolio holdings within a specific fund and firm over time. To account for broad business-cycle and macroeconomic conditions, we also include year fixed effects. This granular empirical specification helps us to pinpoint the effect of changes in ESG scores on the quarter-to-quarter shifts in MFs' portfolio holdings and to put these effects into perspective compared to other firm-level characteristics.

Surprisingly, we find that the stock's overall ESG Score is one of the most critical variables for the average US MF's portfolio decision-making.[7] Across our full sample, from 2009

[6]We control for two composite measures of expected returns. First, we incorporate a net anomaly variable, which combines information from over four hundred documented anomalies (Engelberg, McLean, and Pontiff (2018)). Second, we use an expected returns measure derived from fourteen firm characteristics (Bessembinder, Cooper, and Zhang (2019)). To control for contemporaneous changes in returns that may be mechanically related to portfolio allocations we include firm market cap, firm contemporaneous quarterly returns, and fund size.

[7]The ESG Score refers to the percentile-rank measure of firms' environmental, social, and governance performance that we obtain from Refinitiv. The score is based on more than 750 ESG measures. See section

to 2023, the ESG Score is one of the most important determinants of MF quarter-on-quarter portfolio allocations (tied with leverage). The third most important variable is an aggregate measure of firm-level expected returns that captures the information contained in four hundred-plus anomaly variables from Engelberg et al. (2018).

In the second half of our sample (2017-2023), the ESG Score is about 35% more important than the next-most important variable, leverage. In light of recent anti-ESG sentiment, our second-period findings are all the more noteworthy, as the ESG score exhibits an even stronger influence across all funds. In Figure 1, we show the time-series plot of the coefficient of ESG Score estimated on a five-year rolling window basis. As we can see, the coefficient jumps in 2016, after the Paris agreement of 2015, and becomes statistically significant. From 2016 to 2020, the coefficient almost doubled. During the post-2020 period, when US states started to introduce the anti-ESG laws, the ESG Score coefficient decreases. By 2023, while it remains statistically significant, it is at a level below that of 2016. This time variation of the ESG Score is not only intuitive, but also reduces concerns that the ESG Score is endogenous to the firm characteristics that are also the drivers of expected returns. Furthermore, this time variation in the coefficient also reduces the concerns that we might be capturing some sort of mechanical relation.

In terms of ranking the relative importance of firm characteristics in explaining portfolio allocations, the importance of ESG scores is very much in line with, or even higher than, other measures that the literature has found to be influential, such as composite expected return measures and firm characteristics such as size, momentum, investment, profitability, turnover, and book-to-market.[8] The significance of ESG scores, even after controlling for a

2.1.4.

[8]While the literature has found that mutual fund managers are momentum traders (Grinblatt et al. (1995)), we find that the overall ESG score is about fifty-plus percent more powerful in explaining changes in mutual fund portfolio holdings than the past twelve-month cumulative returns. Regarding the importance of other firm characteristics, it is interesting that leverage (debt/assets) beats both widely-known variables, book-to-market and momentum, in the horse race. Profitability seems to be an order of magnitude less important than other prominent firm characteristics such as book-to-market. Furthermore and contrary to the previous findings (Falkenstein (1996)), turnover does not appear to be a significant factor in explaining the change in MF's portfolio holdings in recent years.

host of important drivers of expected returns, suggests that ESG scores influence MF investment decisions over and above the effects captured by traditional expected-return predictors.

Next, we examine whether mutual fund managers place greater weight on ESG scores when allocating across brown versus non-brown firms. A growing theoretical and empirical literature suggests that ESG information is especially relevant for brown firms because improvements in their environmental or social practices can meaningfully reduce regulatory, operational, and reputational risks. For example, Edmans, Levit, and Schneemeier (2022) develop a theory in which investors optimally direct capital to firms in brown industries that take credible corrective actions, generating a stronger valuation response to ESG improvements among brown firms. Similarly, studies such as Pástor et al. (2022) and Flammer (2021) show that ESG initiatives can have larger effects on expected returns, risk exposures, and stakeholder reactions precisely where the baseline ESG performance is weakest. Together, this work implies that ESG signals should be more informative and more heavily priced for brown firms, motivating our tests of whether mutual fund managers' portfolio weights exhibit stronger ESG sensitivities in the brown segment of the market.

To analyze the importance of ESG scores in Brown vs. Non-Brown industries, we first split the Fama-French 49 industries into Brown and Non-Brown groups primarily based on the EPA's report on the most polluting industries.[9] In addition to the polluter industries suggested by the report, our brown industry group also includes typical sin industries, such as Tobacco and Defense. We find that the interaction term between the brown industry dummy and ESG Score is significant at 5% level. Combining the coefficient of the interaction term and the coefficient of the ESG Score, we find that the impact of ESG Score is about 63% higher in brown industries than in non-brown industries. Thus, ESG scores are more critical in brown than in non-brown industries.

We then conduct a series of tests designed to shed light on the underlying sources of our main results and to understand *why* ESG scores matter for mutual fund portfolio allocations.

[9]https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

Specifically, we examine whether the effects vary between different types of funds, most notably ESG-oriented funds as identified through SEC filings, whether different ESG pillars (E, S, and G) carry distinct informational content, and whether fund-level characteristics, such as managers' political leanings, influence how ESG information is incorporated into portfolio decisions. These tests help to distinguish whether our main results are driven by fund manager preferences, by the composition of fund types in the marketplace, or by particular ESG dimensions that are more salient for investors.

Given our findings, asking whether ESG funds exclusively drive our results is natural. It is also interesting to study whether ESG funds incorporate ESG scores differently from non-ESG funds. Prior research commonly categorizes mutual funds into ESG and non-ESG groups using a name-based or Morningstar-based designation (e.g., Raghunandan and Rajgopal (2022)). However, these studies typically focus on relatively small samples, often around two to three hundred ESG-designated funds. In contrast, we take a different and potentially more comprehensive approach, which uses a novel method for identifying ESG vs. non-ESG mutual funds.

Using the textual analysis of MFs' Form 497K and 497J filings to the SEC, we categorize the universe of MFs into ESG and non-ESG groups. We download the universe of 497K and 497J filings that we can find on the SEC website since 2009 and count the ESG-related words.[10] If we find such words in the yearly filings of a given fund, we classify it as an ESG fund in that specific year. This methodology identifies a wider set of ESG funds than a typical identification strategy using fund names.[11] Our method is also less prone to false identification due to MFs' changing their names to trendy ones (Cooper, Dimitrov, and Rau (2001)).

There are two surprising findings. First, when we designate a fund as an ESG fund based on its name, regardless of what it says in its SEC filings, we do not find any evidence that

[10] Appendix B lists the full set of ESG-related terms used in our textual analysis of SEC filings.

[11] In our sample, the SEC word count approach identifies 1,478 ESG funds, while relying solely on the fund name yields only 219.

the ESG Score matters for explaining MF portfolio allocations. This finding is consistent with Raghunandan and Rajgopal (2022), who find that self-labeled ESG funds hold portfolio firms with worse track records in compliance with labor and environmental laws. An interpretation of this result is that these funds engage in greenwashing. Alternatively, named ESG funds could also predominantly follow exclusionary strategies, which are not covered by our empirical strategy, as explained above.

Second, funds that are ESG-classified based on their SEC filings respond, in contrast, very strongly; for a given change in a firm's ESG Score, these ESG funds act twice as strongly as the average non-ESG fund in the US. We also find that as the number of ESG words goes up, the coefficient on the ESG score measure increases, as one would expect if our SEC word count measure successfully identifies true ESG funds and if ESG-committed funds "walk the talk."

After having established our main empirical result, we analyze whether MF managers' political beliefs influence their portfolio allocations based on ESG scores following recent research that has found that investors' investment decisions are frequently affected by their political beliefs (Meeuwis, Parker, Schoar, and Simester (2022); Moszoro (2021)). Given the recent emergence of anti-ESG sentiment (see footnote 2), it seems plausible that Republican/conservative fund managers' portfolio allocations load less positively on ESG scores than Democratic/liberal managers'. Consistent with that expectation, we find that as the percentage of Republican managers at a given fund increases, the importance of the ESG scores drops in our empirical analysis. This result is important to stress because it suggests that the economic story underlying our main result is a preference-based story rather than a risk-return-related story.

Starks (2023) highlights that ESG is a broad concept, encompassing distinct pillars that measure very different aspects of a firm's behavior. For instance, while carbon emissions may serve as a relatively straightforward metric in the environmental domain, the social

dimension is far harder to quantify. Motivated by this call to study each pillar independently, we next examine whether changes in each sub-pillar score have differential impacts on MFs' investment decisions.

Interestingly, we uncover surprising patterns that challenge common perceptions about the relative importance of environmental issues. Despite the heightened media focus on environmental issues, our findings show that the Environmental (E) pillar becomes statistically insignificant once we control for standard firm-level characteristics such as ROA, size, and book-to-market. By contrast, the Social (S) pillar dominates: a one-standard-deviation increase in S raises MF holdings by about 125% more than the same change in Governance (G). While G also remains significant across specifications, S emerges as the clear leader among the three ESG pillars in the context of our study.

Finally, we run some falsification tests. To ensure that our main results are not driven by a purely mechanical relationship between ESG scores and portfolio weights, we perform a falsification test using the holdings of a hypothetical S&P 500 index fund over time. This fund exactly replicates the S&P 500 portfolio fractions and, thus, should not exhibit any active ESG-driven allocations. Consistent with this expectation, we find that the coefficient on the overall ESG score is indistinguishable from zero in this setup, confirming that index-like (i.e., passive) portfolio choices do not systematically load on ESG metrics.

In the last step of our analysis, we perform a simple back-of-the-envelope calculation of the financial costs of the reliance of funds on ESG scores in their portfolio construction. We find that the average fund paid a price for this behavior by giving up a statistically significant but economically small share of its financial performance. However, at the aggregate industry level, the fact that ESG-scores were consistently used to construct portfolios — almost "everywhere" — led to sizable economic losses.

The remainder of the paper proceeds as follows. Section 1 provides a review of the literature. Section 2 describes the data and variable construction, including our methods to

define (a) ESG funds and (b) brown vs. non-brown industries. Section 3 presents the main empirical results, while Section 4 assesses the implications for financial performance. Section 5 concludes.

1 The Literature on the ESG & Non-ESG Determinants of Mutual Fund Allocations

Earlier studies on the determinants of MF holdings suggest that active managers exhibit momentum trading behavior (Grinblatt et al. (1995)) and prefer visible stocks with lower transaction costs (Falkenstein (1996)). Consistent with these findings, Wermers (2000) shows that active mutual funds hold momentum stocks. Beyond momentum and liquidity, other stock-level characteristics have been found to influence mutual fund holdings. For instance, Wermers (2000) and Jiang, Verbeek, and Wang (2014) provide evidence that mutual funds tilt their portfolios based on firms' earnings announcement surprises and earnings quality measures, suggesting that funds actively seek to incorporate information about near-term profitability into their allocations. Yan and Zhang (2009) find that some funds incorporate accrual-based signals to refine stock selection.

Recent advances in big data and machine learning have also shed light on how mutual fund managers weigh an expanded set of fundamental signals. Li, Naaraayanan, and Sachdeva (2023) reveal that most funds prefer large, liquid firms with high operating profitability, while deliberately avoiding stocks with high idiosyncratic volatility, illiquidity, or pronounced value characteristics. Other studies highlight that funds consider measures of corporate investment and growth. For example, Cooper, Gulen, and Schill (2008) show that asset growth is negatively related to subsequent returns, a relationship that some active managers exploit by underweighting high-growth firms in their portfolios (Lipson, Mortal, and Schill (2011)). Taken together, these findings illustrate that mutual funds condition on a wide variety of

firm characteristics when shaping their portfolio strategies.

Other research finds that fund managers condition on ESG scores in addition to the above firm characteristics. For example, Statman and Glushkov (2016) analyze socially responsible mutual funds and find that they consistently overweight stocks with higher ESG ratings, particularly in sectors with strong environmental and governance practices. Petridis et al. (2023) examine fund performance during the COVID-19 pandemic and find that mutual funds with higher ESG scores maintained stable or increasing allocations to high-ESG stocks. Lalthanliana et al. (2024) provide further evidence that ESG named funds with strong ESG mandates systematically allocate more capital to firms with high ESG compliance, suggesting that ESG ratings serve as an important screening mechanism. Steen et al. (2020) find a positive relationship between Morningstar ESG ratings and Norwegian domiciled ESG oriented fund allocations, indicating that fund managers favor firms with high ESG scores when selecting stocks. Ceccarelli et al. (2024) examine mutual fund managers' responses to Morningstar's novel carbon risk metrics and find that fund managers reduced their exposure to firms with high carbon risk scores after the ratings were introduced. These studies suggest that third-party ESG ratings influence fund manager behavior, particularly in shaping portfolio adjustments to meet investor expectations.

Other studies find mixed results on the incorporation of ESG scores into mutual fund manager portfolio allocations. Raghunandan and Rajgopal (2022) find that ESG funds hold firms with worse labor and environmental compliance records compared to non-ESG funds managed by the same financial institutions. This suggests that ESG funds are often marketed as socially responsible but do not always align with the principles they claim to uphold. Kim and Yoon (2021) analyze MFs that become signatories to the Principles for Responsible Investment (PRI) and find that while they experience large fund inflows, their fund-level ESG scores do not improve. The authors suggest that PRI affiliation is widely marketed by funds, potentially contributing to greenwashing, where funds promote an ESG image without making substantive changes to investment practices.

Similar patterns are observed in a broader set of institutional investors, including MFs, pension funds, insurance companies, and other asset managers. Gibson Brandon et al. (2022) show that U.S. PRI signatories have similar, and in some cases worse, ESG scores compared to non-signatories. Gantchev et al. (2024) find that MFs strategically adjust their ESG holdings around rating measurement periods but reduce their ESG score holdings outside of these periods, providing strong evidence of window dressing—where funds temporarily increase their allocation to high-ESG stocks to boost their Morningstar "globe" ratings without maintaining these allocations consistently. Chen et al. (2024) further highlight that while mutual funds react to real-time firm-level ESG news, they do not systematically favor firms with high ESG scores when making investment decisions.

Overall, the evidence on how fund managers incorporate stock level ESG ratings into their portfolio allocations is decidedly mixed. While some studies provide evidence that certain mutual funds systematically overweight stocks with strong ESG ratings, they are often restricted to a small number of funds (e.g., ESG-focused funds), short time horizons, or unique market conditions. On balance, the literature has not documented pervasive evidence that most mutual funds prioritize ESG characteristics in their investment decisions. In this paper, we build on the existing evidence by conducting a large-sample analysis that examines whether ESG scores meaningfully influence mutual fund allocations, while simultaneously controlling for the set of traditional firm-level characteristics (e.g., momentum, book-to-market, and size) that predict returns and/or mutual fund allocations. This approach provides a more comprehensive perspective on the importance of ESG considerations in mutual fund decision-making.

Our paper is most closely related to Chen et al. (2024). The authors use a daily measure of ESG information constructed by FactSet's Truvalue and analyze whether fund managers use it in their portfolio decisions. Compared to Chen et al. (2024), our sample size is more than seventeen times larger as we don't limit our sample to any particular type of funds. Their sample period goes from 2007 to 2017. Any US MF (e.g., Multi-assets, Balanced)

that holds at least some US equities are in our sample. Due to sample size and the variable specifications, some of our results do not precisely align with theirs.[12]

2 Data and Summary Statistics

2.1 Data Sources and Sample Construction

To investigate the role of ESG scores in mutual fund portfolio decision-making, we draw on a variety of data sources, ranging from traditional CRSP/Compustat databases to textual analyses of SEC filings. This section outlines these data sets and the variables employed in our empirical tests.

2.1.1 Mutual Fund Data

We compile data on mutual fund holdings from 2009 to 2023 using Thomson Reuters (TR). We restrict the sample to US-based holdings and exclude fund-quarters with fewer than ten distinct equity positions. A key departure from most existing mutual fund research is that we do not merge TR holdings with CRSP mutual fund data; such merges can drop more than half of the observations due to inconsistencies between the two datasets (Zhu (2020)). As a result, any fund that holds at least some US equity is included, regardless of its style or classification. Since a goal of our paper is to examine the breadth of mutual fund manager' incorporation of ESG information into their portfolio allocation decisions, we do not impose a minimum threshold for total net assets (TNA), although our findings are even stronger when we exclude fund quarters with TNA under $10 million. Not imposing the matching constraint from CRSP (at least in our primary tests) results in a sample of funds that is substantially larger than those in similar studies.[13]

[12] In unreported analyses, we apply the filters and specifications of Chen et al. (2024) and find results consistent with their paper also in our sample.

[13] For simple comparison, our sample is about 17 times the sample of a similar study by Chen et al, 2023.

In certain tests, we use CRSP data to examine the characteristics of funds in order to better understand the strength of the coefficients on firm ESG scores. We link CRSP's portno to WFICN using MFLinks, and then connect WFICN to TR's fundno to merge the two datasets. To distinguish between retail and institutional funds, we rely on CRSP's institutional flag. We then create a continuous institutional variable, which is the TNA-weighted average of the institutional dummy across share classes. The institutional dummy is equal to 1 if a share class is institutional and 0 otherwise.

2.1.2 Portfolio Allocation Data

Our key dependent variable, which we refer to as portfolio fraction, captures the proportion of a mutual fund's equity portfolio invested in a given firm at the end of each quarter. To construct this variable, we first retrieve each fund's quarter-end equity holdings from Thomson Reuters (TR), selecting the most recent filing date when multiple filings exist for a single reporting period. We then match these holdings to stock prices obtained from the CRSP daily security price database, specifically using the closing price on the final trading day of each quarter. Multiplying each fund's reported holdings by the corresponding quarter-end stock price yields the dollar value of the fund's position in each firm, referred to as the company holding. Since a significant number of observations in the TR holdings data set (e.g., >90% in 2012) have TNA numbers missing, we calculate our own equity-only TNA based on the TR's fund stock holdings information. We then scale the company holding by the fund's total equity-only TNA to compute the proportion of the fund's portfolio invested in each firm. Our primary measure, the portfolio fraction, is defined as the natural logarithm of this percentage, expressed in basis points. To mitigate the influence of extreme observations, we winsorize this measure at the 1st and 99th percentiles.

2.1.3 Stock Data

We obtain market-based firm characteristics from CRSP and accounting-based characteristics from Compustat. Specifically, we calculate market-based characteristics—including quarterly returns, quarter-end market capitalization, cumulative returns over the last 12 months, and turnover—using CRSP. Accounting-based characteristics—such as ROA, asset growth rate, book-to-market ratio, leverage, and sales growth—are calculated using Compustat. To ensure managers have access to information on these firm characteristics and the opportunity to adjust their portfolios accordingly, we incorporate firm characteristics only after companies have filed their 10-K and 10-Q reports. In cases where actual filing dates are unavailable, we assume the filing date to be ninety days after the close of the fiscal quarter. Detailed definitions of all variables are provided in Appendix A.

