The investment skill of ESG aware mutual funds*

Marco Ceccarelli† Simon Glossner‡ Mikael Homanen§ Ellie Luu¶

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Abstract

This paper investigates financial returns to ESG integration by mutual fund families measured via a novel survey on responsible investing by institutional investors. Funds with the highest level of integration outperform comparable conventional funds by 4 basis points per month in terms of risk-adjusted returns. The higher returns are concentrated in mutual funds that are exposed to firms where having superior information is most valuable, i.e., those with high ESG disagreement and those that experience incidents. The findings are robust to controlling for portfolio exposure to an ESG factor and to time-unvarying fund and portfolio manager characteristics. The results showcase the superior investment skill of ESG-aware fund managers.

Keywords: Mutual funds; ESG integration; ESG investing; Investment skill.

JEL classification: G11, G23, Q56

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†Maastricht University; m.ceccarelli@maastrichtuniversity.nl.

‡University of Virginia, Darden School of Business; glossners@darden.virginia.edu.

§PRI and Bayes Business School; mikael.homanen@unpri.org.

¶University of Bristol; ellie.luu@bristol.ac.uk.

1 Introduction

The attention towards ESG investing, an approach that considers integrating environmental, social and governance factors into the investment process, has grown exponentially over the last decade. The United Nations-supported Principles for Responsible Investment (PRI) is a prime example of the commitment towards a more sustainable financial system. As of 2020, it counted more than 4,000 signatories representing over $100 trillion in assets under management. The aim of the PRI is "to understand the investment implications of environmental, social and governance (ESG) factors; and to support signatories in incorporating these factors into their investment and ownership decisions."[1]

It is unclear *if*, *why*, and *how* ESG integration impacts financial investment returns. On the one hand, ESG incorporation could come at the expense of financial returns. For example, green stocks will under-perform brown stocks due to a supply and demand imbalance (Pástor, Stambaugh, and Taylor, 2021a; Zerbib, 2021). Similarly, sin stocks will out-perform due to value-aligned investors shunning away from such investments (Hong and Kacperczyk, 2009). On the other hand, sustainable firms will out-perform when there is an increase in attention towards sustainability (Pástor, Stambaugh, and Taylor, 2021b), when ESG rating uncertainty is high for highly rated ESG stocks (Avramov, Cheng, Lioui, and Tarelli, 2021), or during periods of positive macroeconomic outlook (Bansal, Wu, and Yaron, 2021).[2]

Pedersen, Fitzgibbons, and Pomorski (2021) and Avramov et al. (2021) take the first step to reconcile these opposing results for U.S. stocks. Pedersen et al. (2021) argue that firms' sustainability performance is a positive predictor of returns, only when ESG measures are associated with higher profits in a way that markets *have not fully incorporated*. The effect on returns is reversed when the ESG performance is transparent and investors start to accept lower returns since they hold sustainable stocks also for non-pecuniary reasons. In a similar

[1]For more information refer to the overview of the PRI principles.

[2]Some reasons for this divergence are differences in ESG ratings across data providers (Berg, Koelbel, and Rigobon, 2019; Christensen, Serafeim, and Sikochi, 2022), differences in investment strategies (Gibson, Krueger, and Schmidt, 2021), and differences in sample periods (Lins, Servaes, and Tamayo, 2017; Bansal et al., 2021).

vein, Avramov et al. (2021) suggest that ESG uncertainty affects the risk-return trade-off. Specifically, they show that the correlation between ESG rating and alpha is negative when ESG rating dispersion is low, but becomes neutral or even positive when the dispersion increases.

This paper tests whether these firm-level concepts hold when applied to mutual fund managers. Are "ESG aware" fund managers, i.e., those that have a higher degree of ESG integration at the fund family level, better at identifying profitable investment opportunities?[3] If so, are these opportunities to be found in firms whose ESG performance is yet to be incorporated in asset prices?

The main challenge is to measure ESG integration in a way that does not rely on the observable ESG scores of portfolio firms.[4] We overcome this challenge by using the "Reporting & Assessment (R&A)" framework, a yearly survey on practices related to sustainability that all PRI signatories are obliged to fill out and that is assessed and scored by the PRI. Effectively, we have access to a measure of ESG integration that is comparable across funds and has a comprehensive coverage of fund families across the world (Ceccarelli, Glossner, and Homanen, 2022).

We start by categorizing institutions into scoring bands based on the assessment scores of their R&A framework, where highest scoring bands identify signatories with the best ESG integration. We match these to a list of global mutual funds from Morningstar for which we have obtained the holdings from FactSet (formerly known as LionShare). This allows us to compare risk-adjusted returns of funds across different levels of ESG integration.

Our first hypothesis is that fund managers from families with a high degree of integration will out-perform, as they are more likely to be ESG aware and thus able to identify profitable investment opportunities. This hypothesis is confirmed in our sample: Funds with higher

[3]For ease of exposition we will use the terms being ESG aware and having a high degree of ESG integration interchangeably in the remainder of the paper.

[4]Relying on ESG portfolio scores would be detrimental for at least two reasons: First, ESG scores are public information and widely used for taste-based sustainable investing strategies (Kölbel, Heeb, Paetzold, and Busch, 2020). Following such a strategy should – if anything – have lower expected returns (Pedersen et al., 2021). Second, ESG ratings are often backward looking (Liang and Renneboog, 2020).

R&A ratings out-perform other funds by 4 basis points per month on average over the period from 2014 to 2019. We employ several measures of performance including gross returns, Morningstar category-adjusted returns (Christoffersen, Evans, and Musto, 2013), and funds' alpha over the CAPM, the Fama-French 3-factor, and the Fama-French-Carhart 4-factor model (Carhart, 1997; Fama and French, 1993). This result is robust to adding fund-family and fund manager fixed effects to control for time-invariant unobservables and to using a subset of the R&A survey to identify ESG integration.

It could be that the way we construct risk-adjusted returns is flawed, because we are disregarding exposure to an ESG factor which might be already priced in. To account for this, we replicate the methodology of Pástor et al. (2021a) and compute E, S, G, and ESG factors. We re-estimate our measure of abnormal returns (alphas) while controlling for these factors. Our main insights remain unaffected.

We argue that the reason behind the positive relationship between financial returns and ESG integration is mutual fund managers being ESG aware as opposed to ESG motivated. The latter prefer ESG firms solely out of a taste-based motive and should, if anything, experience worse financial performance compared to the ESG aware investors (Pedersen et al., 2021). We test this conjecture by looking at funds that label themselves as socially conscious, which we use as a proxy for being ESG motivated. Our main effect is concentrated in the sample of conventional funds, i.e., those that are ESG aware but *not* ESG motivated. Our conjecture remains unchanged when using the highest Morningstar Sustainability rating (5 ESG "Globes") as a proxy for being ESG motivated.[5]

While we find evidence of out-performance, identifying skill remains challenging due to noise, random shocks to stock returns, and short sample periods. Jiang and Zheng (2018) introduce the "Active Fundamental Performance" (AFP) measure that looks at funds' performance around earnings announcements, since this it the moment when new fundamental information is released to the markets. Fund managers are considered skilled if their active

[5]Funds that receive 5 Globes are among the top 10% of their peer group (investment categories) in terms of weighted portfolio ESG scores. See the Morningstar Sustainability Ratings for Funds here.

investment choices prior to the earning announcement are positively correlated to abnormal returns. While we want to establish if fund managers are skilled, we are interested in *ESG-specific* investment skill. Following Avramov et al. (2021), we conjecture that ESG-specific investment skill can be best measured around earnings announcements of firms whose ESG performance is uncertain. We proxy for this using the degree of disagreement between four ESG rating agencies.

To test for ESG-specific investment skill, we need to measure the Active Fundamental Performance (AFP) of mutual funds.[6] First, we sort the portfolio holdings of fund managers along the disagreement of ESG scores across four rating providers: Sustainalytics, MSCI IVA, Thomson Asset4, and S&P Global ESG Scores. In this way we can estimate investment skill separately for firms with high and low ESG uncertainty. The out-performance of ESG-aware fund managers should be concentrated in the part of the portfolio with high ESG uncertainty and *not* in firms where the market can easily incorporate ESG information into prices.

Our findings suggest that mutual funds with a high degree of ESG integration exhibit investment skill. When we interact AFP with the measure of ESG integration, we find a strong and positive effect on alpha. This interaction becomes weaker when we look at portfolios with sequentially lower level of disagreement, e.g., those in the top quartile or tercile. When we use the median disagreement as a cutoff, the interaction term is no longer significant. Compared to their less aware peers, ESG aware fund managers are not able to generate higher performance from firms with a relatively certain ESG performance. In other words, in portfolios that are exposed to firms where ESG performance is uncertain, only fund managers of families with a high level of ESG integration are able to identify lucrative investment opportunities.

A drawback of using rating disagreement is that our measure could be noisy because we

[6]The AFP measures how profitable a fund's active portfolio choices are during the days surrounding the release of new fundamental information via earning announcements. Active positions are benchmarked against the average holdings of funds in the same category. The AFP measure is high when the fund manager holds stocks before earnings announcements that performed well in the three day window surrounding the announcement.

have access to a limited number of rating agencies. To mitigate this, we repeat the test above using RepRisk incidents (Glossner, 2021; Yang, 2021) instead of ESG score disagreement. RepRisk measures negative ESG events, which are called "incidents", from public news sources. We argue that – similarly to earnings announcements – active investment decisions taken before severe incidents happen are informative of investment skill. In this setting we also find suggestive evidence that fund managers from families with a high degree of ESG integration are skilled. The positive relationship between ESG integration and abnormal performance is concentrated in funds that also have high active fundamental performance (AFP) measured around severe incidents.