We control for two types of variables to capture the expected returns of stocks. Our first measure of expected returns follows the approach of Engelberg et al. (2018). It consolidates information from over four hundred anomalies into a single continuous anomaly ranking variable that ranges from 1 to 5 for each stock in each quarter. We obtain U.S. daily factor data from Jensen, Kelly, and Pedersen (2023), covering the period from 1950 to 2023. To construct our measure, we first average the daily factor values to obtain monthly factor numbers for each stock. We then estimate a regression of monthly returns on each factor using the full sample of monthly factor data. Regardless of statistical significance, we assign the anomaly's sign based on the t-statistic of the regression. A positive (negative) sign indicates that a higher factor value predicts higher (lower) returns.

For each month and anomaly, we rank all firm-month observations into five quintiles based on factor values. We ensure that higher deciles always correspond to higher predicted returns, irrespective of the anomaly's sign. For example, firms with the lowest asset growth (a negative-sign anomaly) and firms with the highest twelve-month cumulative returns (a positive-sign anomaly) are both placed in quintile five, while firms with the highest asset

growth and the lowest twelve-month cumulative returns are assigned to quintile one. Finally, we define the variable Anomaly Rank (Anomaly Long Ranking) as the firm's average quintile ranking across all four-hundred anomalies. We then average these anomaly rankings over three months to obtain the quarterly values used in our regressions.

Our second measure, Expected Returns, follows the method from Bessembinder et al. (2019). It is calculated using fourteen firm characteristics: Log size, log book-to-market ratio, momentum, ROA, beta, accrual, dividend, log LR return (-13 to -36 month buy and hold returns), idiosyncratic risk, illiquidity, turnover, leverage, and sales to price. The authors estimate the following cross-sectional regression for each month t: $R_{it} = \alpha_t + \beta X_{i,t-1} + \epsilon_{it}$, where R_{it} is stock i's realized log (or simple) return in month t, and $X_{i,t-1}$is a vector of firm i's characteristics measured at the end of month t-1. Then, the predicted return for month t is the average intercept over the prior 12 months plus the sum of products of average slope coefficients over the previous 12 months and month t-1 characteristic.

We incorporate these two measures of expected returns, along with various firm characteristics previously shown to predict returns—such as book-to-market, size, asset growth, and profitability—as controls in our regression analyses.

2.1.4 ESG Scores

All ESG scores (overall and for the E, S, and G pillars) in our analysis are from Refinitiv. According to its data manual, Refinitiv collects and calculates over 750 ESG measures, converting them into 186 metrics. These 186 metrics are then aggregated into 10 ESG category scores, which are further combined to derive each pillar score and the overall ESG score. The scores range from 0 to 100. Recognizing that the importance of ESG factors varies by industry, Refinitiv maps each metric's materiality on a scale from 1 to 10 for each industry. Company disclosure is central to its methodology. Through an applied weighting system, the absence of reporting on "immaterial" data points has little impact on a company's

score, whereas failure to disclose "highly material" data points negatively affects the score. Refinitiv utilizes industry and country benchmarks at the data point scoring level to facilitate comparable analysis within peer groups. Percentile rank scoring (ESG Score) is calculated as follows:

$$\frac{\begin{array}{c}\text{no. of firms with a worse value} + \\ (\text{no. of companies with the same value included in the current one} / 2)\end{array}}{\text{no. of companies with a value}}$$

We do not have the exact release dates for Refinitiv scores, as the company states that they are continuously updated. Given that the scores incorporate various market-based factors that change daily, we assume they are updated frequently and available in real time or with minimal lag.[14]

2.1.5 ESG and Non-ESG Fund Classification

To examine whether ESG mutual funds incorporate ESG score information differently than non-ESG funds, we analyze regulatory information related to the investment mandates of U.S. mutual funds. Under Rules 497(k) and 497(j) of the Securities Act of 1933, mutual funds must file a prospectus describing their investment strategies with the SEC. We download all 497 filings, including 497K and 497J, from the SEC's EDGAR database for the period 2009–2023.

Using textual analysis of these filings, we classify U.S. mutual funds into two groups: ESG and non-ESG funds. For each 497 K and J filings, we count occurrences of terms such as "Environmental Social," "Social and Governance," "Impact Investing," and "Corporate Social Responsibility." If an ESG-related term appears in a fund's filing, we classify the fund as an ESG fund for that specific year. Conversely, if no ESG-related terms are found in a given year's filing—regardless of whether they appeared in previous filings—the fund is

[14]Our results are robust to the assumption that ESG scores become available to mutual fund managers 30 days after a company's actual 10-K SEC filing date.

classified as non-ESG for that year. We acknowledge the possibility of false positives, such as an Oil & Gas fund mentioning "Environmental Social" in the context of risk disclosure. However, we expect such instances to be minimal.[15]

This methodology allows us to identify more ESG funds compared to traditional methods that rely solely on fund names. Additionally, our approach reduces the risk of false classifications arising from mutual funds changing their names to adopt popular trends (Cooper, Gulen, and Rau (2005)). Furthermore, we analyze the entire universe of mutual funds rather than limiting our scope to specific fund categories, such as pure equity ESG funds, when examining the impact of ESG scores on mutual fund portfolio allocations. Consequently, our sample of ESG-designated funds is substantially larger than those typically studied in the ESG literature.[16]

To identify the funds' investment strategies concerning ESG criteria, we analyze more than 300K SEC filings. Our primary analysis focuses exclusively on Forms 497K and 497J. To assign a prospectus's ESG word count to a fund, we must establish a unique association between an SEC filing and a Thomson Reuters fund number. SEC filings are categorized based on CIK numbers, and a single CIK number can be associated with multiple funds. To mitigate this risk of assigning ESG word counts to multiple funds, we exclude all the 497Ks and 497Js associated with multiple funds. For each 497K and 497J filing, we extract the associated ticker symbol to link the SEC filing information to the Thomson Reuters fund holdings data using the MFLINKS dataset. When linking with TR fund numbers, if a single 497K or 497J is associated with more than one fund, information from such filings is dropped. All funds for which we could not match 497K or 497J information to a specific fund are classified as non-ESG funds for that year.

We also identify ESG funds using the traditional-to-the-literature approach of screening on fund names. We do this by manually checking each fund's name. First, we searched the

[15]Please refer to Appendix B for a list of ESG-related words that count in the SEC filings.

[16]For example, Raghunandan and Rajgopal (2022) uses the sample of 147 MFs, while we identify 1,478 ESG designated MFs in our sample.

words "esg", "sust", "social", "green", "environment", "climate", "impact", "responsible", and "clean" in the MFs name. Once we find the match, we manually check the name to make sure it is a ESG fund. For example, if we find "green" in the fund name such as, "JPM Green...", then the fund is assigned as ESG and if we find "green" in the fund name such as, "Evergreen...", the fund is not assigned as ESG despite of the word "green."

2.1.6 Brown vs. Non-Brown Industries

Another key aspect of our empirical analysis is the distinction between brown (i.e., non-sustainable) and non-brown (i.e., sustainable) industries. Industry exclusion is a widely adopted ESG strategy among money managers (Cohen, Gurun, and Nguyen (2020)). To align their portfolios with ESG principles, managers often exclude firms from industries traditionally classified as brown, such as Oil and Gas or Transportation, regardless of the firm's individual ESG performance. Given this practice, it is important to examine whether a firm's ESG score has a differential impact depending on the industry in which it operates.

To classify the Fama-French 49 industries as brown or non-brown, we rely on the EPA's report, "Total U.S. Greenhouse Gas Emissions by Economic Sector in 2021."[17] In addition to the industries identified in the report as primary polluters, we also classify industries such as Tobacco and other "sin stocks" as part of the brown industry group. In summary, brown sectors include industries such as Petroleum and Natural Gas, Automobiles and Trucks, Defense, Coal, and Agriculture. Non-brown sectors include industries such as Banking, Insurance, Business Supplies, Trading, Entertainment, and Wholesale.[18]

2.1.7 MF Managers' Political Affiliation

We obtain mutual fund managers' political contributions from Ringgenberg, Shu, and Werner (2023). The authors collect individual political donations from the Federal Election

[17] https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

[18] Please refer to Appendix B.2 for the complete list of Brown and Non-Brown industries

Commission (FEC) dataset, which includes information on contributors' names, occupations, employers, and contribution amounts. This data is then matched to mutual fund managers' names from Morningstar's mutual fund manager dataset to identify their political contributions. Ringgenberg et al. (2023) use both first and last names for matching and require the first letter of the middle name to match if both datasets include middle names. We classify funds as Republican or Democratic based on whether their managers primarily contribute to Republican or Democratic committees. For each fund, for each year, we calculate Republican to total ratio, which is the number of managers contributing to the Republican party divided by the total number of managers contributing to both Republican and Democratic parties. Our fund's political affinity variable, Republican Affiliation, is then the average of the ratio over our sample period. We then interact the Republican Affiliation with the ESG score to examine how a mutual fund manager's political affiliation influences their incorporation of ESG score information into portfolio decisions.

2.1.8 Merging the Data

Our sample consists of all US firms with CRSP and Compustat information if a firm has the Refinitive (now LSEG) score available for any year from 2009 to 2023. ESG score availability, especially for the first half of our sample period, is our main limitation. All the firms' fundamental information comes from Compustat and is used only after a firm files its quarterly or annual reports to SEC. Using WRDS CUSIP, GVKEY and Permno linking information, we merge the firm characteristics information from CRSP, Compustat, and the ESG score data from Refinitiv. Firm identifier variables are CUSIP, Permno and Gvkey in TR portfolio holdings, CRSP, and Compustat data sets, respectively. Due to the requirement of all the fundamental characteristics and the ESG score, our sample consists of 3,208 firms for 2009-2023. Our final sample comprises 11,901 mutual funds and nearly 29 million unique fund-firm-quarter level observations. Of the 11,901 funds, 1,478 are designated as ESG funds

at least once in our sample period.[19]

2.2 Summary Statistics

Table 1 reports the summary statistics . We present the definitions of all the variables used in our analysis in Appendix A. We report that our sample contains a total of 28,768,331 fund-firm-quarter observations being significantly larger than the samples in previous studies (E.g., Chen et al. (2024), Raghunandan and Rajgopal (2022)) examining ESG-related mutual fund portfolio allocations. The mean portfolio fraction is 60 basis points, with a relatively large standard deviation of about 103 basis points, highlighting the substantial variation in mutual fund holdings across firms. Also, as our TNA for the portfolio fraction is purely equity-only TNA and calculated solely based on the TR holdings information, the mean of our portfolio fraction number will be biased upward.

At the fund-firm-quarter level, the average overall ESG score is 0.656, slightly right-skewed, ranging from 0.418 at the 25th percentile to 0.958 at the 95th percentile. Among the ESG sub-scores, the corporate governance score has the highest mean at 0.760, with relatively lower variability compared to the environmental and social scores, which have means of 0.550 and 0.567, respectively. The monthly mean expected return is 1.1%, with a standard deviation of 1.9%, while the average firm size, proxied by the natural logarithm of market capitalization (Ln MCAP), is 9.022, suggesting a mix of mid- and large-cap firms in our sample.

In Panel B, which presents summary statistics at the firm-quarter level, we observe 86,608 observations. The mean overall ESG score is 0.527, with a wider dispersion compared to Panel A, ranging from 0.292 at the 25th percentile to 0.948 at the 95th percentile. The corporate governance score remains the highest ESG sub-score, with a mean of 0.717, while the environmental and social scores average 0.415 and 0.442, respectively. The mean expected

[19]Please refer to Appendix B for the detail on ESG Words Sets.

return is 1.3%, slightly higher than in Panel A, and firm characteristics such as turnover, leverage, and book-to-market ratios exhibit similar distributions across both panels. The summary statistics underscore the substantial variation in ESG scores and firm characteristics, providing a comprehensive dataset to explore how mutual funds incorporate ESG factors into their portfolio decisions.

Panel C of Table 1 reports the time-series dynamics of firms' overall ESG scores ($ESG\ Score_Q$) from 2009 to 2023. The mean and median values remain relatively stable throughout the sample period, suggesting that the distribution of firms' ESG performance does not exhibit a pronounced upward or downward trend over time. This stability is visually confirmed in Figure 2, which plots the mean, median, and percentile bands of the $ESG\ Score_Q$ distribution. Taken together, the evidence from Panel C highlights that the time-series variation in mutual funds' sensitivity to ESG scores—documented later in the paper—is driven less by sudden changes in firms' ESG fundamentals and more by evolving investor sentiment and portfolio allocation preferences.

As we show in Table 1, Panel D, from 2009 to 2023, our sample consists of 11,901 mutual funds, 3,208 firms, and about 29 million fund-firm-quarter observations. Even though it varies depending on how strict the definition of ESG designations that we use for different analyses is, our most lenient definition gives us 1,478 mutual funds with an ESG designation in at least one quarter during our sample. The median TNA across our full-sample observations among Non-ESG funds is \$89 million, while the Mean is \$977 million. TNA is highly right-skewed as bigger funds dominate the sample because they hold more firms than the smaller funds. Furthermore, our TNA numbers are biased downwards compared to the TNA numbers available in the Thomson Reuters Mutual Fund holdings data set, as we focus on the equity part of each fund.

Similarly, as expected, our sample is also dominated by large firms. The fifth and ninety-fifth percentiles market capitalization across the sample are \$435 million and \$190 billion,

respectively, with the median being $8.0 billion.

Table 2 shows the correlation matrices among our variables – Panel A at the fund-firm-quarter level and Panel B at the firm-quarter level. None of the correlation numbers are alarming or need special mention. Our two forms of expected returns measures – anomaly ranking and expected returns of Bessembinder et al. (2019) – have a correlation of only 6.6%, suggesting that these measures capture independent information. Table 2, Panel B shows that the social score, among the ESG pillars, has the highest correlation, 91%, with the overall ESG score. Between the ESG pillar pairs, the correlation between corporate governance and the environment is the least.

Our main variable of interest, portfolio fraction, has a correlation of -0.151 with fund TNA. Consistent with the idea that funds use well-known firm characteristics to guide portfolio allocations, portfolio fraction is negatively correlated with book-to-market (-.175) and positively correlated with ROA (0.164). The correlation between the overall ESG score and portfolio fraction is 0.30, indicating a strong univariate relationship between ESG scores and mutual fund allocations. This suggests that ESG considerations may significantly influence portfolio allocation decisions.

3 The Importance of ESG Scores

In this section, we summarize our empirical results. We first analyze whether ESG scores affect the weights of individual holdings within mutual fund portfolios. Second, we zoom in on the details and study the role of the overall ESG-orientation of funds — i.e., funds dedicated to ESG in comparison to funds without any such dedication — in this context. Third, we decompose the ESG score in its three components and look at the importance of the individual sub-scores separately. Finally, we perform a falsification test to evaluate whether our results might be driven by any mechanical effects.

3.1 ESG Scores Impact on portfolio weights

Our primary analysis examines the effect of ESG scores on mutual fund portfolio holdings. Table 3 presents the results of pooled OLS regressions estimating the relationship between stock-level quarterly mutual fund portfolio allocations and firm-level characteristics, including ESG scores. The table includes all funds in our sample, encompassing both ESG and non-ESG funds. To account for unobserved heterogeneity, all panel regressions incorporate a comprehensive set of fixed effects. Specifically, we include fund-by-firm fixed effects to control for a fund's time-invariant interest in a particular firm and calendar year fixed effects to account for macroeconomic shocks. Additionally, to control for contemporaneous changes in returns that may mechanically influence portfolio allocations, we include firm market capitalization, firm-level quarterly returns, and fund size as explanatory variables. Standard errors are clustered at the fund, firm, and year levels to help ensure robust inference. This granular empirical specification is a key strength of our analysis, allowing us to isolate the impact of ESG scores on mutual fund allocations with greater precision.

The most striking finding is that the coefficient on the ESG Score is positive and statistically significant in all specifications (t-statistics range from 4.7 to 6.8). The magnitude of the point estimate is largest in Column (1), which excludes the full set of control variables, and is somewhat smaller—but still economically and statistically significant—in the more fully specified models in Columns (2)–(4). These results suggest that, on average, mutual fund holdings respond positively to ESG scores.

In particular, we find that the overall ESG score is one of the most important variables in determining the portfolio allocations of the average U.S. mutual fund, as evidenced by its standardized coefficient. For example, in the model in Column (4), which includes all controls, the coefficient on the overall ESG score (0.022) emerges as one of the most influential determinants of mutual fund quarter-on-quarter portfolio allocations. Economically, this coefficient implies that a one standard deviation increase in a firm's ESG score is associated

with an approximately 2.2% increase in the mutual fund's current portfolio fraction for that firm, holding other factors constant. In terms of absolute economic importance, leverage ties with the ESG score, with a statistically significant coefficient of -0.022. Additionally, while variables such as the return on assets (coefficient = 0.011) and book-to-market (coefficient = -0.015) are also statistically significant, their effects on portfolio weights are notably smaller in economic magnitude. Overall, these empirical results appear robust, as the models explain a substantial portion of the variation in holdings (adjusted R-squared values exceeding 90%) and yield coefficients on firm characteristics that align with prior literature.

Subperiod results. In Table 4, we present subperiod results that compare the relationship between ESG scores and portfolio allocations in 2009–2016 (Panel B) and 2017–2023 (Panel A). The results show a substantially stronger influence of the ESG score on mutual fund allocations in the latter period, consistent with the broader rise in ESG investing after the Paris Agreement.[20] In the earlier sample period (Panel B), which covers a period before widespread adoption of ESG, the coefficients on the overall ESG score in columns (2)–(4) are substantially smaller than in the more recent sample period. They are, however, still statistically significant, but only at the 10% level. To us, this is not too surprising, as ESG investing was still relatively niche, with fewer funds explicitly incorporating ESG criteria and less investor demand for sustainable investment strategies.

However, in Panel A (2017–2023), ESG scores become highly significant across all model specifications, even after including the full set of controls. More importantly, the ESG score emerges as the dominant predictor of mutual fund allocations, with its standardized coefficient approximately 35% higher than the next most influential variable, firm leverage. This suggests that, by the latter period, ESG considerations have become more important

[20]The Paris Agreement is a landmark international treaty on climate change adopted in December 2015 at the United Nations Climate Change Conference (COP21) in Paris, France. It was a meeting of 196 parties, including nearly every country in the world, with the goal of limiting global warming to well below 2°C above pre-industrial levels, while aiming for 1.5°C to reduce the risks of climate change. The agreement also encouraged standardized ESG disclosures, making it easier for investors to allocate capital to funds that integrate sustainability criteria.

than traditional financial metrics in mutual fund decision-making. This trend is particularly striking given the rise in anti-ESG sentiment and regulatory scrutiny in the most recent part of the sample period. Despite state-level legislative bans on ESG investing and the increasing political pushback against ESG integration, mutual funds have continued to incorporate ESG considerations into their investment decisions.