We have shown that ESG aware mutual funds over-perform funds with a smaller degree of ESG integration and that this over-performance seems driven by investment skill. Next we ask *how* fund managers over-perform, i.e., how does the ESG investment skill translate into higher returns. An intuitive explanation is that skilled fund managers will over-weight firms for which they have superior information. This intuition is consistent with Kacperczyk, Sialm, and Zheng (2005), that show how mutual funds overperform when their holdings are concentrated in a small set of industries. Cici, Gehde-Trapp, Göricke, and Kempf (2018) argue that such over-weighting is particularly profitable when fund managers had prior experience in the specific industries. In a similar vein, Jiang, Verbeek, and Wang (2014) show how firms that are over-weighted by active mutual funds outperform. Following this line of reasoning, we conjecture that ESG-aware fund managers should *over-weight* firms with high ESG-uncertainty.

To test this conjecture, we first develop a measure for the degree to which a fund is over-exposed to firms with a high ESG disagreement. To this end, we compare the individual fund's exposure (percent of AuM invested in a given company) to that of the average fund in its category. We then sum up the holdings in all over-weighted firms for which the fund has a higher exposure than the average and call this fund-level measure "*over-hold*". In a similar fashion, we compute "*under-trade*". If our hypothesis is correct, the interaction between

ESG aware funds and their over-exposure to high ESG disagreement should be positive. Moreover, the triple interaction with under-trading should also be positive. Our findings confirm this: The observed out-performance is concentrated in those funds with the highest level of ESG integration that have both an over-exposure and are under-trading firms with high ESG uncertainty.

This paper makes three contributions of the literature. First, it adds to the studies on the financial implication of ESG incorporation by fund managers. Pedersen et al. (2021) have shown the benefits for risk-adjusted performance of incorporating ESG information at the stock level. Moreover, a rapidly growing literature examines the effects of ESG information, ESG tastes, or both on stock prices (Bolton and Kacperczyk, 2021a,b; Pástor et al., 2021a; Zerbib, 2021). We are the first to study how the benefits of ESG integration at the *institutional level* benefit financial performance. This is important since it builds on real investment choices of fund managers as opposed to constructed portfolios. Moreover, it helps ESG aware investors choose mutual funds that match their preferences.

Second, this paper is also related to the literature studying investment practices of PRI signatories. Existing works have documented greenwashing among some signatories (Gibson et al., 2021; Liang, Sun, and Teo, 2020; Kim and Yoon, 2020) while Humphrey and Li (2021) show that fund managers reduce emissions after joining the PRI. Ceccarelli et al. (2022) looks not only at PRI membership status, but also at the level of ESG integration within PRI signatories. They shows that mutual fund investors reward funds with higher inflows *only* when their fund families have a high level of integration. We add to this literature by studying the financial performance of mutual funds whose families are PRI signatories, while taking the level of ESG integration into account.

The final contribution of this paper is to propose a new measure of ESG-specific investment skill. We show that such skill is concentrated around the release of information about firms' fundamentals, but only for those firms with a high level of disagreement in ESG performance. In doing so we add to the insights related to ESG disagreement (Avramov et al.,

2021) and measuring general fund manager skill (Jiang and Zheng, 2018). To our knowledge, this is the first paper to provide evidence that the ESG-specific investment skill of mutual fund managers, as reflected in their holdings and trading strategies of firms with high ESG uncertainty, results in superior fund returns.

The remainder of this paper proceeds as follows. Section 2 describes our sample. Section 3 presents the baseline results. Section 4 examines the mechanism through which ESG incorporation affects fund returns. Section 5 concludes.

2 Data

2.1 PRI R&A rating

Since 2014, PRI signatories have the duty to report on their responsible investing practices, in accordance with the Reporting and Assessment (R&A) framework. The signatories are required to fill out an annual survey in the reporting window between the 6th of January and the 31st of March. The survey is then assessed by PRI staff and signatories receive their assessment reports in early July each year, based on the submitted responses during the recent reporting period. This report consists of several modules, documenting the responsible investing practices of institutions across their organization. The main modules are 1) Strategy & Governance 2) Listed Equity 3) Active Ownership and 4) Asset Manager Selection, Appointment and Monitoring.[7] Within each modules there are several types of questions: Mandatory to report and disclose, mandatory to report and voluntary to disclose, and voluntary to report and disclose. The first type of questions are published as part of the investors' transparency reports on the PRI website.[8] The second type are published only with the signatory's consent while for the last type the signatory can opt not to answer.

[7]This applies for surveys filled out within the period from 2014 to 2020. From 2021, the PRI introduced the revised Reporting and Assessment framework with the purpose of improving reporting process and quality.

[8]See PRI public signatory's transparency report here.

Ceccarelli et al. (2022) provide detailed discussion of the benefits and responsibility of being a PRI signatory in the space of responsible investment.

For our study, we make use of the assessment scores that PRI staff provide. Importantly, these scores are based on the entirety of the disclosure, both public and private. Moreover, the performance bands are standardized and comparable across institutions. The scores for each module range from "A+" to "E", where "A+" indicates highest level of ESG incorporation. Figure 1 shows one such example.[9]

[Insert Figure 1 here]

The aggregate R&A rating score, denoted as $\varnothing R\&A$, is defined as the average score across all available modules: (1) Strategy and Governance, (2) Selection, appointment of managers - SAM: Listed Equity, (3) SAM: Fixed Income, (4) Listed Equity: Screening, (5) Listed Equity: Integration, (6) Listed Equity: Active Ownership, (7) Private Equity, (8) Direct Property, (9) Direct Infrastructure , and (10) Fixed Income. We then categorize institutions into 4 groups based on the aggregate R&A rating score. $\varnothing R\&A \geq A$ is an indicator variable taking value of 1 for funds that have an average score of A or greater across all modules. This will be a proxy for the highest level of ESG integration by a mutual fund family. $\varnothing R\&A \in [B, A)$ is an indicator variable for funds that have an average score of B or greater, but smaller than A across all modules, while $\varnothing R\&A < B$ is an indicator variable for funds that have an average score smaller than B across all modules. *No Rating* identifies funds with no R&A rating including funds of signatories in one-year grace period and/or funds of non-PRI signatories.

2.2 Mutual fund data

Our survivorship-bias-free fund sample consists of all open-end equity mutual funds from Morningstar for the period spanning from January 2014 to December 2019. We collect fund-specific information including total assets under management at the fund level (the sum

[9]See an example of a private transparency report, which signatory voluntarily published their report.

of the assets across all share classes) and at the fund-family level (the sum of the assets across all funds of a given fund-family). The fund age is retrieved from the largest share class (Hartzmark and Sussman, 2019). We also collect information for expense ratio, load fee, and the turnover ratio.[10] A more detailed description of all variables is provided in Appendix Table A1.

To measure funds' financial returns, we use gross returns, Morningstar-category adjusted benchmark returns (proxy for benchmark adjusted returns), and alphas over CAPM, 3-risk factor and 4-risk factor models. We obtain the monthly regional risk-factor from AQR benchmark factor datasets.[11] To measure alphas, we require a minimum of 3 years of return data to estimate the model (with minimum of 24 monthly observations). Our first estimate of a fund's alpha is for January 2012. A positive (negative) alpha indicates that the fund out-performs (under-performs) the regional benchmark.

We get information on the holdings of mutual funds from FactSet Ownership (formerly known as Lionshares). In this way we can compute several additional measures of interest: The ESG disagreement of the firms in a mutual fund's portfolio, the over-exposure to specific firms, as well as the degree of under-trading for a given stock.

We then manually match the Morningstar fund-level sample to the PRI signatories data using the fund family name (Ceccarelli et al., 2022). In this way we obtain the Reporting & Assessment scores for mutual funds.

2.3 Summary statistics

Our final mutual fund sample for which risk-adjusted returns are available, includes 2,608 fund families consisting of 27,983 unique funds. Figure 2 plots the sample distribution of the R&A rating by year. The number of PRI signatories increases from 348 in 2014 to 616 at the end of 2019, with the number of signatories with the highest R&A rating account for

[10] We do not drop observations where these variables are missing because of the limited availability of such data for the non-US sample.

[11] AQR Betting Against Beta: Equity Factors Data, Monthly

the most significant rise from 12 in 2014 to 296 in 2019, translating into stark growth in the number of funds with highest rating as shown in Panel B of Figure 2.

[Insert Figure 2 here]

To verify that R&A rating is a reasonable proxy for ESG integration by mutual fund families, we examine the ESG score distribution of funds by rating groups. Figure 3 show that A/A+ signatories have higher portfolio footprint on average and higher fraction of social conscious funds.[12] However, there is substantial variation in the distribution of the portfolio ESG score within R&A rating.

[Insert Figure 3 here]

Panel A of Table 1 reports the summary statistics of the fund sample. Panel A shows variables for the mutual funds sample used in our analysis. All sample average risk-adjusted returns are negative, and, apart from the category-adjusted returns, the same holds for the sample median as well. The average assessment score of a fund family is 4.3, corresponding to a score slightly above "B". About half of the fund families in our sample are not PRI signatories. For the remaining half, the split between rating groups (e.g., funds with an average rating of A or higher) is approximatively uniform.

Panel B shows the sample average Spearman correlation coefficients of the main variables used in our analyses. We observe a positive correlation between risk-adjusted returns and R&A rating, suggesting that the higher level of ESG intergration by the mutual fund families is associated with higher risk-adjusted returns since 2014.

[Insert Table 1 here]

[12] In untabulated tests, we also find that on average, fund-families with the highest rating have higher fraction of socially conscious funds after controlling for the family size.