To obtain an even more nuanced understanding of the time-series variation of our main results, we plot the coefficient estimates from regressing portfolio weights on the overall ESG score and the full set of controls (from Table 3, Column 4 model) using rolling five-year window regressions during the period 2013 to 2023 in Figure 1. The time-series variation in these ESG coefficient estimates closely aligns with broader shifts in ESG sentiment, as discussed above, suggesting that such broad ESG sentiment plays an important role in explaining the motivation behind mutual fund managers' decisions to condition portfolio allocations on ESG.

This correlation between overall ESG sentiment and coefficient magnitude is particularly striking in the most recent years (2019–2023), during which ESG concerns became mainstream despite emerging anti-ESG legislative actions—such as Texas's 2021 law restricting state pension fund investments in firms perceived as boycotting fossil fuels, and similar initiatives in Florida in 2022. Consistent with these general trends, we find a drop in coefficient estimates. It is, however, important to stress that they remain highly statistically significant and elevated compared to the pre-Paris-agreement period. The persistence of ESG scores' significance during this recent period of ESG backlash, thus, suggests that mutual fund managers broadly view ESG considerations as important, likely motivated by investor demand, reputational concerns, and long-term value considerations (Ceccarelli et al. (2024)).

Brown Versus Non-Brown Industries. Another important aspect to consider is whether the influence of ESG scores on mutual fund portfolio allocations varies between industries. Specifically, we conjecture that mutual funds use ESG scores selectively in industries that

are traditionally viewed as less sustainable which we refer to as "brown" industries, such as oil & gas, tobacco and transportation.

The results in Table 5 reveal that ESG scores play a significantly larger role in mutual fund portfolio allocations within brown industries than in non-brown industries. In all specifications, the coefficient on the Brown Industry Dummy x ESG Score is significant at the 5% level. In models with all controls (Columns (3) and (4)), the coefficient of Brown Industry Dummy x ESG Score is approximately 63% of the coefficient of ESG Score alone, suggesting that funds use ESG scores substantially more aggressively in industries with higher environmental and social risks. This is consistent with the idea that investors tilt their portfolios away from firms in "bad" industries unless these firms exhibit strong ESG characteristics (Edmans et al. (2022)). Overall, these results suggest that mutual funds integrate ESG considerations more selectively within industries with higher environmental and social risks, rather than applying ESG criteria uniformly across all sectors.

To summarize our main result, we find strong empirical evidence that ESG scores represent one of the main drivers — if not the main driver — of portfolio weights in mutual funds based on a comprehensive econometric framework with a host of fixed effects and a large number of traditional financial control variables. These findings are not only novel but also surprising. In order to better understand the underlying economic mechanisms, we report results of complementary empirical analysis in the following sub-sections.

3.2 ESG Funds and Non-ESG Funds

One might argue that our main result is just the consequence of a large share of mutual funds following some dedicated ESG-oriented investment strategy, such as, for example, a best-in-class approach that identifies the top ESG performers within a group of firms and invests in those.

To address this mechanism, we split our sample of funds into ESG funds and non-ESG

funds. The existing literature typically performs this classification based on fund names or Morningstar designations (e.g. Raghunandan and Rajgopal (2022)), resulting in a limited number of ESG funds of around 200 to 300 funds. However, such name-based classification methods can be imprecise, failing to capture funds that actively engage with ESG themes despite lacking an ESG-specific name. To address this limitation, we take a more comprehensive approach and identify ESG funds using textual analysis of mutual fund filings with the SEC, specifically 497K and 497J filings.

Table 6 shows the corresponding results and reveals several key findings. First, we find that ESG funds identified solely by name do not exhibit strong ESG score sensitivities (see column (1)). The coefficient on the interaction term between an ESG fund dummy and the overall ESG score is not statistically significant, suggesting that these funds do not actively allocate capital based on ESG scores. This surprising finding might be interpreted as evidence of greenwashing, where funds brand themselves as ESG funds but do not substantively integrate ESG factors into their investment decisions. Alternatively, ESG funds might predominantly apply exclusionary strategies, in which funds avoid entire sectors as they are considered to be low ESG instead of differentiating individual firms' portfolio weights based on ESG scores.[21]

In contrast, Table 6 column (2) shows that ESG funds identified on the basis of SEC-filing keyword searches exhibit an economically meaningful positive relationship with ESG scores. The coefficient on the interaction term ESG Score $\times$ ESG Dummy is positive, statistically significant, and larger in absolute terms than the unconditional effect of ESG Score. These results indicate that these ESG funds actively incorporate ESG characteristics into their portfolio allocations and, most importantly, more so than the average US fund. This suggests that funds with explicit ESG commitments in their regulatory disclosures are more likely to

[21] We examine the exclusion practices of ESG-named funds in unreported results. On average, ESG-named funds hold 2,907 stocks, of which 626 are classified as brown. In comparison, all other funds hold an average of 3,060 stocks, with 648 being brown. The similar ratio of brown stocks across both fund types is difficult to square with the idea that ESG funds follow exclusionary strategies.

"walk the talk" compared to those that simply adopt ESG terms in their fund names.

Columns (3) and (4) explore the heterogeneity among SEC-identified ESG funds further by splitting them into two groups: those with above-median (column (4)) and below-median (column (3)) ESG keyword frequencies in their filings. Funds that reference ESG more frequently in their filings exhibit a significantly stronger relationship between portfolio allocations and ESG scores reinforcing the idea that funds with high ESG word counts are more committed to ESG investing and, thus, also condition their portfolio composition more on ESG scores.

Finally, it is also important to emphasize that the unconditional effect of the overall ESG score remains highly statistically significant in Table 6. This effect captures the reliance of non-ESG funds, which do not indicate any explicit ESG orientation in their fund names or in their fund documents, on ESG scores to determine portfolio weights. These findings reinforce the idea that ESG considerations have become a prevalent factor in mutual fund investment decisions, extending well beyond funds that follow explicit ESG strategies.

3.3 Decomposing ESG into Components

A growing body of research emphasizes that ESG is a multidimensional concept, with its three pillars—environmental (E), social (S), and governance (G)—capturing distinct aspects of a firm's behavior (Starks (2023)). While the environmental pillar often receives the most public and regulatory attention, particularly regarding carbon emissions and climate change risks, the social and governance pillars measure corporate policies on labor practices, diversity, ethics, and shareholder rights. Given that these dimensions may not be equally relevant to investors, we separately examine how mutual fund portfolio allocations respond to changes in each ESG sub-score.

The results in Table 7 reveal differences in how mutual funds incorporate each ESG pillar

into their investment decisions.[22] The social pillar (Panel A) emerges as the dominant driver of portfolio allocations, as the coefficient on the social Score in Panel A is consistently larger than that of both the environmental and governance scores, even in models with the full set of control variables. The effect of the Social Score is approximately 125% larger than the effect of the governance score (Panel B), underscoring that fund managers appear to place greater weight on corporate social policies than governance structures when adjusting their portfolios. The governance pillar (Panel B), however, remains statistically significant across specifications.

In contrast, the environmental pillar (Panel C) ends up being statistically insignificant, as soon as additional controls are taken into consideration (Columns 2 - 4), suggesting that mutual funds do not systematically overweight firms with high environmental scores. This finding challenges the widely held perception that environmental concerns dominate ESG-based investment decisions. While climate risk and carbon emissions receive significant media and regulatory attention, our results suggest that fund managers may be less responsive to environmental scores when making portfolio allocation decisions, potentially due to measurement difficulties, regulatory uncertainty, or the long-term nature of environmental risks compared to more immediate financial and social concerns.

It is interesting to note that our findings are consistent with a recent study by Agarwal, Gomez, Hosseini, and Jha (2025) in which the authors analyze to what extent CEOs' attention to ESG metrics and their responsibilities to improve their firms' valuations interact. They find that S and G are complementary, but E works in the opposite direction. These findings suggest that social and governance aspects might have more direct value implications than the environmental pillar. For example, a company that focuses on employees will have satisfied staff, which means increased productivity and higher valuations. Regarding the environmental aspect, the firm might be tweaking its operations based on what regulators

[22]In Table A.I, we provide the results on each individual ESG pillar scores on time-split sub-samples. Figure 3 shows the time-series plots of coefficient estimates for each of the E, S, and G pillars.

are forcing it to do, but the value implications of these activities are unclear.

One possible explanation for these findings is that social factors may serve as a more direct proxy for firms' short-term operational stability and public reputation, which are increasingly relevant to investors in the wake of growing social activism, regulatory scrutiny, and shifts in consumer behavior. Our results imply that fund managers may be more sensitive to social risks and workforce-related issues than to environmental concerns, likely because social factors are perceived as having a more immediate and tangible impact on firm performance.

These findings contribute to the broader debate on ESG investing by challenging the view that environmental concerns dominate fund managers decision-making. While environmental metrics are frequently discussed in regulatory and public discourse, our results suggest that mutual funds are far more responsive to social factors than to environmental ones. This may reflect a more immediate link between social practices and firm stability, as well as the difficulty in translating long-term environmental risks into short-term investment decisions. For investors, these findings imply that ESG-based mutual funds may be prioritizing corporate social policies—such as employee treatment, diversity initiatives, and ethical supply chains—over carbon reduction strategies and governance improvements. This further implies that investors who allocate capital based on ESG principles should carefully examine which specific aspects of ESG their funds prioritize.

3.4 Falsification Tests

In Table 8, we present the results of a falsification test to assess whether our main findings reflect active mutual fund decisions rather than any mechanical portfolio rebalancing effects. We construct a hypothetical S&P 500 index fund that strictly follows the theoretical S&P 500 portfolio allocations and estimate the same regression specifications used in our main analysis. If ESG scores are mechanically related to mutual fund portfolio weights due to, for example, their correlation with firm size, we would expect to see a significant relationship

between ESG scores and portfolio fractions even in this setting, in which ESG scores do not matter at all for portfolio weights.

Our results show that the coefficient on the overall ESG score is statistically insignificant. This finding confirms that ESG scores do not mechanically influence portfolio allocations in a passive index fund that strictly adheres to market-cap weights. Instead, the significant relations observed in our primary analysis are likely attributable to active portfolio decisions by mutual fund managers who incorporate ESG considerations into their investment process.

Additionally, the results illustrate that other well-established determinants of portfolio weights in index funds behave as expected. For example, the coefficient on market capitalization is highly significant and positive, reflecting the fact that index fund holdings are primarily driven by firm size. Meanwhile, other firm characteristics such as return on assets and asset growth exhibit little explanatory power in this passive setting, further reinforcing the notion that active mutual funds, rather than mechanical indexing, drive the observed ESG effects.

In general, these findings validate the robustness of our primary results by demonstrating that ESG scores do not play a systematic role in the allocations of a purely passive S&P 500 index fund. This strengthens our conclusion that the positive relationship between ESG scores and mutual fund holdings that we have dicumented in earlier tables is the result of active investment decisions rather than mechanical market forces.[23]

[23]In an unreported analysis, our results remain robust when excluding all index funds from the sample. We define index funds as funds with a beta greater than 0.9 and less than or equal to 1 with SPY returns. We exclude these funds and estimate our models from Table 3. We find a positive and statistically significant relationship between ESG scores and mutual fund portfolio allocations among the non-index fund sample.

4 Understanding the Dependence of Portfolio Weights on ESG Scores

The preceding sections document a central and somewhat surprising empirical fact: mutual funds' portfolio weights load, on average, positively on firms' ESG scores, and this pattern is not driven solely by ESG-designated funds. Instead, the typical U.S. mutual fund—including those without explicit sustainability mandates—allocates more weight to firms with higher ESG ratings. Moreover, this ESG sensitivity is economically meaningful, statistically robust, and in many periods rivals or exceeds the influence of traditional firm characteristics. These findings naturally raise the question of *why* funds incorporate ESG information so pervasively into their portfolio decisions.

A priori, several mechanisms could explain the observed ESG tilting. One possibility that immediately comes to mind is that fund managers believe ESG characteristics predict future returns or reduce portfolio risk. Another one is that ESG scores proxy for latent firm attributes that are not fully captured by standard anomaly or characteristic controls. Although we cannot completely rule out the possibility that these explanations matter for our results, our earlier analysis renders these explanations less likely because we already control for a wide range of expected-return proxies. Thus, the evidence points to a third preference-based interpretation, whereby ESG tilting emerges because investors value sustainable investing and managers respond to these preferences when shaping their portfolios.

In this section, we investigate the forces that sustain positive ESG loadings across the mutual fund industry. We begin by studying the heterogeneity in ESG tilting across funds. By estimating fund-specific ESG coefficients and sorting funds into quintiles, we examine how economic characteristics vary across funds with weak versus strong ESG sensitivities. We then examine how managers' political affiliations shape ESG-based decisions, providing direct evidence that ideological preferences influence the extent to which managers use ESG

information. Finally, we complement the cross-sectional analysis with a time-series perspective that shows that ESG tilting varies with aggregate "green" sentiment proxied by the Green Factor of Pástor et al. (2022).[24] These results paint a consistent picture, namely that mutual funds' portfolio weights load on ESG scores primarily because of investor preferences and manager beliefs.

In summary, Section 4 provides a deeper understanding of the economic forces behind the widespread use of ESG information in mutual fund portfolios, highlighting how investor demand, managerial preferences, and marketwide sentiment jointly shape ESG-based portfolio decisions.

4.1 Quintile Sorts on Fund-Level ESG Coefficients

To better understand why mutual funds condition on firms' ESG scores to determine their portfolio weights, we investigate whether funds with stronger or weaker dependence on ESG scores differ systematically in their observable characteristics. For this purpose, we estimate the coefficient on the ESG Score separately for each fund using the specification in Table 3, Column (4), excluding fixed effects, and obtain a fund-level ESG loading (i.e., an "ESG beta"). We then sort funds into quintiles based on this loading and compare their characteristics in Table 9. Quintile 1 (Q1) contains funds with the lowest ESG betas, while Quintile 5 (Q5) contains those with the highest.

Panel A of Table 9 reveals several interesting patterns. First, the majority of the funds fall in the middle of the ESG-loading distribution, having moderate ESG betas, whereas the extreme quintiles (Q1 and Q5) comprise relatively distinct groups. Mean comparisons and associated t-statistics indicate that Q1 and Q5 funds often differ sharply from the middle quintiles (especially Q3), although differences between Q1 and Q5 themselves are frequently statistically insignificant. We find this pattern, among others, for management fees, expense

[24]Our results are robust to using the green factor adjusted ESG scores. Please, see Table A.II.

ratios, and measures of portfolio concentration (i.e., the Herfindahl–Hirschman Index of portfolio holdings) where funds in extreme quintiles show significantly larger values than funds in quintiles 2 to 4. In the case of flows, we document that Q5 funds attract sizable positive flows, while Q1 funds face much weaker, sometimes even negative flows.

Panel B of Table 9 examines portfolio compositions across the five quintiles. Similarly to the results in Panel A, funds in quintiles 2 to 4 display similar asset allocations, while the Q1 and Q5 funds differ markedly from this typical profile.

Overall, the evidence presented in Table 9 shows that funds whose portfolio weights strongly depend, positively or negatively, on ESG scores represent a distinct subset of fund managers who tend to be active, run more concentrated portfolios, charge higher fees and experience larger deviations in flows and factor exposures. By contrast, the majority of funds, captured by quintiles 2 to 4, exhibit moderately positive sensitivities of portfolio weights to ESG loadings and otherwise have similar characteristics.

This analysis illustrates that even though our earlier empirical results suggest that ESG scores matter "everywhere", i.e., for the average fund, there is a lot of cross-fund heterogeneity. One fifth of the funds, represented by Q1, condition on ESG scores but in a strongly negative way. Their impact on our full sample estimates is, roughly speaking, offset by those funds with the most positive ESG betas, captured in Q5. However, our main results described above are driven by the large set of funds representing quintiles 2 to 4, which have much less extreme ESG betas than the funds in extreme quintiles but still exhibit, on average, positive ESG betas.

4.2 Mutual Fund Managers' Political Affiliation and ESG-Based Portfolio Decisions

The role of political ideology in investment decisions has gained increasing attention, particularly in the context of ESG investing, where attitudes toward environmental and social responsibilities are often highly polarized along political lines. In the U.S., Republican-leaning individuals tend to be more skeptical of ESG initiatives, whereas Democratic-leaning individuals are generally more supportive of sustainable investing (Meeuwis et al. (2022); Moszoro (2021)). The emergence of anti-ESG sentiment at the state and federal levels, along with state-level legislation restricting ESG-based investment strategies, further suggests that political ideology influences financial decision-making.

To assess whether fund managers' political affiliations impact how their mutual funds allocate capital based on ESG scores, we examine the interaction between fund managers' political leanings and firm-level ESG scores. Specifically, we construct a measure of the percentage of Republican-affiliated fund managers (Republican Affiliation) at each fund using individual political contribution data from the Federal Election Commission (FEC). We then test whether Republican-leaning fund managers use ESG scores differently than Democratic-leaning counterparts when determining portfolio weights.

The results shown in Table 10 provide evidence that mutual fund managers' political affiliations systematically influence to what extent portfolio decisions depend on ESG scores. The interaction term between ESG Score and Republican Affiliation is negative and statistically significant in a model specification that includes all our controls. This result suggests that as the share of Republican-affiliated managers increases at a given fund, the fund tends to look less at ESG scores when determining the portfolio weights.

The fact that political affiliation influences how fund managers take into account ESG scores is consistent with a preference-based interpretation of our main results. If fund managers considered ESG scores because they were related to expected returns, risk premia or

risk measures, then political orientation should not matter.

4.3 Funds' ESG Coefficients and Green Factor

Our final analysis examines the time-series dynamics of the sensitivity of portfolio weights to ESG scores and their relationship to the Green Factor of Pástor et al. (2022), which we interpret as an aggregate measure of investor preferences for ESG-oriented investing.

Figure A.I plots five-year rolling window estimates of the ESG Score coefficient from the specification in Table 3, Column (4), together with the rolling window average of the Green Factor. The figure reveals a pronounced comovement between the two series. The ESG Score coefficient rises sharply after 2015, peaks around 2020, and declines thereafter, closely tracking the evolution of the Green Factor over the same period. This pattern suggests that mutual funds condition their ESG tilts on broad shifts in market sentiment toward sustainability rather than on changes in firm-level ESG fundamentals, which remain relatively stable over the sample period (see Table 1, Panel C). The timing aligns with important institutional events, such as the Paris Agreement or the recent emergence of anti-ESG sentiment.