3 R&A rating and fund performance

This section asks whether ESG aware funds outperform similar funds that have lower ESG integration, as proxied by the R&A ratings. To build intuition, we start with a univariate comparison of mean returns by level of integration. Table 2 below shows that there is a considerable difference between average returns in the sample of funds from families that receive the highest rating in the Reporting & Assessment framework and those from families that are not even PRI signatories. The difference is statistically significant and large, corresponding to 10% of a standard deviation in monthly gross returns. We have similar discrepancies when looking at risk-adjusted performance, e.g., category-adjusted or using Fama-French factor models.

[Insert Table 2 here]

Next we formally test whether these difference persists in a regression setup while controlling for fund characteristics. We run the following specification:

$$Return^{\tau}_{f,t} = \beta_1 \varnothing R\&A_{f,t} + \beta_2' \Gamma_{f,t-1} + \beta_3 \delta_t \times \gamma_f + \epsilon_{f,t} \tag{1}$$

$Return^{\tau}_{f,t}$ is our measure of fund's f return during month t and τ captures the various return measures that we use: gross, category-adjusted, CAPM, and Fama-French three and four factor models. $\varnothing R\&A_{f,t-1}$ is our proxy for a fund's level of ESG integration and measures the average Reporting & Assessment score that the fund family receives. $\Gamma_{f,t-1}$ is a vector of time-varying fund-level characteristics, the logarithm of fund and fund-family size, and fund age. $\delta_t \times \gamma_f$ are our category-by-months fixed effects which absorb time-varying trends specific to a fund investment strategy. $\epsilon_{f,t}$ are the standard errors, which are clustered at the fund and month level. Table 3 shows the results from this regression.

[Insert Table 3 here]

In column (1) we find that funds with the highest level of ESG integration, i.e., those with an average R&A rating of A or higher, outperform non-rated funds by 4.1 basis point in gross returns per month, with the t-statistics of 2.27. Columns (2) to (5) show that controlling for standard risk-factors does not change our interpretation. If anything, the effect becomes even stronger.

3.1 Ruling out alternative explanations

There are several alternative explanations that could drive our findings. First, it could be that funds with higher expense ratios are also those that are more willing to invest in ESG integration. This could be because such funds have larger budgets at their disposal (Ibert, Kaniel, van Nieuwerburgh, and Vestman, 2018; Ma, Tand, and Gómez, 2019) or because their clients are generally more willing to pay a premium for ESG integration (Laudi, Smeets, and Weitzel, 2021). To make sure that this is not the case, we repeat our analysis while including the fund's fee structure as controls. Panel A of Appendix Table A2 shows that our results remain robust.[13] Panel B reports the results using alternative measure of alpha using country-level benchmark risk factors. Chaieb, Langlois, and Scaillet (2021) document that regional benchmark factor do not capture all country-level risk factors, which are priced in. Our main results are also robust to using a different measure of alpha, defined as returns over country-level market, size, value and momentum risk factors benchmark. In addition, Panel C reports the baseline results for the restricted Morningstar sample consisting of all funds with non-missing FactSet holdings data. Our findings suggest that the outperformance related to the level of ESG integration is also observed in a more restricted testing sample. Specifically, funds with higher level of ESG integration level have 4 basis points higher in returns (measured by *Gross Return*) and risk-adjusted returns (measured by Alpha 4F).

We further examine the sensitivity of the documented results to the construction of R&A

[13]Since data on fund net expense ratio is not available for a large fraction of non-US domiciled funds, controlling for fund expense and fee charges significant reduces the testing sample. Our interpretation is robust to this alternative specification controlling for *Expense Ratio* and *Load Fee*.

rating. Appendix Table A3 shows that our results are robust to using the restricted version of R&A rating, which is constructed based on the restricted sample of reporting modules filled out for approximately 90% of signatories: S&G–Strategy & Governance, LEI–Listed Equity Screening, Integration, and LEA–Active Ownership (Ceccarelli et al., 2022). Panel B of this Table shows that the List Equity modules have the highest power in explaining the outperformance of funds with high over R&A rating.

In addition, we document that the geographical variations of the relationship between ESG incorporation and returns. Appendix Table A4 show observed effect mainly comes from European funds and R&A rating combination, not from the U.S. domiciled funds or funds from other regions. Note that, there are only 4 Asia-Pacific countries that are included in our sample because of the availability of risk-factor benchmark. Figure A1 shows that the highest intensity of institutions with R&A rating of A/A+, defined as the country-level fraction of A/A+ institutions over total number of institutions in the respective countries of headquarter, is observed in the EU and Pacific region.

3.2 Controlling for unobserved heterogeneity

Although our baseline results provide evidence that the out-performance of high R&A rated funds is not driven by several fund-specific effects documented in prior studies including fund size, age and investment styles, there may be plausible alternative explanations related to unobserved (1) fund family, (2) fund, and (3) manager-level heterogeneity.

[Insert Table 4 here]

First, given the economics of the asset management industry, family-level unobserved factors other than the level of ESG incorporation, as proxied by R&A rating, are also a relevant concern. To address this concern, we include fund-family fixed effects in our regressions in columns (1) and (2) of Table 4. In this regressions, we compare the performance of mutual funds from the same family, after the Reporting & Assessment score changes.

There seems to be no significant difference in gross returns. However, our main coefficient of interest correlates positively and significantly with risk-adjusted returns. Funds with the highest level of ESG integration generate 8.1bp higher monthly alphas compared to funds that are not PRI signatories. In other words, time-invariant fund family characteristics do not explain the positive relationship between ESG integration and performance.

Second, since PRI R&A ratings are quite persistent during our sample period, one concern is that the cross-sectional differences in R&A ratings might be capturing time-invariant heterogeneity across funds. We address this concern by including fund fixed effects in our specification. Columns (3) and (4) show that these concerns are misguided.

Third, time-invariant fund-manager characteristics such as their preferences or their investment ability might drive our results. For example, higher ability fund managers might self-select into funds from institutions with high R&A rating. Thus, the superior performance would be the result of manager attributes rather than the superior ESG awareness of the fund-family. Column (5) and (6) of Table 4 adds manager fixed effects to the regression.[14]. Again, we confirm the robustness of our results.[15]

3.3 Exposure to the regional ESG-factor

One possible reason for the observed out-performance is that high R&A funds have higher exposure to the ESG-factor or to one of its component factors E,S, and G. Such exposure should be priced in by markets Pástor et al. (2021b).

We want to test if the over-performance we document is driven by loading on an ESG factor, that contains public information, as opposed to investment skill driven by private information. To this end we estimate fund alphas over a 2 risk-factor model including size together with, respectively, each of the E-, S-, G-, and ESG-factors. Specifically, we follow the method of constructing the green factor (E-factor) proposed in Pástor et al. (2021b)

[14]The number of observations for this test decreases because in several cases fund manager information is either missing or not disclosed.

[15]In untabulated tests we show that the findings remain unchanged when using alternative returns measures, including $Alpha1F$ and $Alpha3F$.

and start by constructing E-, S-, G-, and ESG- benchmark factors for each investment regions using MSCI IVA ESG data.[16] We then estimate fund monthly exposure (β) to E-factor using up to 3 years of returns data (with minimum of 24 monthly observations), then derive monthly alpha over the regional market risk and the E-factor risk, denoted as $Alpha(mkt, E-fac)$. In similar fashion, we estimate $Alpha(mkt, S-fac)$, $Alpha(mkt, G-fac)$ and $Alpha(mkt, ESG-fac)$.

[Insert Table 5 here]

If a ESG-factor loading were to explain our results, using the newly computed alpha as dependent variable should yield insignificant results in our baseline specification. Table 5 tests whether this is the case. Our results suggest that fund regional ESG exposure do not explain the superior performance of high R&A rating funds, as shown in column (5).

To make sure that our findings are not specific to a single rating provider, we construct fund ESG-adjusted Alpha where the regional the regional E-, S-, G- and ESG-factor are estimated from Sustainalytics ESG data, then replicate the above tests. Appendix Table A5 shows that the results are robust to using different rating providers.

An alternative way to capture mutual funds' exposure to public ESG information is to control for its ESG portfolio rating. This measures the weighted average of the ESG scores of a fund's holdings. Results in Appendix Table A6 show that the positive association between R&A rating and fund returns is robust to the inclusion of portfolio-level ESG scores. Columns (1) and (2) control for the normalized Sustainalytics ESG ranking within investment category and time while (3) and (4) control for Morningstar's sustainability ratings (Globes).

[Insert Table A6 here]

[16] The green factor $\hat{f}_{gt}$ for each region, denoted as E-factor in our paper, is estimated following equation (3) in Pástor et al. (2021b), where

$$\hat{f}_{gt} = \frac{g'_{t-1}\tilde{r}^e_t}{g'_{t-1}g_{t-1}}$$

where g_{t-1} is the vector of stocks' E-score, and $\tilde{r}^e_t$ is the vector of stocks' market-adjusted excess returns. We also construct S-, G- and the aggregate ESG-factor following this construction method.

3.4 The role of ESG awareness and taste in fund performance

We next examine the relationship between financial returns and the ESG investment style of fund managers. Pedersen et al. (2021) argue that the reason behind the positive relationship between financial returns and ESG integration is mutual fund managers being ESG aware as opposed to ESG motivated. The latter prefer ESG firms solely out of a taste-based motive and should, if anything, experience worse financial performance compared to the ESG aware investors (Fama and French, 2007).

To measure the role of ESG taste, we propose two proxies. The first is the self-designation of funds as "socially conscious." Morningstar identifies these types of funds based on their name or investment prospectus. The second proxy is the ESG rating ("Globes") that Morningstar assigns funds based on their holdings (Hartzmark and Sussman, 2019). Morningstar ranks funds along the weighted ESG score of their holdings and assigns the highest 5 Globe rating to those that are among the top 10% of their category.