To explore the heterogeneity across funds, Figure A.II plots the same rolling window ESG coefficients separately for each of the five ESG-beta quintiles constructed in Table 9. The differences across quintiles are pronounced. Funds in the highest ESG-loading quintile (Q5) exhibit strongly positive and highly time-varying ESG sensitivities that move closely with the Green Factor, with correlations approaching 70%. By contrast, funds in the lowest ESG-loading quintile (Q1) display consistently negative ESG coefficients that move inversely with green sentiment, with correlations around –59%. The middle quintiles (Q2–Q4), which contain the majority of funds, show only modest and relatively stable ESG loadings over time.

Taken together, these results point to the interpretation that mutual funds' dependence on ESG scores is a preference-driven, sentiment-sensitive phenomenon rather than a return-

based strategy. Funds with strong sensitivities to ESG scores actively adjust their exposures in line with shifts in the Green Factor, while the majority of funds maintain mild but persistent ESG tilts that reflect the prevailing industry norm. Therefore, the time-series evidence complements the cross-sectional analysis.

5 Implications for Fund Returns

So far, our empirical analysis has focused on the weights of individual holdings within mutual fund portfolios. However, an important question is whether fund returns would have been better or worse had funds not considered the ESG score when making portfolio decisions. To address this issue, we take advantage of our empirical model and calculate the hypothetical returns the funds could have earned if they had not looked at ESG scores when determining the weights of their holdings.

First, we calculate the actual returns that a given fund earned based on its observed equity holdings. We need to restrict the analysis to those holdings for which we also observe ESG scores to ensure comparability with the returns of the hypothetical fund. Second, we create hypothetical fund holdings by adjusting the portfolio weights of each firm within the given fund. Specifically, we take out the part of the portfolio fraction that is due to the firm's ESG score by multiplying the standardized ESG score of a given firm with the slope coefficient estimates from our empirical model. Thus, we basically purge each fund's holdings of the average sensitivity to ESG scores. Then, these hypothetical portfolio holdings are scaled up to match the actual dollar amount of the underlying portfolio, and finally quarterly returns are calculated.

Table 11, Column (1), shows the unconditional average difference between the observed and hypothetical returns of funds. It amounts to -0.46 basis points per quarter, which represents a very small effect in economic terms but is highly statistically significant given

the large number of observations. When we zoom into the fund characteristics that explain the variation in these return differences, we find that the size of the institutional share classes mitigates the negative return implications. This suggests that institutional investors might be more sensitive to the financial consequences of ESG orientation than retail investors. In contrast, expense and turnover ratios amplify the negative return implications of conditioning on ESG scores. Given that funds targeting retail investors often have higher expense ratios and trade more, these results also point towards an asymmetry between institutional and retail funds.

Next, we analyze whether dedicated ESG funds have a potentially greater ability to manage tradeoffs between ESG scores and financial performance given that they explicitly focus on ESG considerations according to their fund documents. However, we find that a dummy variable classifying ESG funds based on their SEC filings does not load significantly, suggesting that these ESG funds lose neither more nor less than the average mutual fund. Interestingly, when we use fund names to identify ESG funds, we find a significantly positive coefficient that almost perfectly compensates for the unconditional negative return consequences. This result is not too surprising, as we have found in our earlier analysis that funds with ESG-related words in their names do not condition their portfolio weights on ESG scores. As a consequence, the differences between observed fund returns and hypothetical fund returns are negligible.

Although return differences look minimal at the average fund level, these differences add up to a significant dollar amount of financial performance lost at the industry level. We present the MF industry's cumulative dollar loss from 2009 to 2023 in Figure 4. Our baseline estimates show that the MF industry lost approximately USD 20 billion due to extensive conditioning on ESG considerations in their portfolio decisions during the sample period. The time-series dynamics paint an overall negative picture reaching the minimum cumulative financial loss of almost USD 30 billion at the end of the third quarter of 2021 followed by a short period from Quarter 4, 2021, to Quarter 4, 2022, during which the

reliance on ESG scores also resulted in better financial performance. The trend has reverted downward again in recent times.

This analysis again supports the idea that the average fund considers ESG scores to cater to its investors' ESG preferences and not to chase returns. As a consequence, the average fund paid a price for this behavior by giving up a small share of its financial performance. Although statistically speaking the result is strong, financial losses are small in economic terms at the individual fund level. Still, at the aggregate industry level, the fact that ESG-scores were consistently used to construct portfolios — almost "everywhere" — led to sizable economic losses. Of course, this analysis represents a back-of-the-envelope calculation of the financial costs of funds' reliance on ESG scores in their portfolio construction rather than a precise fund-by-fund assessment.

6 Conclusion

Our findings provide compelling evidence that ESG considerations are now a fundamental component of mutual fund investment decisions. Across our extensive dataset covering close to 29 million fund-firm-quarter observations, ESG scores consistently emerge as one of the most important determinants of mutual fund portfolio allocations, often rivaling or exceeding traditional financial metrics such as momentum, book-to-market, and size. Notably, ESG scores influence not only explicitly ESG-designated funds but also non-ESG funds, reinforcing the idea that ESG is integrated into portfolio decision-making across the mutual fund industry.

The heightened importance of ESG scores in the latter half of our sample period (2016–2021), despite growing political opposition to ESG investing, further underscores the resilience of these considerations in shaping fund allocations. Our decomposition of ESG into its environmental, social, and governance components reveals that social factors are the most influen-

tial, while environmental scores—despite extensive media and regulatory attention—exhibit limited significance once traditional firm characteristics are accounted for. These results highlight the nuanced ways in which mutual fund managers interpret and apply ESG information in their investment decisions.

Furthermore, our analysis of institutional versus retail funds, as well as fund manager political affiliations, reveals that investor preferences and ideological leanings play a role in ESG-based investment decisions. Institutional funds, likely due to peer influence and international ESG initiatives, exhibit a stronger response to ESG scores than retail funds. Additionally, we find that mutual fund managers' political affiliations systematically affect their ESG allocations, with Republican-leaning managers demonstrating a lower propensity to invest in high-ESG firms. This suggests that ESG investing is, at least in part, shaped by personal beliefs and broader political discourse. Future research should explore how evolving regulatory pressures, investor activism, and geopolitical developments will continue to shape ESG integration in financial markets.

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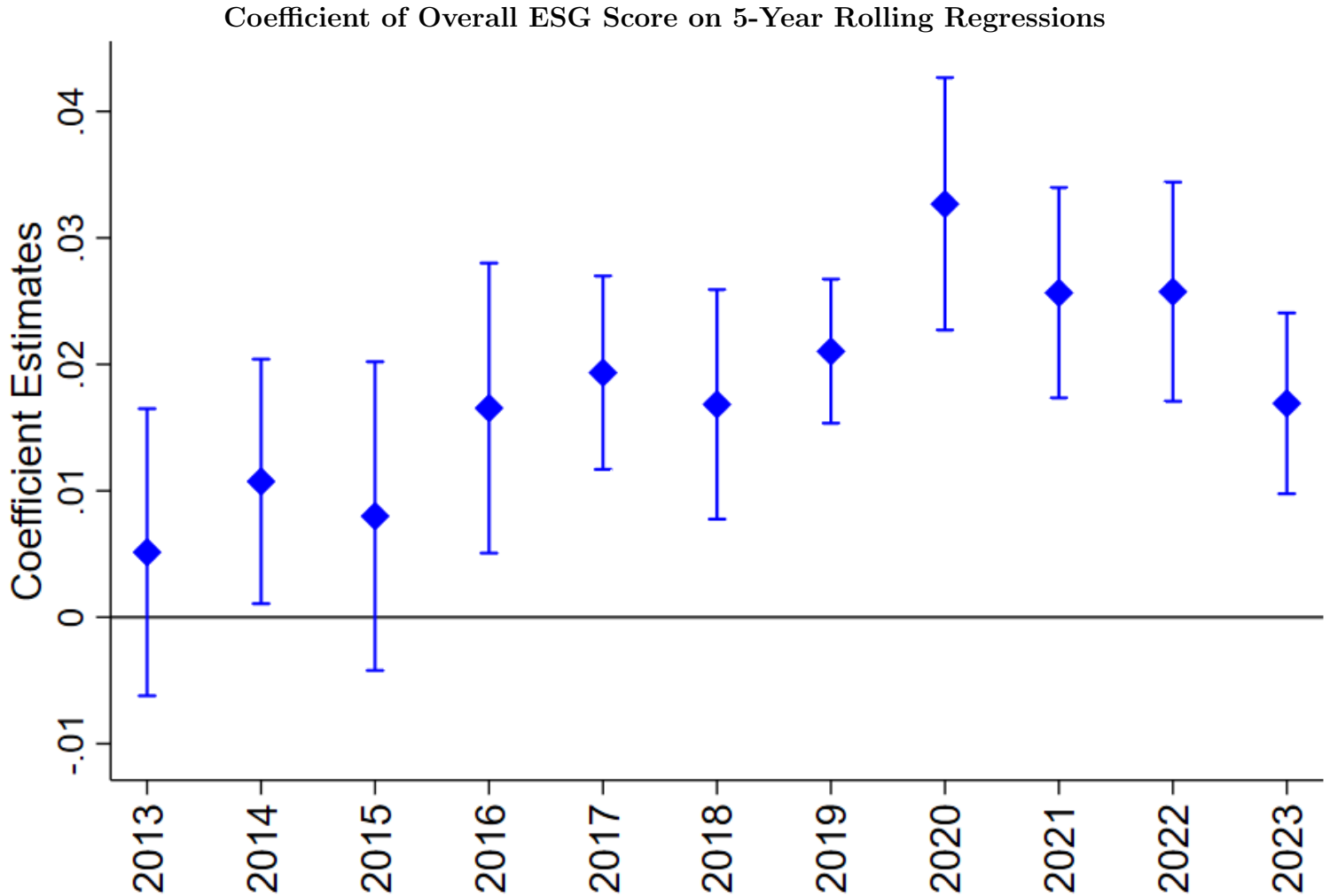


Figure 1: **Time Series of ESG Score Coefficient:** This figure plots the time series of estimated coefficients on the Overall ESG Score (*ESG Score*) from 2013 to 2023, obtained from five-year rolling regressions of mutual fund portfolio weights on firm-level characteristics (the specification in Column (4) of Table 3). Each dot represents the point estimate of the *ESG Score* coefficient for the respective rolling window, while the **vertical bars** show its 90% confidence interval, constructed from the standard errors of the regression coefficients. The solid line connecting the dots traces the evolution of the coefficient over time. A higher coefficient indicates that mutual funds placed greater weight on firms' ESG scores when determining portfolio allocations during that period. The coefficient rises sharply after the 2015 Paris Agreement—reflecting the surge in ESG enthusiasm—peaks around 2020, and then declines after 2021 amid growing anti-ESG sentiment and state-level restrictions, though it remains statistically significant and economically meaningful through 2023.

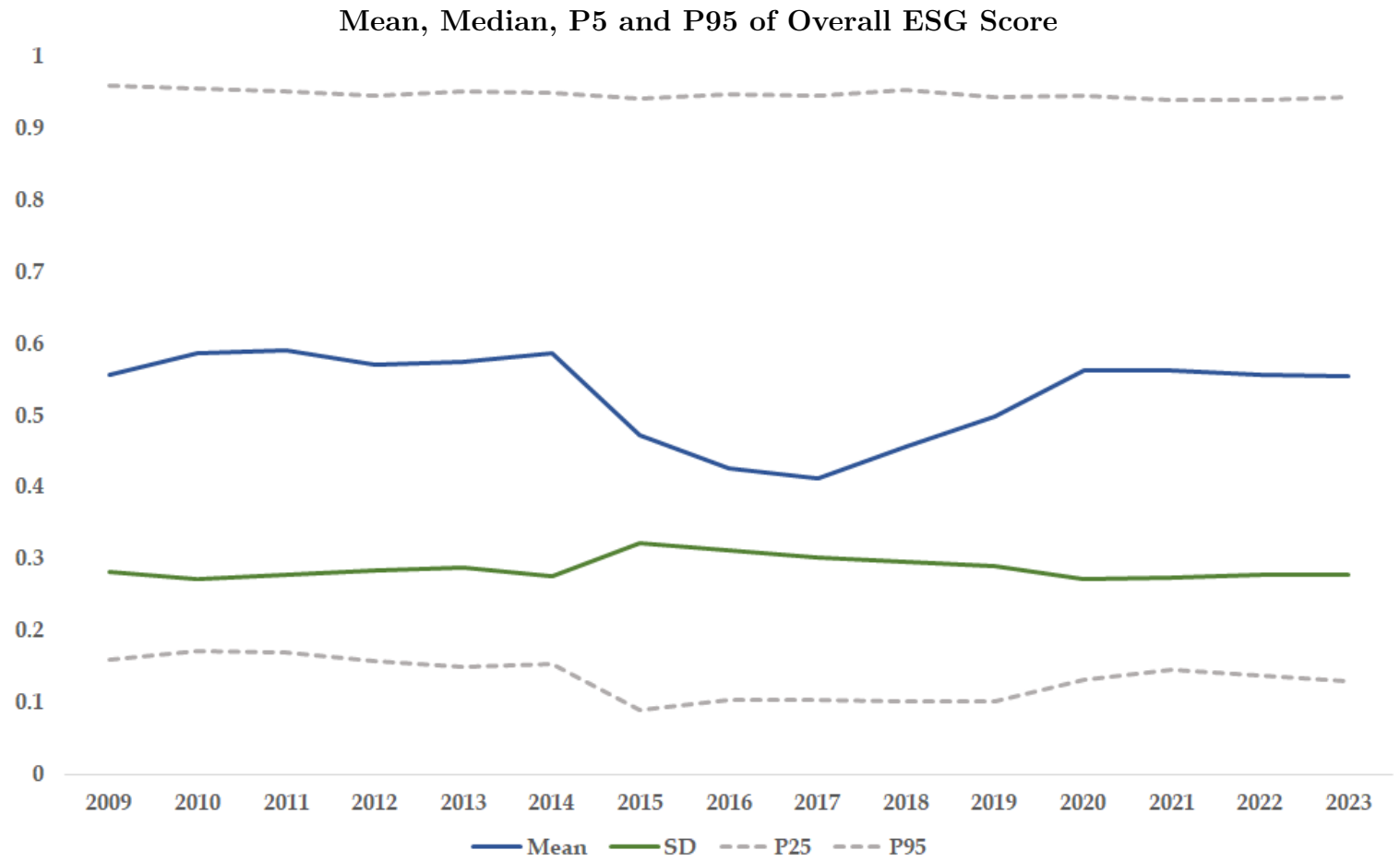


Figure 2: **Time Series of ESG Score:** This figure presents the time series of the mean, median, twenty fifth percentile, and ninety-fifth percentile of the Overall ESG Score (*ESG Score*) for firms in the sample from 2009 to 2023. The *ESG Score* is overall ESG score from LSEG (formerly Refinitiv or Asset4), which aggregates environmental, social, and governance metrics into a 0–100 scale. The plot illustrates the distribution and stability of firm-level ESG scores over time, showing relatively stable central tendencies and dispersion, with no pronounced upward or downward trend in aggregate ESG performance across firms during the sample period.

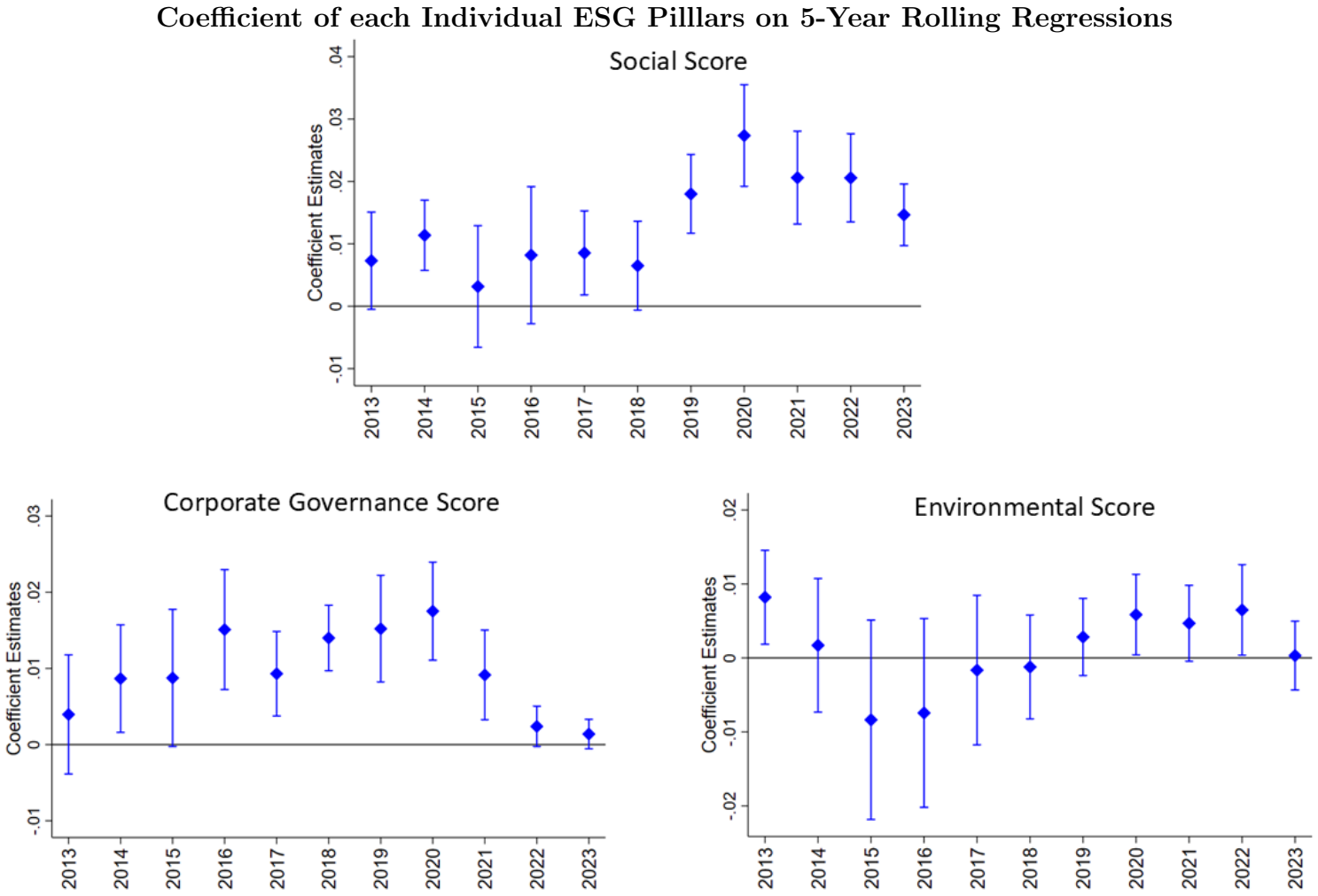


Figure 3: **Time Series of each of ESG Pillar Coefficient:** This figure presents the time series of coefficient estimates for each ESG pillar—Environmental (*Environmental Score*), Social (*Social Score*), Governance (*Corp Gov Score*)— from 2013 to 2023. Coefficients are obtained from five-year rolling regressions based on the specification in Column (4) of Table 3. Each dot denotes the estimated coefficient for a given rolling window, and the accompanying vertical bars depict the 90% confidence interval derived from standard errors of the regression coefficients. The connected line traces the dynamic importance of each pillar over time. The results show that the Social and Governance dimensions exert consistently stronger and statistically significant effects on mutual fund portfolio allocations, while the Environmental pillar loses significance after controlling for firm characteristics. The persistent positive and significant coefficients for the Social score indicate that fund managers are particularly sensitive to firms' social practices when adjusting portfolio weights.