[Insert Table 6 here]

We argue that, to some extent, both socially conscious and 5 Globe funds are employing taste-based investment strategies. Therefore, the out-performance we document should be concentrated in the funds that are ESG aware but have *no* ESG taste. Table 6 tests whether this is the case. Panel A shows that the positive relationship between ESG integration and fund returns is mostly concentrated in conventional funds that have the highest R&A rating (columns (3) and (4)). For socially conscious funds we observe a marginally significant relationship that disappears once fund family fixed effects are introduced in column (2). In a similar vein, Panel B shows a similar pattern for funds with the highest ESG rating. Together these results suggest that, ESG awareness can give rise to superior financial performance, but only when the fund managers' investment decisions are not additionally motivated by an ESG taste.

4 Fund investment skill

The previous section documents a positive relation between the degree of ESG integration of a fund family and the financial performance of its mutual funds. However, credibly identifying investment skill is notoriously difficult, especially in a short time window as ours (Fama and French, 2010).

To overcome this challenge, we employ the active fundamental performance (AFP) measure proposed by Jiang and Zheng (2018). The AFP is a forward-looking measure to proxy for fund managers' skill as it captures the performance of the fund around earning announcements. Looking at these events is useful because this is when new information about firm fundamentals is released to the market which then allows for repricing to occur. We employ this measure to investigate the difference in fund specific-skill (in ESG investment) and fund-family ESG incorporation in impacting fund returns.

4.1 Measuring Active Fundamental Performance (AFP)

We first replicate the index-based AFP measure of Jiang and Zheng (2018) because it is comprehensive in capturing the information set of active fund managers. For each fund in each quarter, the index-based AFP is defined as the sum of product of quarterly portfolio active weights (difference between portfolio weights and corresponding passive benchmark portfolio weights) and subsequent 3-day abnormal returns surrounding earning announcements.[17]

$$Index\text{-}based\ AFP_{j,t} = \sum_{i=1}^{N_j} (w_{i,t}^{j} - w_{i,t}^{bj}) CAR_{i,t}$$

where $CAR_{i,t}$ is the 3-day abnormal returns surrounding quarterly earnings announcements, ($w_{i,t}^{j}$ is the weight of stock i in fund j's portfolio at the start of quarter t, ($w_{i,t}^{bj}$ is the weight of

[17] We use quarterly instead of monthly data for this test because the earnings announcements of portfolio firms are observed at the quarter-level. For stocks that publish multiple earnings in any given quarter, we keep the first earnings announcement of the firm as the unique quarterly earnings announcement. We then observe CAR[-1,+1] around the unique earnings announcement event for the construction of funds' AFP measure.

stock i in fund j's benchmark portfolio at the start of quarter t. The 3-day CAR[-1, 1] refers to the sum of daily abnormal returns over the Carhart 4-factor regional risk benchmark from 1 day before to 1 day after earnings announcements.

The analysis of fund performance on fund's AFP is done at the quarterly level since portfolio stock earnings are announced quarterly. We track the performance of a particular fund for the subsequent quarter after the release of quarterly earnings of majority of portfolio firms.

4.2 Active fundamental performance and ESG Disagreement

Our hypothesis is that if high R&A funds have skill in assessing firm ESG value under uncertainty (Avramov et al., 2021), we should see them out-perform around earning announcements of firms with high ESG rating disagreement.

We employ the index-based AFP measure but only consider firms with high ESG disagreement observed at the earnings announcement date. The idea is that during such events new information hits the markets and repricing occurs. We defined ESG disagreement score as the standard deviation of the four ESG raters (MSCI IVA, Thomson Reuters Asset4, Sustainalytics and S&P Global ESG data) when there are all four ESG ratings available, or minimum of two ESG Ratings when only two are available (Gibson et al., 2021; Serafeim and Yoon, 2021). We then classify firms into annual quintiles of ESG disagreement to construct AFP^{Disag} measure conditioned on the high ESG disagreement group and AFP^{Others} measure for the remaining portfolio firms with lower ESG disagreement score.

We find that there exists positive returns to fund-family and fund-specific skill in selecting stocks with high ESG disagreement, which on average generate positive returns around earnings announcement. In fact, Gibson et al. (2021) find that there is a risk premium for firms with higher ESG rating disagreement for the sample S&P 500 firms in the period from 2010 to 2017. Our results are robust to alternative sample partition of ESG disagreement, including firms with high ESG disagreement classified by top quartile or tercile of disagree-

ment score. However, we do not observe additional value of family-level skill in the high ESG disagreement by sample median-split.

[Insert Table 7 here]

In untabulated tests, we show that our AFP measure conditioned on ESG disagreement does indeed capture ESG-specific information available to skilled fund managers. Specifically, we do not observe the positive interaction term coefficient from the test of fund returns on AFP measure conditioned on quarterly analyst earnings forecasts disagreement, suggesting that ESG disagreement is not simply just a proxy for portfolio firm business complexity unrelated to ESG factor.