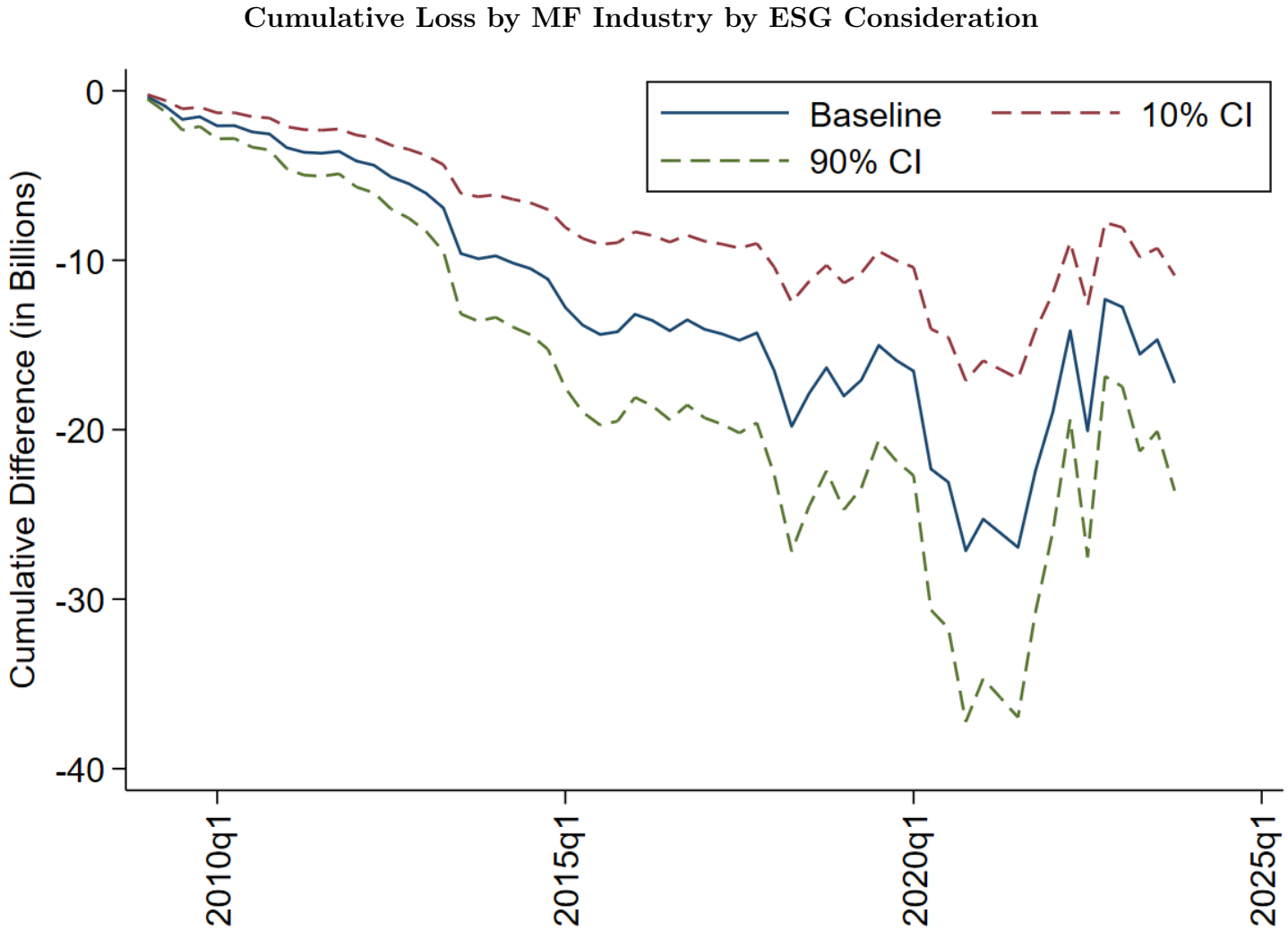


Figure 4: **Value Loss due to ESG Consideration:** This figure presents the cumulative dollar loss experienced by the U.S. mutual fund industry from 2009 to 2023 that is attributable to conditioning portfolio allocations on firms' ESG scores. For each fund and quarter, hypothetical counterfactual returns are computed by reweighting actual portfolio holdings to remove the portion of the portfolio fraction explained by the firm's Overall ESG Score (*ESG Score*) using the estimated coefficients from the main regression model in Table 3. The difference between observed and hypothetical returns represents the performance impact of ESG-based portfolio tilts. These differences are then aggregated across funds and over time to calculate the cumulative industry-wide value loss. The plot shows that while individual fund-level effects are economically small, the cumulative loss reaches roughly 20–30 billion USD by 2023, indicating that widespread ESG-driven allocation decisions collectively reduced industry returns modestly over the sample period.

Table 1: **Summary Statistics.**

The table shows the summary statistics of the variables that we use in our analysis. Panels A and B show the summary statistics at the fund-firm-quarter level and firm-quarter levels, respectively. Panel C shows the summary statistics of our ESG score variables and Panel D shows the summary statistics on the Mutual Funds in our sample. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is the overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Panel A: Using Fund-Firm-Quarter Level Observations

	N	Mean	SD	P25	Median	P95
	(1)	(2)	(3)	(4)	(5)	(6)
Portfolio Fraction	28,768,331	59.737	103.347	4.120	16.338	265.995
ESG Score_{Q}	28,768,331	0.656	0.276	0.418	0.753	0.958
Social Score_{Q}	28,768,331	0.567	0.283	0.306	0.621	0.937
Environmental Score_{Q}	22,221,602	0.550	0.327	0.182	0.604	0.944
Corp Gov Score_{Q}	28,768,331	0.760	0.186	0.678	0.810	0.957
Controversy Score_{Q}	28,101,947	0.824	0.309	0.768	1.000	1.000
Anomaly Rank_{Q-1}	28,768,331	2.973	0.207	2.841	2.988	3.294
Expected Ret_{Q}	28,768,331	0.011	0.019	0.006	0.010	0.045
BHR12_{Q-1}	28,768,331	0.180	0.650	-0.080	0.115	0.902
RET_QT_{Q-1}	28,768,331	0.040	0.205	-0.065	0.033	0.350
AsstGrwth_{Q-1}	28,768,331	0.095	0.214	0.000	0.056	0.447
ROA_{Q-1}	28,768,331	0.029	0.033	0.015	0.029	0.076
Ln BM_{Q-1}	28,768,331	-1.095	0.982	-1.633	-0.968	0.199
Ln MCAP_{Q-1}	28,768,331	9.022	1.812	7.770	8.966	12.132
Turnover $(\text{Firm})_{Q-1}$	28,768,331	0.200	0.189	0.108	0.155	0.471
Lev_{Q-1}	28,768,331	0.233	0.168	0.091	0.221	0.532
Sale Growth_{Q-1}	28,768,331	0.533	44.035	-0.014	0.067	0.585
Ln TNA_{Q-1}	28,768,331	10.658	2.296	9.223	10.724	14.460

Panel B: Using Firm-Quarter Level Observations

	N	Mean	SD	P25	Median	P95
	(1)	(2)	(3)	(4)	(5)	(6)
ESG Score$_Q$	86,608	0.527	0.292	0.251	0.501	0.948
Social Score$_Q$	86,608	0.442	0.287	0.171	0.390	0.917
Environmental Score$_Q$	68,147	0.415	0.315	0.128	0.289	0.935
Corp Gov Score$_Q$	86,608	0.717	0.204	0.622	0.765	0.949
Controversy Score$_Q$	83,563	0.895	0.245	1.000	1.000	1.000
Anomaly Rank$_{Q-1}$	86,608	2.958	0.219	2.816	2.971	3.300
Expected Ret$_Q$	86,608	0.013	0.021	-0.000	0.010	0.046
BHR12$_{Q-1}$	86,608	0.168	0.810	-0.133	0.087	0.990
RET_QT$_{Q-1}$	86,608	0.042	0.250	-0.079	0.029	0.401
AsstGrwth$_{Q-1}$	86,608	0.093	0.241	-0.008	0.055	0.492
ROA$_{Q-1}$	86,608	0.021	0.043	0.007	0.024	0.071
Ln BM$_{Q-1}$	86,608	-0.913	0.953	-1.435	-0.784	0.349
Ln MCAP$_{Q-1}$	86,608	7.872	1.763	6.668	7.856	10.905
Turnover (Firm)$_{Q-1}$	86,608	0.209	0.303	0.098	0.154	0.523
Lev$_{Q-1}$	86,608	0.219	0.183	0.053	0.196	0.561
Sale Growth$_{Q-1}$	86,608	0.942	61.028	-0.025	0.065	0.681

Panel C: Time Series of ESG Scores

	N	Mean	SD	P25	Median	P95
Year	(1)	(2)	(3)	(4)	(5)	(6)
2009	686	0.556	0.282	0.16	0.522	0.959
2010	710	0.587	0.271	0.171	0.568	0.956
2011	725	0.59	0.278	0.171	0.61	0.952
2012	722	0.57	0.285	0.158	0.579	0.947
2013	727	0.574	0.287	0.149	0.57	0.952
2014	726	0.588	0.276	0.153	0.606	0.949
2015	1,146	0.472	0.322	0.089	0.408	0.942
2016	1,623	0.426	0.312	0.103	0.266	0.948
2017	2,057	0.413	0.301	0.103	0.266	0.946
2018	2,192	0.457	0.296	0.102	0.356	0.953
2019	2,286	0.498	0.289	0.102	0.447	0.944
2020	2,349	0.562	0.273	0.132	0.556	0.946
2021	2,422	0.562	0.273	0.146	0.568	0.94
2022	2,445	0.557	0.278	0.137	0.561	0.941
2023	2,192	0.555	0.278	0.129	0.563	0.945

Panel D.1: Fund Summary Statistics (Non-ESG Funds)

	N	Mean	SD	P25	Median	P95
Year	(1)	(2)	(3)	(4)	(5)	(6)
TR Sample (Fund Level)						
TNA	11901	976.62	8501.44	16.85	88.77	3076.55
Num Hold per Q	11901	87.73	178.2	12.96	34.46	374.1
TR and CRSP Merged Sample (CRSP Portno Level)						
TNA	6,182	789.6	3,743	24.52	111.7	2,890
Income Yield	2,353	0.581	0.695	0.236	0.394	1.750
Management Fee	4,393	62.41	38.68	39.12	61.10	115.1
Expense Ratio	4,880	1.090	0.740	0.620	1.070	2.039
Fund Turnover Ratio	4,872	97.93	216.5	31.40	58.32	270.3
Dividend %	2,632	2.249	6.489	0.310	0.587	10.45
Avg Quarterly Returns	6,182	2.486	5.757	0.106	1.807	12.73

Panel D.2: Fund Summary Statistics (ESG Funds)

	N	Mean	SD	P25	Median	P95
Year	(1)	(2)	(3)	(4)	(5)	(6)
TR Sample (Fund Level)						
TNA	1,478	1243.41	4446.68	35.75	175.47	5302.04
Num Hold per Q	1,478	107.0	196.8	16.25	37	442.8
TR and CRSP Merged Sample (CRSP Portno Level)						
TNA	722	804.1	3,069	24.57	111.4	3,780
Income Yield	306	0.472	0.333	0.272	0.380	1.112
Management Fee	606	51.41	31.32	29.00	46.50	106.6
Expense Ratio	669	0.802	0.529	0.350	0.714	1.717
Fund Turnover Ratio	668	68.12	93.34	25.24	42.15	191.0
Dividend %	343	1.000	4.189	0.276	0.424	1.697
Avg Quarterly Returns	722	3.832	5.185	1.461	3.423	11.97

Table 2: **Correlation Matrix.**

The table shows the correlation matrix between the variables used in our analysis. The table shows the summary statistics of the variales that we use in our analysis. Panels A and B show the correlations among variables at the fund-firm-quarter level and firm-quarter levels, respectively. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Panel A: Using Fund-Firm-Quarter Level Observations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Portfolio Fraction	1.000																	
ESG Score$_Q$	0.299	1.000																
Social Score$_Q$	0.301	0.904	1.000															
Environmental Score$_Q$	0.309	0.880	0.818	1.000														
Corp Gov Score$_Q$	0.148	0.609	0.441	0.436	1.000													
Controversy Score$_Q$	-0.276	-0.228	-0.225	-0.313	-0.129	1.000												
Anomaly Rank$_{Q-1}$	0.011	0.254	0.249	0.248	0.112	-0.106	1.000											
Expected Ret$_Q$	-0.051	-0.016	-0.010	-0.023	-0.006	0.034	0.066	1.000										
BHR12$_{Q-1}$	0.025	-0.049	-0.044	-0.044	-0.024	0.015	-0.059	0.325	1.000									
Ret Qt$_Q$	0.044	0.001	-0.005	-0.003	0.007	0.008	-0.051	-0.094	-0.058	1.000								
Asst Grwth$_{Q-1}$	0.006	-0.136	-0.137	-0.143	-0.069	0.050	-0.501	0.056	0.227	-0.022	1.000							
ROA$_{Q-1}$	0.164	0.222	0.210	0.202	0.109	-0.073	0.092	0.025	0.040	-0.000	-0.032	1.000						
Ln BM$_{Q-1}$	-0.175	-0.053	-0.085	-0.084	-0.040	0.052	0.209	-0.106	-0.218	0.021	-0.147	-0.243	1.000					
Ln MCAP$_{Q-1}$	0.539	0.583	0.589	0.617	0.266	-0.513	0.077	-0.022	0.052	-0.055	0.005	0.251	-0.335	1.000				
Turnover (Firm)$_{Q-1}$	-0.038	-0.083	-0.080	-0.081	0.001	0.001	-0.126	-0.054	0.203	0.100	0.090	-0.073	0.002	-0.121	1.000			
Lev$_{Q-1}$	0.038	0.152	0.173	0.188	0.109	-0.015	0.034	0.011	-0.032	0.015	-0.007	0.063	-0.184	0.104	0.077	1.000		
Sale Grwth$_{Q-1}$	-0.005	-0.013	-0.013	-0.010	-0.002	0.003	-0.018	0.002	0.011	-0.008	0.019	-0.022	-0.007	-0.007	0.012	-0.004	1.000	
TNA $_{Q-1}$	-0.151	-0.026	-0.025	-0.024	-0.021	0.028	-0.012	0.059	0.016	-0.013	0.012	-0.029	-0.012	-0.031	-0.009	0.006	0.002	1.000

Panel B: Using Firm-Quarter Level Observations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
ESG Score_{Q}	1.000															
Social Score_{Q}	0.908	1.000														
Environmental Score_{Q}	0.881	0.825	1.000													
Corp Gov Score_{Q}	0.645	0.480	0.460	1.000												
Controversy Score_{Q}	-0.225	-0.225	-0.268	-0.142	1.000											
Anomaly Rank_{Q-1}	0.229	0.222	0.213	0.114	-0.095	1.000										
Expected Ret_{Q}	-0.007	-0.003	-0.017	-0.007	0.018	0.098	1.000									
BHR12_{Q-1}	-0.036	-0.035	-0.034	-0.024	0.008	-0.049	0.289	1.000								
Ret Qt_{Q}	-0.003	-0.009	-0.008	-0.002	0.013	-0.030	-0.061	-0.052	1.000							
Asst Grwth_{Q-1}	-0.116	-0.114	-0.123	-0.065	0.049	-0.480	0.039	0.245	-0.041	1.000						
ROA_{Q-1}	0.242	0.224	0.205	0.105	-0.065	0.137	0.020	0.032	-0.006	-0.010	1.000					
Ln BM_{Q-1}	-0.034	-0.061	-0.057	-0.021	0.012	0.238	-0.065	-0.212	0.043	-0.162	-0.107	1.000				
Ln MCAP_{Q-1}	0.593	0.603	0.580	0.300	-0.393	0.028	-0.038	0.060	-0.078	0.027	0.286	-0.310	1.000			
Turnover (Firm)$_{Q-1}$	-0.005	-0.002	0.003	0.037	-0.072	-0.090	-0.020	0.172	0.066	0.076	-0.049	-0.037	0.003	1.000		
Lev_{Q-1}	0.163	0.181	0.198	0.115	-0.037	0.035	0.003	-0.037	0.012	-0.008	0.069	-0.126	0.129	0.082	1.000	
Sale Grwth_{Q-1}	-0.013	-0.014	-0.010	0.000	0.001	-0.022	-0.000	0.013	-0.010	0.022	-0.028	-0.011	-0.006	0.017	-0.002	1.000

Table 3: **Overall ESG Score and Portfolio Weights in Mutual Funds**

The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, firm-level controls, and fixed effects at the fund x firm and the year level. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
ESG Score$_Q$	0.058***	0.022***	0.022***	0.022***
	(6.774)	(4.653)	(4.797)	(4.789)
Anomaly Rank$_{Q-1}$		0.018***	0.017***	0.017***
		(5.391)	(4.876)	(4.870)
Expected Ret$_Q$		-0.013	-0.013	-0.012
		(-1.639)	(-1.660)	(-1.523)
BHR12$_{Q-1}$		0.010**	0.009**	0.009**
		(2.719)	(2.503)	(2.570)
Ret Qt$_Q$		0.139***	0.139***	0.138***
		(13.551)	(13.715)	(13.619)
Asst Grwth$_{Q-1}$		0.001	0.002	0.002
		(0.856)	(1.700)	(1.683)
ROA$_{Q-1}$		0.012***	0.011***	0.011***
		(4.997)	(4.576)	(4.596)
Ln BM$_{Q-1}$		-0.008*	-0.015***	-0.015***
		(-2.039)	(-3.326)	(-3.332)
Ln MCAP$_{Q-1}$		1.275***	1.265***	1.267***
		(57.870)	(54.752)	(55.844)
Turnover (Firm)$_{Q-1}$			0.003	0.003
			(0.869)	(0.837)
Lev$_{Q-1}$			-0.022***	-0.022***
			(-4.841)	(-4.793)
Sale Grwth $_{Q-1}$			-0.001	-0.001
			(-1.730)	(-1.736)
Ln TNA $_{Q-1}$				-0.054***
				(-4.697)
Observations	28,768,331	2,8768,331	2,8768,331	2,8768,331

Table 4: **The Impact of the Overall ESG Score on Portfolio Weights in Sub-Periods.**

The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, firm-level controls, and fixed effects at the fund x firm and the year level. Panel A and B show the results in the second and first half of our sample, repectively. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Panel A: 2017 - 2023

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
ESG Score$_Q$	0.043	0.027***	0.028***	0.027***
	(5.112)	(4.950)	(5.098)	(5.011)
Anomaly Rank$_{Q-1}$		0.018***	0.017***	0.017***
		(5.058)	(4.542)	(4.532)
Expected Ret$_Q$		-0.013	-0.013	-0.011
		(-1.339)	(-1.364)	(-1.183)
BHR12$_{Q-1}$		0.008**	0.007*	0.007**
		(2.834)	(2.358)	(2.489)
Ret Qt$_Q$		0.148***	0.147***	0.147***
		(11.265)	(11.375)	(11.266)
Asst Grwth$_{Q-1}$		-0.000	0.001	0.001
		(-0.113)	(0.557)	(0.495)
ROA$_{Q-1}$		0.016***	0.015***	0.015***
		(6.509)	(6.288)	(6.402)
Ln BM$_{Q-1}$		-0.010*	-0.017**	-0.017**
		(-2.032)	(-2.638)	(-2.631)
Ln MCAP$_{Q-1}$		1.375***	1.363***	1.367***
		(46.168)	(42.634)	(44.586)
Turnover (Firm)$_{Q-1}$			0.002	0.002
			(0.725)	(0.651)
Lev$_{Q-1}$			-0.021**	-0.020**
			(-3.429)	(-3.367)
Sale Grwth$_{Q-1}$			-0.002	-0.002
			(-1.814)	(-1.805)
TNA$_{Q-1}$				-0.073***
				(-4.737)
Observations	20,462,402	20,462,402	20,462,402	20,462,402

Panel B: 2009 - 2016

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
ESG Score$_Q$	0.091***	0.015*	0.015*	0.015*
	(5.836)	(1.923)	(1.981)	(2.014)
Anomaly Rank$_{Q-1}$		0.017***	0.017***	0.016***
		(4.025)	(3.644)	(3.656)
Expected Ret$_Q$		-0.017	-0.016	-0.015
		(-0.862)	(-0.855)	(-0.807)
BHR12$_{Q-1}$		0.019***	0.019***	0.019***
		(8.167)	(8.501)	(8.396)
Ret Qt$_Q$		0.116***	0.116***	0.116***
		(12.426)	(12.408)	(12.417)
Asst Grwth$_{Q-1}$		0.003	0.004**	0.004**
		(1.720)	(2.531)	(2.573)
ROA$_{Q-1}$		0.001	-0.000	-0.000
		(0.323)	(-0.137)	(-0.096)
Ln BM$_{Q-1}$		-0.017**	-0.022***	-0.023***
		(-2.661)	(-3.584)	(-3.640)
Ln MCAP$_{Q-1}$		0.997***	0.992***	0.993***
		(32.093)	(35.283)	(35.761)
Turnover (Firm)$_{Q-1}$			0.005	0.005
			(0.627)	(0.617)
Lev$_{Q-1}$			-0.015**	-0.015**
			(-3.171)	(-3.206)
Sale Grwth$_{Q-1}$			0.003***	0.003***
			(4.077)	(4.049)
TNA $_{Q-1}$				-0.055***
				(-4.157)
Observations	8,203,177	8,203,177	8,203,177	8,203,177

Table 5: **Overall ESG Score and Change in Mutual Funds Positions in Industry-based Sub-samples.**

The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, firm-level controls, and fixed effects at the fund x firm and the year level among Brown and Non-brown Industries. Brown industry dummy (Brown Ind Dummy) is 1 if a firm belongs to brown industry and 0 otherwise. We classify brown industries in two ways: first, as the most polluting Fama–French 49 industries based on the EPA's emissions data (e.g., Oil & Gas, Transportation); and second, as industries typically regarded as 'sin' industries, such as Tobacco. Non-brown industries are the rest. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Brown Industry Dummy x ESG Score$_Q$	0.037**	0.013**	0.012**	0.012**
	(2.149)	(2.496)	(2.323)	(2.269)
ESG Score$_Q$	0.068***	0.018***	0.019***	0.019***
	(6.858)	(3.625)	(3.813)	(3.818)
Anomaly Rank$_{Q-1}$		0.018***	0.017***	0.017***
		(5.344)	(4.837)	(4.832)
Expected Ret$_Q$		-0.013	-0.013	-0.012
		(-1.646)	(-1.665)	(-1.529)
BHR12$_{Q-1}$		0.010**	0.009**	0.009**
		(2.716)	(2.498)	(2.565)
Ret Qt$_Q$		0.139***	0.139***	0.138***
		(13.553)	(13.716)	(13.620)
Asst Grwth$_{Q-1}$		0.001	0.002	0.002
		(0.821)	(1.657)	(1.641)
ROA$_{Q-1}$		0.012***	0.011***	0.010***
		(4.990)	(4.571)	(4.591)
Ln BM$_{Q-1}$		-0.008*	-0.015***	-0.015***
		(-2.012)	(-3.293)	(-3.299)
Ln MCAP$_{Q-1}$		1.276***	1.266***	1.268***
		(58.035)	(54.875)	(55.970)
Turnover (Firm)$_{Q-1}$			0.003	0.003
			(0.876)	(0.844)
Lev$_{Q-1}$			-0.022***	-0.022***
			(-4.805)	(-4.759)
Sale Grwth$_{Q-1}$			-0.001	-0.001
			(-1.731)	(-1.737)
TNA $_{Q-1}$				-0.054***
				(-4.693)
Observations	28,768,331	28,768,331	28,768,331	28,768,331

Table 6: **Overall ESG Score and Portfolio Weights in ESG-Designated Mutual Funds.**

The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, firm-level controls, and fixed effects at the fund x firm and the year level. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. ESG Dummy equals to 1 for all fund-quarter observations for the year if a fund mentions ESG-related words (Appendix B) in its SEC filings for the year and 0 otherwise. Column (2) includes the full sample, Column (3) excludes fund-quarter observations of funds that mention more than the median number of ESG-related words, and Column (4) excludes those with fewer than the median. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
ESG Dummy x ESG Score$_Q$	0.007	0.023***	0.065**	0.105**
	(0.458)	(3.151)	(2.939)	(2.975)
ESG Dummy		-0.002	-0.038	-0.083***
		(-0.212)	(-1.727)	(-3.134)
ESG Score$_Q$	0.022***	0.020***	0.020***	0.020***
	(4.643)	(4.480)	(4.360)	(4.479)
Anomaly Rank$_{Q-1}$	0.017***	0.017***	0.017***	0.016***
	(4.870)	(4.855)	(4.896)	(4.777)
Expected Ret$_Q$	-0.012	-0.012	-0.012	-0.013
	(-1.523)	(-1.503)	(-1.480)	(-1.577)
BHR12$_{Q-1}$	0.009**	0.009**	0.009**	0.009**
	(2.569)	(2.572)	(2.558)	(2.619)
Ret Qt$_Q$	0.138***	0.138***	0.138***	0.139***
	(13.620)	(13.619)	(13.597)	(13.604)
Asst Grwth$_{Q-1}$	0.002	0.002	0.003*	0.002*
	(1.683)	(1.689)	(1.764)	(1.771)
ROA$_{Q-1}$	0.011***	0.011***	0.011***	0.010***
	(4.596)	(4.602)	(4.591)	(4.475)
Ln BM$_{Q-1}$	-0.015***	-0.015***	-0.016***	-0.016***
	(-3.332)	(-3.350)	(-3.646)	(-3.600)
Ln MCAP$_{Q-1}$	1.267***	1.267***	1.261***	1.267***
	(55.844)	(55.859)	(54.533)	(55.567)
Turnover (Firm)$_{Q-1}$	0.003	0.003	0.003	0.003
	(0.837)	(0.843)	(0.846)	(0.837)
Lev$_{Q-1}$	-0.022***	-0.022***	-0.023***	-0.022***
	(-4.793)	(-4.791)	(-4.849)	(-4.640)
Sale Grwth$_{Q-1}$	-0.001	-0.001	-0.001*	-0.001
	(-1.736)	(-1.749)	(-1.789)	(-1.695)
TNA $_{Q-1}$	-0.054***	-0.054***	-0.053***	-0.056***
	(-4.716)	(-4.724)	(-4.583)	(-4.838)
Observations	28,768,331	28,768,331	27,911,553	27,768,008

Table 7: **Individual ESG Pillar Scores and Change in Mutual Funds Positions.**
The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on individual components of the overall ESG score, firm-level controls, and fixed effects at the fund x firm and the year level. Panel A, B, and C show the results on social, corporate governance, and environmental scores, respectively. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The individual ESG scores are from LSEG and are contemporaneous, as we assume that they are updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Panel A: Social Score

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Social Score$_Q$	0.049***	0.018***	0.018***	0.018***
	(6.070)	(4.310)	(4.515)	(4.514)
Anomaly Rank$_{Q-1}$		0.018***	0.017***	0.017***
		(5.503)	(4.971)	(4.963)
Expected Ret$_Q$		-0.013	-0.013	-0.012
		(-1.625)	(-1.645)	(-1.510)
BHR12$_{Q-1}$		0.010**	0.009**	0.009**
		(2.733)	(2.511)	(2.578)
Ret Qt$_Q$		0.139***	0.139***	0.138***
		(13.585)	(13.751)	(13.654)
Asst Grwth$_{Q-1}$		0.001	0.002	0.002
		(0.775)	(1.615)	(1.598)
ROA$_{Q-1}$		0.012***	0.011***	0.011***
		(5.199)	(4.773)	(4.793)
Ln BM$_{Q-1}$		-0.007*	-0.014***	-0.014***
		(-1.773)	(-3.099)	(-3.108)
Ln MCAP$_{Q-1}$		1.278***	1.267***	1.269***
		(57.860)	(54.693)	(55.791)
Turnover (Firm)$_{Q-1}$			0.003	0.003
			(0.862)	(0.830)
Lev$_{Q-1}$			-0.022***	-0.022***
			(-4.863)	(-4.814)
Sale Grwth$_{Q-1}$			-0.001	-0.001
			(-1.706)	(-1.712)
TNA $_{Q-1}$				-0.054***
				(-4.698)
Observations	28,768,331	28,768,331	28,768,331	28,768,331

Panel B: Corporate Governance Score

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Corp Gov Score$_Q$	0.018**	0.007**	0.008**	0.008**
	(2.553)	(2.377)	(2.481)	(2.475)
Anomaly Rank$_{Q-1}$		0.018***	0.017***	0.017***
		(5.590)	(5.068)	(5.061)
Expected Ret$_Q$		-0.013	-0.013	-0.012
		(-1.604)	(-1.623)	(-1.490)
BHR12$_{Q-1}$		0.010**	0.009**	0.009**
		(2.726)	(2.505)	(2.572)
Ret Qt$_Q$		0.139***	0.139***	0.138***
		(13.573)	(13.735)	(13.638)
Asst Grwth$_{Q-1}$		0.001	0.002	0.002
		(0.697)	(1.490)	(1.472)
ROA$_{Q-1}$		0.013***	0.011***	0.011***
		(5.259)	(4.843)	(4.864)
Ln BM$_{Q-1}$		-0.006	-0.013**	-0.013**
		(-1.426)	(-2.718)	(-2.730)
Ln MCAP$_{Q-1}$		1.281***	1.270***	1.273***
		(57.425)	(54.143)	(55.220)
Turnover (Firm)$_{Q-1}$			0.003	0.003
			(0.859)	(0.828)
Lev$_{Q-1}$			-0.022***	-0.022***
			(-4.767)	(-4.718)
Sale Grwth$_{Q-1}$			-0.001	-0.001
			(-1.738)	(-1.744)
TNA $_{Q-1}$				-0.054***
				(-4.703)
Observations	28,768,331	28,768,331	28,768,331	28,768,331

Panel C: Environmental Score

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Environmental Score$_Q$	0.052***	-0.004	-0.003	-0.003
	(3.383)	(-0.938)	(-0.619)	(-0.595)
Anomaly Rank$_{Q-1}$		0.018***	0.017***	0.017***
		(5.507)	(4.997)	(4.992)
Expected Ret$_Q$		-0.013	-0.014	-0.013
		(-1.625)	(-1.646)	(-1.514)
BHR12$_{Q-1}$		0.010**	0.010**	0.010**
		(2.627)	(2.475)	(2.538)
Ret Qt$_Q$		0.138***	0.138***	0.138***
		(14.084)	(14.252)	(14.145)
Asst Grwth$_{Q-1}$		0.001	0.002	0.002
		(0.668)	(1.493)	(1.481)
ROA$_{Q-1}$		0.013***	0.011***	0.011***
		(5.222)	(4.798)	(4.825)
Ln BM$_{Q-1}$		-0.005	-0.012**	-0.012**
		(-1.223)	(-2.441)	(-2.452)
Ln MCAP$_{Q-1}$		1.281***	1.271***	1.273***
		(57.485)	(54.024)	(55.043)
Turnover (Firm)$_{Q-1}$			0.002	0.002
			(0.568)	(0.537)
Lev$_{Q-1}$			-0.021***	-0.020***
			(-4.311)	(-4.257)
Sale Grwth$_{Q-1}$			-0.001	-0.001
			(-1.725)	(-1.731)
TNA $_{Q-1}$				-0.054***
				(-4.648)
Observations	28,287,822	28,287,822	28,287,822	28,287,822

Table 8: **Falsification.**

The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, firm-level controls, and fixed effects at the fund x firm and the year level for a hypothetical S&P 500 fund. A hypothetical S&P 500 fund is a fund that exactly matches the theoretical S&P 500 portfolio fractions for each stock for each quarter. The dependent variable, Portfolio Fraction, is defined as the ratio of a constituent's market capitalization at the end of the quarter to the total market capitalization of all S&P 500 constituents at that time. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Dependent Variable	Log of Portfolio Fractions (Quarterly)	
	(1)	(2)
ESG Score$_Q$	0.000	0.001
	(0.278)	(0.556)
Anomaly Rank$_{Q-1}$		-0.003
		(-0.906)
Expected Ret$_Q$		-0.007
		(-0.466)
BHR12$_{Q-1}$	-0.006	-0.004
	(-0.898)	(-0.689)
Ret Qt$_{Q-1}$	0.131***	0.131***
	(26.895)	(25.780)
Asst Grwth$_{Q-1}$	0.003**	0.002
	(2.515)	(1.046)
ROA$_{Q-1}$q	0.002	0.002
	(0.879)	(0.958)
Ln BM$_{Q-1}$	-0.009***	-0.009***
	(-3.284)	(-3.236)
Ln Mcap$_{Q-1}$	1.111***	1.108***
	(154.289)	(154.296)
Turnover (Firm) $_{Q-1}$	0.009*	0.009*
	(1.884)	(1.780)
Lev$_{Q-1}$	-0.003*	-0.003*
	(-1.765)	(-1.938)
Sale Grwth$_{Q-1}$	0.001	0.001
	(0.219)	(0.271)
Ln TNA $_{Q-1}$	0.001	0.001
	(0.733)	(0.672)
Observations	22,040	22,040

Table 9: **Fund Characteristics by EGS Score Beta Quintiles.**

This table reports characteristics of mutual funds sorted into quintiles based on their estimated ESG Score loadings. For each fund, we estimate the specification in Table 3, Column 4 without fixed effects and obtain a fund-level ESG loading (ESG beta). Funds are then assigned to quintiles ranging from Q1 (lowest ESG loading) to Q5 (highest). Columns 1–5 present the mean characteristics for each quintile, and Columns 6–9 report the corresponding t-statistics for differences in means (for example, Q5–Q1 and Q5–Q3). Panel A summarizes fund-level attributes, including size, fees, flows, returns, and portfolio concentration (HHI). Panel B reports the average portfolio composition by security type for each quintile. Together, these panels describe how fund characteristics and portfolio allocations vary across the ESG-loading distribution. Detailed interpretation of these patterns is provided in the text.

Panel A: Fund Characteristics by ESG Beta Quintiles

ESG Ecore Beta Quintiles	Q1	Q2	Q3	Q4	Q5	Q5 - Q1	Q4,5 - Q1,2	Q5 - Q3	Q1 - Q3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ESG Score T-Stat	-1.694	-0.755	0.38	1.068	1.73	69.301	83.843	30.397	-44.78
ESG Score Beta	-0.375	-0.032	0.002	0.036	0.301	10.865	11.949	8.864	-7.598
TNA	574.367	604.986	956.684	999.243	861.975	2.127	3.781	-0.477	-1.915
Management Fee	66.6	62.61	54.239	59.038	67.437	0.489	-1.165	7.759	6.973
Expense Ratio	1.179	1.072	0.972	1.028	1.16	-0.731	-1.34	6.053	6.795
Turnover Ratio (Fund)	97.647	84.496	109.129	83.044	103.774	0.778	0.452	-0.44	-1.025
Dividend %	2.489	2.256	1.839	2.271	2.69	0.327	0.283	2.241	1.291
Quarterly Returns	2.411	3.004	3.211	3.177	2.275	-0.578	0.16	-3.835	-3.172
Yield	0.645	0.495	0.545	0.508	0.621	-0.38	-0.294	1.412	2.226
TNA-Weighted Fun Flow $	-0.905	3.19	3.274	3.794	4.955	1.793	0.551	0.402	-1.136
HHI of Portfolio Holdings	0.174	0.068	0.105	0.062	0.179				
Correlation with Green Factor	-0.589	0.301	0.232	0.069	0.697				
Number of Funds	1068	1209	1164	1217	1090				

Panel B: Funds' Holdings Compositions by ESG Beta Quntiles

ESG Ecore Beta Quintiles	Q1	Q2	Q3	Q4	Q5	Q5 - Q1	Q4,5 - Q1,2	Q5 - Q3	Q1 - Q3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Common Stock %	82.371	88.872	89.996	88.503	82.632	0.252	-0.138	-8.069	-8.631
Preferred Stock %	0.294	0.157	0.1	0.142	0.296	0.03	-0.238	5.296	5.34
Other Equities %	2.815	1.459	1.2	1.352	2.641	-0.835	-1.124	8.317	8.751
Other Securities %	3.95	1.842	1.911	1.69	3.22	-1.375	-1.471	2.861	4.811
Convertible Bonds %	0.167	0.189	0.034	0.059	0.153	-0.25	-1.485	2.48	2.683
Municipal Bonds %	0.124	0.134	0.019	0.03	0.083	-0.61	-1.492	1.398	2.194
Asset-Backed Securities %	0.292	0.153	0.219	0.2	0.257	-0.416	0.168	0.338	0.621
Corporate Bonds %	2.208	1.199	0.71	1.33	2.194	-0.038	0.293	5.058	5.067
All Bonds %	1.417	1.386	1.158	1.167	1.814	1.12	0.321	2.034	0.908
Other Fixed-Income Securities %	0.45	0.196	0.108	0.285	0.433	-0.121	0.507	3.876	2.97
Mortgage-Backed Securities %	0.197	0.231	0.147	0.322	0.323	1.662	2.081	2.273	0.922
Government Bonds %	1.906	1.509	1.554	1.808	2.153	0.88	1.433	2.011	1.242
Cash %	3.899	2.703	2.852	3.134	3.804	-0.197	0.641	1.972	2.562

Table 10: **Standardized Overall ESG Score and Change in Mutual Funds Positions (Managers' Political Affiliation).**

The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, firm-level controls, fixed effects at the fund x firm and the year level, and MF managers' political affiliation. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. The variable Republican Affiliation is the percentage of fund managers contributing to the republican parties averaged over the sample period. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score score is the overall ESG score from LSEG, and it is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret_QT), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Dependent Variable	Log of Portfolio Fractions (Quarterly)	
	(1)	(2)
Republican Affiliation x ESG Score$_Q$	-0.008	-0.018*
	(-1.069)	(-2.094)
Republican Affiliation $_Q$	0.003	0.019
	(0.143)	(1.077)
ESG Score$_Q$	0.057***	0.011
	(5.315)	(1.533)
Anomaly Rank$_{Q-1}$		0.019***
		(3.493)
Expected Ret$_Q$		-0.010
		(-1.411)
BHR12$_{Q-1}$		0.010*
		(1.953)
Ret Qt$_Q$		0.135***
		(13.842)
Asst Grwth$_{Q-1}$		0.003
		(1.591)
ROA$_{Q-1}$		0.008**
		(2.674)
Ln BM$_{Q-1}$		-0.019**
		(-2.527)
Ln MCAP$_{Q-1}$		1.238***
		(31.659)
Turnover (Firm)$_{Q-1}$		-0.003
		(-0.867)
Lev$_{Q-1}$		-0.024***
		(-4.162)
Sale Grwth$_{Q-1}$		-0.001
		(-1.243)
TNA (Firm)$_{Q-1}$		-0.069**
		(-2.837)
Observations	4,299,164	4,299,164

Table 11: **Return Differential with and without ESG Consideration**

The table shows the results of pooled regressions of funds' return differential with and without ESG consideration on various fund characteristics, and funds' ESG designation. The dependent variable is the difference in funds' quarterly returns with and without ESG consideration in their portfolio decisions. Independent variables are natural logarithm of funds' US equity only assets under management (TNA), TNA weighted institutional vs retail share classes offerings (Inst TNAW), Expense Ratio, management fee (MGMT Fee), funds' turnover ratio (Turnover Ratio), Funds' ESG designation based on ESG-related words (Appendix B) in their SEC filings for the year (ESG Dummy) and the funds' ESG designation solely based on the name of the fund regardless what they mention is their SEC filings (ESG Dummy NB). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are robust standard errors. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Dependent Variable:	Difference in Returns			
	(1)	(2)	(3)	(4)
Ln TNA		-0.009	-0.009	-0.007
		(-1.078)	(-1.125)	(-0.842)
Inst TNAW		0.134***	0.132***	0.135***
		(3.086)	(3.014)	(3.098)
Expense Ratio		-10.032***	-9.851***	-9.260***
		(-3.351)	(-3.272)	(-3.080)
MGMT Fee		-0.000	-0.000	-0.000
		(-0.228)	(-0.232)	(-0.242)
Turnover Ratio		-0.037***	-0.036***	-0.035***
		(-2.726)	(-2.711)	(-2.639)
ESG Dummy			0.049	
			(0.804)	
ESG Dummy NB				0.345***
				(3.531)
Constant	-0.464***	-0.339***	-0.340***	-0.375***
	(-40.983)	(-3.113)	(-3.116)	(-3.410)
Observations	242485	119332	119332	119332

Appendix A. Variable Definitions

In this appendix, we provide a comprehensive explanation of how we calculate our variables.

Anomaly Rank$_{Q-1}$: Anomaly Long Raking calculated in the spirit of Engelberg, McLean, and Pontiff, 2018. For each month, for each anomaly, using the factor data from Jensen et al. (2023) we divide all firm-month observations into five quintiles based on the factor values. We divide samples so that higher quintiles always predict higher returns. Anomaly Long Ranking for a month is the firm's average quintile ranking across all 400 anomalies. We then average the anomaly long ranking for all three months to get the quarterly number used in our regression

AsstGrwth: AsstGrwth is the Year-over-year asset growth.

BHR12: Last twelve months buy and hold returns starting at month-11 to month-1.

Brown Industry Dummy: Brown dummy is 1 for all the brown industries defined using the EPA report on the most polluted industries and typically considered sin industries such as tobacco and 0 otherwise. Industry categorizations is done using Fama-French 49 industries.

Corp Gov Score$_Q$: ESG corporate governance pillar score provided by LSEG (former Refinitiv or Asset4)

Controversy Score$_Q$: ESG controversy score provided by LSEG (former Refinitiv or Asset4)

Environmental Score$_Q$: ESG environmental pillar score provided by LSEG (former Refinitiv or Asset4)

ESG Dummy: ESG dummy is 1 for a fund for a year if the fund's 479K or 497J filings for the year included any ESG-related words listed in Appendix B, and 0 otherwise.

Expected Ret: Expected Ret is expected returns of Bessembinder et al. (2019) calculated using fourteen firm characteristics.

INST Dummy: Institutional dummy is a binary variable that is equal to 1 for fund who only offer institutional funds and 0 for a fund that only offer retail funds. A fund that offer mix is excluded from the sample.

Lev: Leverage is calculated as total debt divided by total assets for the quarter.

Ln BM: Natural logarithm of book-to-market ratio. BM ratio is calculated following Davis, Fama, and French (2000). Book equity is total common ordinary equity plus deferred taxes and investment tax credits minus the book value of the preferred stock (in the following order: preferred stock redemption value, preferred stock liquidating value or preferred stock at carrying value), and market equity is the closing price calendar times common shares outstanding.

Ln MCAP: Ln MCAP is the Natural logarithm of market capitalization. Market capitalization for quarter Q is calculated as the quarter closing price times the shares outstanding.

Ln Assets (Fund): Ln Assets is the natural logarithm of total assets under management for the quarter. The total assets are calculated using the individual stock holdings data provided by Thomson Reuters' holding data.

ESG Score$_Q$: Overall ESG score provided by LSEG (former Refinitiv or Asset4)

Ret_Qt: Ret Qt is the quarterly returns of a stock.

Republican Affiliation: Republican Affiliation is percentage of mutual fund managers of a fund that donated to the republican party out of all the managers who made the political donations and identified using Federal Election Committee individual donation data.

ROA: Return on Assets is calculated as income before extraordinary items divided by the total assets.

Sale Grwth: Sales growth is growth in sales from the same quarter of the previous year to this year.

Social Score$_Q$: ESG social pillar score provided by LSEG (former Refinitiv or Asset4)

TNA: TNA, sometime also referred to as AUM, is a fund's total assets for the quarter calculated using the stock holdings data from Thompson Reuters. As it is calculated solely based on the stock holdings dataset, this is US equity only part of total assets of the fund for the quarter.

Turnover (Firm): Turnover is the calendar year average of monthly turnovers, calculated as monthly trading volumes divided by the total outstanding shares.

Appendix B: List of Words/Phrases Counted in SEC Filings (Both lower and upper cases)

In this appendix, we provide a list of words that we int the SEC filings of Mutual Funds. We specifically look at the form 497K and 497J, where the funds explain their investment strategies.

environmental social, social governance, social and governance, corporate social, corporate responsibility, impact investing, responsible investing, esg criteria, esg practices, sustainability, sustainable, and sum of three pillar words (sum of individual count of environment or environmental, social, and governance given that all three are non-missing in the filings)

Appendix C. Additional Plots and Tables

In this appendix, we provide additional plots and tables that contribute to the story of our paper.

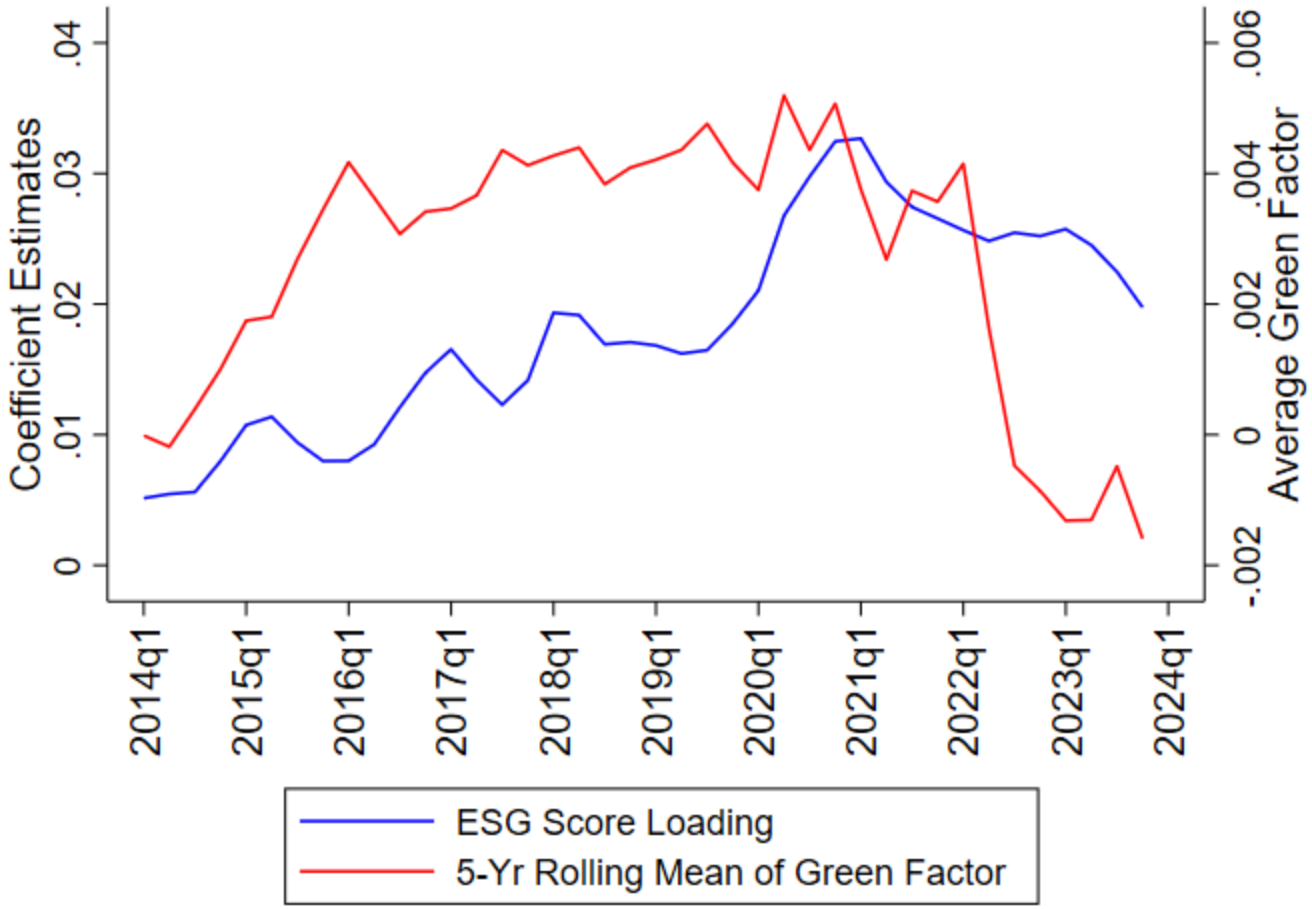
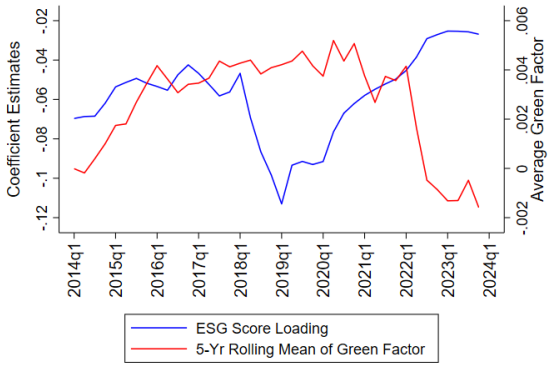
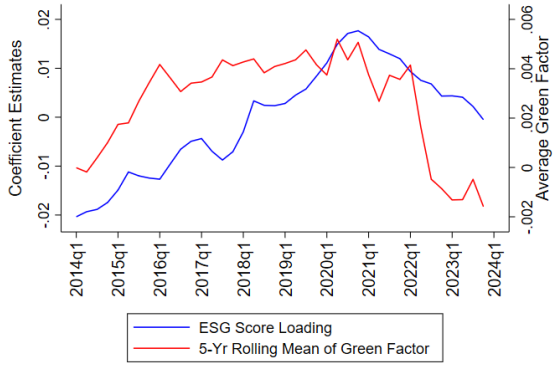


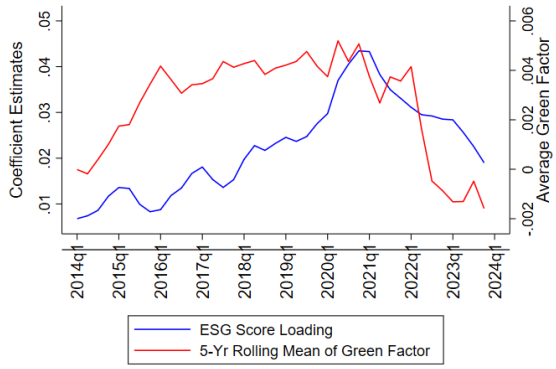
Figure A.I: **Time Series of ESG Score Loadings and Mean of Green Factor:** This figure plots the coefficient estimates from our main specification model together with the average of the Green Factor from (Pástor et al., 2022). For each quarter, we obtain the slope coefficient of *ESG Score* by estimating our main model (Column 4 of Table 3) on a five-year (20-quarter) rolling basis. To align the time frames, we also average the Green Factor over the same five-year rolling windows. The Green Factor from Pástor et al. (2022) measures the return premium on environmentally friendly ("green") stocks relative to environmentally unfriendly ("brown") ones, capturing broad market sentiment toward sustainable investing. The figure shows that the time-series movements of the *ESG Score* coefficients somewhat track changes in the Green Factor, with a correlation of 9.04%. This strong co-movement suggests that mutual fund managers' sensitivity to ESG scores varies with aggregate market sentiment toward green assets, reinforcing the interpretation that ESG integration is partly driven by shifts in investor preferences rather than purely by risk-return considerations.



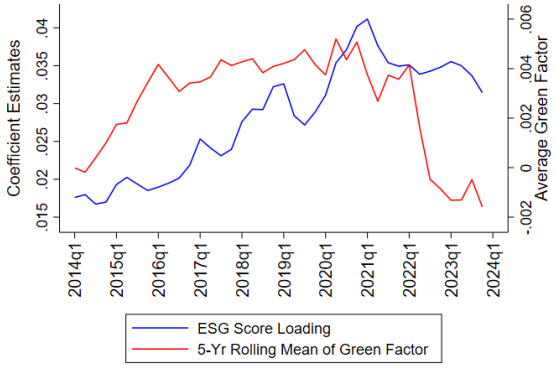
(a) ESG Score Beta Quintile One



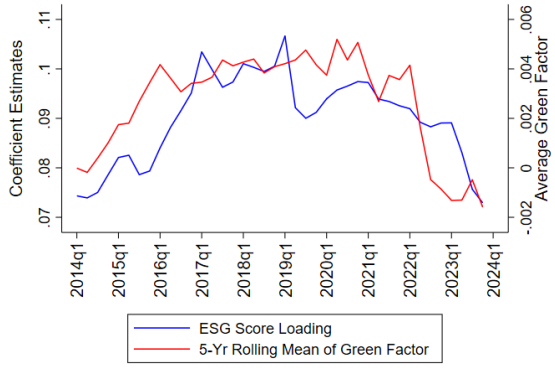
(b) ESG Score Beta Quintile Two



(c) ESG Score Beta Quintile Three



(d) ESG Score Beta Quintile Four



(e) ESG Score Beta Quintile Five

Figure A.II: **Time Series of ESG Score Loadings and Mean of Green Factor:** This figure plots the coefficient estimates from our main specification model together with the average of the Green Factor from (Pástor et al., 2022) for five sub-samples divided using the fund-level ESG score coefficient. Firs, we estimate our main specification with our fund fixed effects for each fund and obtian fund-level ESG Score coefficients. Using those coeffcients, we then designate each fund into five ESG Beta quintiels. For each quintile, for each quarter, we obtain the slope coefficient of *ESG Score* by estimating our main model (Column 4 of Table 3) on a five-year (20-quarter) rolling basis. To align the time frames, we also average the Green Factor over the same five-year rolling windows. The Green Factor from Pástor et al. (2022) measures the return premium on environmentally friendly ("green") stocks relative to environmentally unfriendly ("brown") ones, capturing broad market sentiment toward sustainable investing. For each of the five quintiles, correlations between the ESG Score loading and the average of green factor are -58.89%, 30.11%, 23.17%, 6.85%, 69.68%, respectively.

Table A.I: **Individual ESG Pillar Scores and Change in Mutual Funds Positions in Time-based Sub-samples.**

The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, firm-level controls, fund-level controls and fixed effects at the fund x firm and the year level in the first and second half of our sample. Panel A, B, C, and D show the results on social, corporate governance, environmental, and economic ESG scores, respectively. For each panel, sub-panels I and II show the results in the second and first half of our sample, respectively. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG score is contemporaneous, as we assume that it is updated continuously throughout the year. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret˙QT), and the stock's anomaly ranking for the quarter (Anmly˙Lrank) are also contemporaneous. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Panel A-I: Social Score (2017-2023)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Social Score$_Q$	0.043***	0.023***	0.024***	0.023***
	(6.287)	(4.745)	(4.910)	(4.862)
Anomaly Rank$_{Q-1}$		0.019***	0.017***	0.017***
		(5.230)	(4.684)	(4.667)
Expected Ret$_Q$		-0.012	-0.013	-0.011
		(-1.318)	(-1.342)	(-1.163)
BHR12$_{Q-1}$		0.008**	0.007*	0.007**
		(2.886)	(2.397)	(2.532)
Ret Qt$_Q$		0.148***	0.147***	0.147***
		(11.290)	(11.401)	(11.290)
Asst Grwth$_{Q-1}$		-0.000	0.001	0.001
		(-0.163)	(0.495)	(0.432)
ROA$_{Q-1}$		0.016***	0.015***	0.015***
		(6.781)	(6.582)	(6.696)
Ln BM$_{Q-1}$		-0.010	-0.016**	-0.016**
		(-1.865)	(-2.494)	(-2.491)
Ln MCAP$_{Q-1}$		1.375***	1.363***	1.367***
		(45.883)	(42.386)	(44.323)
Turnover (Firm)$_{Q-1}$			0.002	0.002
			(0.716)	(0.644)
Lev$_{Q-1}$			-0.021**	-0.020**
			(-3.426)	(-3.362)
Sale Grwth$_{Q-1}$			-0.002	-0.002
			(-1.783)	(-1.768)
TNA$_{Q-1}$				-0.074***
				(-4.745)
Observations	20,462,402	20,462,402	20,462,402	20,462,402

Panel A-II: Social Score (2009-2016)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Social Score$_Q$	0.056*	0.010	0.011	0.011
	(2.123)	(1.715)	(1.799)	(1.862)
Anomaly Rank$_{Q-1}$		0.017***	0.017***	0.017***
		(4.076)	(3.689)	(3.700)
Expected Ret$_Q$		-0.017	-0.017	-0.015
		(-0.873)	(-0.866)	(-0.818)
BHR12$_{Q-1}$		0.019***	0.019***	0.019***
		(8.105)	(8.449)	(8.343)
Ret Qt$_Q$		0.116***	0.116***	0.116***
		(12.392)	(12.378)	(12.386)
Asst Grwth$_{Q-1}$		0.003	0.004**	0.004**
		(1.660)	(2.461)	(2.501)
ROA$_{Q-1}$		0.001	0.000	0.000
		(0.483)	(0.021)	(0.064)
Ln BM$_{Q-1}$		-0.017**	-0.022***	-0.022***
		(-2.595)	(-3.559)	(-3.616)
Ln MCAP$_{Q-1}$		1.000***	0.993***	0.995***
		(31.756)	(35.036)	(35.486)
Turnover (Firm)$_{Q-1}$			0.005	0.005
			(0.606)	(0.596)
Lev$_{Q-1}$			-0.016**	-0.016**
			(-3.223)	(-3.262)
Sale Grwth$_{Q-1}$			0.003***	0.003***
			(4.058)	(4.032)
TNA$_{Q-1}$				-0.055***
				(-4.156)
Observations	8,203,177	8,203,177	8,203,177	8,203,177

Panel B-I: Corporate Governance Score (2017-2023)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Corp Gov Score$_Q$	0.003	0.006	0.006	0.006
	(0.498)	(1.841)	(1.856)	(1.881)
Anomaly Rank$_{Q-1}$		0.019***	0.018***	0.017***
		(5.362)	(4.833)	(4.814)
Expected Ret$_Q$		-0.012	-0.012	-0.011
		(-1.285)	(-1.308)	(-1.132)
BHR12$_{Q-1}$		0.008**	0.007*	0.007**
		(2.890)	(2.396)	(2.552)
Ret Qt$_Q$		0.148***	0.148***	0.147***
		(11.284)	(11.389)	(11.278)
Asst Grwth$_{Q-1}$		-0.000	0.001	0.000
		(-0.268)	(0.331)	(0.271)
ROA$_{Q-1}$		0.016***	0.015***	0.015***
		(6.808)	(6.648)	(6.763)
Ln BM$_{Q-1}$		-0.008	-0.014*	-0.014*
		(-1.441)	(-2.051)	(-2.054)
Ln MCAP$_{Q-1}$		1.379***	1.368***	1.372***
		(45.673)	(42.011)	(43.906)
Turnover (Firm)$_{Q-1}$			0.002	0.002
			(0.705)	(0.633)
Lev$_{Q-1}$			-0.020**	-0.019**
			(-3.234)	(-3.175)
Sale Grwth$_{Q-1}$			-0.002	-0.002
			(-1.809)	(-1.811)
TNA (Firm)$_{Q-1}$				-0.074***
				(-4.761)
Observations	20,462,402	20,462,402	20,462,402	20,462,402

Panel B-II: Corporate Governance Score (2009-2016)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Corp Gov Score$_Q$	0.026**	0.011*	0.011*	0.011*
	(2.712)	(2.188)	(2.343)	(2.333)
Anomaly Rank$_{Q-1}$		0.017***	0.017***	0.017***
		(4.051)	(3.672)	(3.684)
Expected Ret$_Q$		-0.017	-0.017	-0.015
		(-0.873)	(-0.866)	(-0.817)
BHR12$_{Q-1}$		0.019***	0.019***	0.019***
		(8.211)	(8.549)	(8.444)
Ret Qt$_Q$		0.116***	0.116***	0.116***
		(12.401)	(12.384)	(12.393)
Asst Grwth$_{Q-1}$		0.003	0.004**	0.004**
		(1.718)	(2.525)	(2.565)
ROA$_{Q-1}$		0.001	-0.000	0.000
		(0.442)	(-0.027)	(0.017)
Ln BM$_{Q-1}$		-0.017**	-0.022**	-0.022***
		(-2.524)	(-3.450)	(-3.504)
Ln MCAP$_{Q-1}$		1.000***	0.994***	0.996***
		(32.108)	(35.424)	(35.883)
Turnover (Firm)$_{Q-1}$			0.005	0.005
			(0.647)	(0.638)
Lev$_{Q-1}$			-0.015**	-0.016**
			(-3.245)	(-3.278)
Sale Grwth$_{Q-1}$			0.003***	0.003***
			(4.070)	(4.045)
TNA$_{Q-1}$				-0.055***
				(-4.147)
Observations	8,203,177	8,203,177	8,203,177	8,203,177

Panel C-I: Environmental Score (2017-2023)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Environmental Score$_Q$	0.032	-0.001	0.000	0.000
	(1.863)	(-0.197)	(0.028)	(0.045)
Anomaly Rank$_{Q-1}$		0.019***	0.018***	0.017***
		(5.292)	(4.770)	(4.756)
Expected Ret$_Q$		-0.012	-0.013	-0.011
		(-1.303)	(-1.327)	(-1.149)
BHR12$_{Q-1}$		0.008*	0.007*	0.007*
		(2.431)	(2.106)	(2.221)
Ret Qt$_Q$		0.147***	0.147***	0.146***
		(11.617)	(11.721)	(11.602)
Asst Grwth$_{Q-1}$		-0.000	0.001	0.000
		(-0.261)	(0.372)	(0.315)
ROA$_{Q-1}$		0.016***	0.015***	0.015***
		(6.385)	(6.100)	(6.202)
Ln BM$_{Q-1}$		-0.008	-0.014*	-0.014*
		(-1.499)	(-2.000)	(-2.001)
Ln MCAP$_{Q-1}$		1.381***	1.370***	1.374***
		(45.502)	(41.662)	(43.551)
Turnover (Firm)$_{Q-1}$			0.001	0.001
			(0.428)	(0.353)
Lev$_{Q-1}$			-0.018**	-0.018**
			(-2.888)	(-2.816)
Sale Grwth$_{Q-1}$			-0.002	-0.002
			(-1.806)	(-1.808)
TNA$_{Q-1}$				-0.074***
				(-4.749)
Observations	19,992,929	19,992,929	19,992,929	19,992,929

Panel C-II: Environmental Score (2009-2016)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Environmental Score$_Q$	0.047**	0.005	0.006	0.006
	(3.348)	(0.746)	(0.867)	(0.877)
Anomaly Rank$_{Q-1}$		0.017***	0.016***	0.016***
		(4.031)	(3.607)	(3.616)
Expected Ret$_Q$		-0.018	-0.017	-0.016
		(-0.905)	(-0.902)	(-0.854)
BHR12$_{Q-1}$		0.020***	0.019***	0.019***
		(8.144)	(8.476)	(8.391)
Ret Qt$_Q$		0.116***	0.116***	0.116***
		(12.242)	(12.237)	(12.246)
Asst Grwth$_{Q-1}$		0.003	0.004**	0.004**
		(1.663)	(2.492)	(2.532)
ROA$_{Q-1}$		0.001	0.000	0.000
		(0.497)	(0.046)	(0.092)
Ln BM$_{Q-1}$		-0.016**	-0.021**	-0.022**
		(-2.449)	(-3.377)	(-3.429)
Ln MCAP$_{Q-1}$		0.999***	0.993***	0.994***
		(31.229)	(34.754)	(35.221)
Turnover (Firm)$_{Q-1}$			0.004	0.004
			(0.528)	(0.518)
Lev$_{Q-1}$			-0.016**	-0.016**
			(-3.180)	(-3.215)
Sale Grwth$_{Q-1}$			0.003***	0.003***
			(4.068)	(4.050)
TNA$_{Q-1}$				-0.054***
				(-4.125)
Constant	12.456***	12.456***	12.456***	12.456***
	(1137165.849)	(123897.041)	(113103.450)	(94916.547)
Observations	8,190,596	8,190,596	8,190,596	8,190,596

Panel D-I: Economic Score (2017-2023)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
ECScore_{Q}	0.024***	0.020***	0.020***	0.019***
	(4.678)	(4.130)	(4.114)	(4.072)
$\text{Anomaly Rank}_{Q-1}$		0.018***	0.017***	0.017***
		(4.928)	(4.457)	(4.448)
Expected Ret_{Q}		-0.013	-0.013	-0.011
		(-1.356)	(-1.378)	(-1.197)
BHR12_{Q-1}		0.008**	0.007*	0.007**
		(2.856)	(2.370)	(2.498)
Ret Qt_{Q}		0.148***	0.148***	0.147***
		(11.386)	(11.486)	(11.376)
Asst Grwth_{Q-1}		-0.000	0.001	0.001
		(-0.189)	(0.396)	(0.339)
ROA_{Q-1}		0.016***	0.014***	0.014***
		(6.351)	(6.138)	(6.254)
Ln BM_{Q-1}		-0.011*	-0.017**	-0.017**
		(-2.220)	(-2.763)	(-2.753)
Ln MCAP_{Q-1}		1.377***	1.366***	1.370***
		(46.180)	(42.537)	(44.450)
$\text{Turnover (Firm)}_{Q-1}$			0.002	0.002
			(0.763)	(0.690)
Lev_{Q-1}			-0.020**	-0.019**
			(-3.241)	(-3.184)
Sale Grwth_{Q-1}			-0.002	-0.002
			(-1.777)	(-1.771)
TNA_{Q-1}				-0.073***
				(-4.661)
Observations	20,559,882	20,559,882	20,559,882	20,559,882

Panel D-II: Economic Score (2009-2017)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
ECScore_{Q}	0.054***	0.007	0.007	0.007
	(4.963)	(1.754)	(1.714)	(1.718)
$\text{Anomaly Rank}_{Q-1}$		0.017***	0.017***	0.017***
		(4.084)	(3.708)	(3.720)
Expected Ret_{Q}		-0.017	-0.016	-0.015
		(-0.863)	(-0.857)	(-0.808)
BHR12_{Q-1}		0.019***	0.019***	0.018***
		(8.154)	(8.462)	(8.368)
Ret Qt_{Q}		0.116***	0.116***	0.116***
		(12.434)	(12.410)	(12.419)
Asst Grwth_{Q-1}		0.003	0.004**	0.004**
		(1.676)	(2.443)	(2.483)
ROA_{Q-1}		0.000	-0.000	-0.000
		(0.261)	(-0.181)	(-0.137)
Ln BM_{Q-1}		-0.017**	-0.022**	-0.022**
		(-2.556)	(-3.419)	(-3.473)
Ln MCAP_{Q-1}		0.999***	0.994***	0.995***
		(32.222)	(35.517)	(36.000)
$\text{Turnover (Firm)}_{Q-1}$			0.005	0.005
			(0.642)	(0.632)
Lev_{Q-1}			-0.015**	-0.015**
			(-3.100)	(-3.136)
Sale Grwth_{Q-1}			0.003***	0.003***
			(4.005)	(3.969)
TNA_{Q-1}				-0.055***
				(-4.146)
Observations	8,203,177	8,203,177	8,203,177	8,203,177

Panel E-I: Controversy Score (2017-2023)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Controversy Score$_Q$	0.026**	0.013***	0.013***	0.013***
	(3.494)	(4.074)	(4.069)	(3.979)
Anomaly Rank$_{Q-1}$		0.019***	0.018***	0.017***
		(5.286)	(4.758)	(4.743)
Expected Ret$_Q$		-0.013	-0.013	-0.011
		(-1.318)	(-1.341)	(-1.163)
BHR12$_{Q-1}$		0.008*	0.007*	0.007*
		(2.433)	(2.088)	(2.203)
Ret Qt$_Q$		0.147***	0.147***	0.146***
		(11.644)	(11.745)	(11.625)
Asst Grwth$_{Q-1}$		-0.000	0.001	0.000
		(-0.243)	(0.371)	(0.313)
ROA$_{Q-1}$		0.016***	0.015***	0.015***
		(6.298)	(6.036)	(6.134)
Ln BM$_{Q-1}$		-0.008	-0.014*	-0.014*
		(-1.496)	(-1.984)	(-1.986)
Ln MCAP$_{Q-1}$		1.380***	1.370***	1.374***
		(45.746)	(41.699)	(43.584)
Turnover (Firm)$_{Q-1}$			0.002	0.001
			(0.503)	(0.429)
Lev$_{Q-1}$			-0.018**	-0.017**
			(-2.830)	(-2.762)
Sale Grwth$_{Q-1}$			-0.002	-0.002
			(-1.838)	(-1.840)
TNA (Firm)$_{Q-1}$				-0.074***
				(-4.744)
Observations	19,992,929	19,992,929	19,992,929	19,992,929

Panel E-II: Controversy Score (2009-2016)

Dependent Variable	Log of Portfolio Fractions (Quarterly)			
	(1)	(2)	(3)	(4)
Controversy Score$_Q$	0.021***	0.008***	0.008***	0.008***
	(3.865)	(4.573)	(4.606)	(4.581)
Anomaly Rank$_{Q-1}$		0.017***	0.016***	0.016***
		(4.044)	(3.626)	(3.635)
Expected Ret$_Q$		-0.018	-0.017	-0.016
		(-0.911)	(-0.908)	(-0.859)
BHR12$_{Q-1}$		0.019***	0.019***	0.019***
		(8.168)	(8.495)	(8.408)
Ret Qt$_Q$		0.116***	0.116***	0.115***
		(12.246)	(12.236)	(12.246)
Asst Grwth$_{Q-1}$		0.003	0.004**	0.004**
		(1.710)	(2.538)	(2.578)
ROA$_{Q-1}$		0.001	-0.000	0.000
		(0.427)	(-0.010)	(0.037)
Ln BM$_{Q-1}$		-0.016**	-0.021**	-0.021**
		(-2.390)	(-3.289)	(-3.342)
Ln MCAP$_{Q-1}$		0.999***	0.994***	0.995***
		(31.887)	(35.612)	(36.097)
Turnover (Firm)$_{Q-1}$			0.005	0.005
			(0.568)	(0.558)
Lev$_{Q-1}$			-0.015**	-0.015**
			(-3.094)	(-3.127)
Sale Grwth$_{Q-1}$			0.003***	0.003***
			(4.253)	(4.234)
TNA (Firm)$_{Q-1}$				-0.054***
				(-4.116)
Observations	8,190,596	8,190,596	8,190,596	8,190,596

Table A.II: **Main Results after Adjusting for Green Factor of (Pástor et al., 2022)**
The table shows the results of pooled regressions of the natural logarithm of Portfolio Fraction on the overall ESG score, fund-level controls and fixed effects at the fund x firm and the year level. The dependent variable, Portfolio Fraction, is shares held by a fund at the end of the quarter times the CRSP closing price for the quarter divided by the AUM calculated using Thomson Reuters' stock holdings data. All independent variables are standardized to have zero mean and unit standard deviation for readability. Accounting-based control variables such as return on assets (ROA) are lagged and only used after a firm's SEC filing dates. The ESG Score is overall ESG score from LSEG and it is contemporaneous, as we assume that it is updated continuously throughout the year. ESG Score GFAdj, and the dependent variable Residual of Log of Port. Frac. (Q) are the residuals from the regression of ESG Score and our portfolio fraction on the Green Factor of Pástor et al. (2022), respectively. Market-based variables such as the expected return (Expected Ret), the realized quarterly return of the stock (Ret˙Qt), and the stock's anomaly ranking for the quarter (Anomaly Rank) are also contemporaneous. Expected Ret is expected returns based on fourteen firm characteristics and Anomaly Rank is a stock's average anomaly variable ranking accross about four-hundred anomalies for the quarter. Other control variables include past twelve-month cumulative returns (BHR12), asset growth (AsstGrwth), the natural logarithm of book-to-market (Ln BM), the natural logarithm of market capital (Ln MCAP), stock's turnover (Turnover), leverage (Lev), sales growth (Sales Growth), and the natural logarithm of funds' AUM (Ln Assets). *, **, *** signify statistical significance at the 10%, 5%, and 1% level, respectively. Standard errors are clustered at fund, firm, and year level. The sample period goes from 2009 to 2023. All variables are defined in Appendix A.

Depependent Variable	Log of Port. Frac. (Q)		Residual of Log of Port. Frac. (Q)	
	(1)	(2)	(3)	(4)
ESG Score GFAdj$_Q$	0.058***	0.024***		
	(6.744)	(4.609)		
ESG Score$_Q$			0.058***	0.022***
			(6.785)	(4.934)
Anomaly Rank$_{Q-1}$		0.017***		0.018***
		(4.830)		(5.320)
Expected Ret$_Q$		-0.012		-0.017**
		(-1.556)		(-2.858)
BHR12$_{Q-1}$		0.009**		0.011**
		(2.563)		(2.367)
Ret Qt$_Q$		0.138***		0.143***
		(13.725)		(20.346)
Asst Grwth$_{Q-1}$		0.002		0.003
		(1.718)		(1.698)
ROA$_{Q-1}$		0.010***		0.010***
		(4.605)		(4.824)
Ln BM$_{Q-1}$		-0.015***		-0.016***
		(-3.314)		(-3.600)
Ln MCAP$_{Q-1}$		1.267***		1.271***
		(55.269)		(59.239)
Turnover (Firm)$_{Q-1}$		0.003		0.002
		(0.836)		(0.750)
Lev$_{Q-1}$		-0.022***		-0.022***
		(-4.785)		(-5.106)
Sale Grwth$_{Q-1}$		-0.001		-0.001
		(-1.733)		(-1.623)
TNA (Firm)$_{Q-1}$		-0.054***		-0.054***
		(-4.697)		(-4.543)
Observations	28,768,331	28,768,331	28,768,331	28,768,331