4.3 Active fundamental performance and RepRisk incidents

We further perform additional test on the relationship between active fundamental performance conditional on ESG information. Our conjecture is that similar rationale to earning announcement events can be applied to negative ESG incidents. We thus compute AFP^{RR} around the month of ESG incidents of portfolio firms, where stock prices are reevaluated, specifically negatively adjusted following the negative incident news.

We construct the modified version of AFP measure as the correlation of fraction of portfolio weight exposed to incidents events and monthly CARs. We use this approach because of the following 2 reasons. First, unlike firm quarterly earnings announcement where we can observe 3-day CARs around specific earnings announcement dates, we only observe the month-interval of high RepRisk incident score, thus we employ the monthly abnormal returns around incidents as a proxy for returns. And second, unlike earnings announcement events when more than 95% of portfolio firms report earnings in the second month of each quarter, RepRisk events are unexpected in the timing of occurrence. Thus, we use total portfolio weight exposed to incidents events as proxy for portfolio weight (Lo, 2008).

The analysis of fund performance on fund's AFP^{RR} is done at the monthly level. We track the performance of a particular fund for the subsequent month following. Our results

suggest that funds with high R&A ratings have better investment skill in predicting and allocating to stock with future negative ESG events, and thus outperform other funds in month following the month that any ESG incidents of portfolio firms occur.

[Insert Table 8 here]

Appendix Table A6 reports the results of tests using ESG-specific AFP by fund domicile. Panel A shows that the positive effect of fund R&A and AFP^{Disag} on α^{4F}_{t+1} is concentrated in EU-domiciled funds. The same interpretation is mirrored from the results reported in Panel B for tests using AFP^{RR}. Overall, our findings suggest that the effect of skill is more pronounced in the EU-domiciled fund sample.

5 Mutual funds' investment strategies

So far, we have established that ESG aware mutual fund managers have investment skill when measured around the release of fundamental information. This skill is not homogeneous across all firms in a fund's portfolio, but is concentrated among stocks with high ESG-related uncertainty. What is less clear is what investment strategies these fund managers follow.

In order to perform better than their peers, fund managers need to take an active investment stance compared to the average fund in their benchmark (Cremers and Pareek, 2016). They can either over- or under-weight certain positions, over- or under-trade certain firms, or do a mixture of the two. Since we are interested in ESG investment skill, we need to obtain a measure that is specific to firms with high ESG uncertainty.

To this end we start by sorting firms by the level of ESG disagreement. First, for each firm that has a high level of disagreement, we compute the average holding size in percentage of AuM (Jiang et al., 2014) and the average trade size across all funds in a given category (Gantchev, Giannetti, and Li, 2021). Second, we define a dummy each for firms that are over-held and under-traded by mutual funds. In a third step we match these dummies to

the holdings of mutual funds. Finally, we define the variable *Over-hold* and *Under-trade* as the sum the weights of these positions for the mutual funds in our sample.

To test whether the investment strategies of ESG aware funds are different from their peers we interact our proxy of ESG awareness with the measures of over-exposure and under-trading. If fund managers generate alphas by having a higher exposure to firms whose ESG performance is uncertain, we expect the interaction between $\varnothing R\&A$ and *Over-hold* to be positive. Moreover, given that investments into ESG typically take time to be incorporated into stock returns (Edmans, 2011; Starks, Venkat, and Zhu, 2020), we should expect the triple interaction between $\varnothing R\&A$, *Over-hold*, and *Under-trade* to be positive as well. The triple interaction term measure the performance that is attributable to funds that *both* over-hold and under-trade stocks with high ESG uncertainty.

[Insert Table 9 here]

Table 9 shows the results of these tests. While we find some evidence that ESG aware fund that are over-exposed to firms with a high ESG uncertainty outperform, the evidence is not overly robust if we ignore the trading choices of fund managers. Once we include the triple interaction term in our specifications, the positive effect becomes stronger and robust.[18] The out-performance that we observe in ESG aware funds is concentrated in those that *both* over-hold and under-trade firms for which they are most likely to have superior information, i.e., those with a high degree of ESG uncertainty. For example, in model (2), a one standard deviation increase in *Over-hold* (0.10) and a one standard deviation increase in *Under-trade* (0.02) correlate to an increase in monthly performance of 3.7 basis points.[19]

[18] In Appendix Table A9 we confirm that our results hold when additionally controlling for fund family fixed effects.

[19] 0.037 = 0.38*0.10+9.64*0.10*0.02-0.21*0.10-1.96*0.10*0.02-0.11*0.02+0.341*0.02

6 Conclusion

This paper contributes to the large discussion on the relationship between ESG integration and financial performance. We document a positive association between being ESG aware, i.e., of having a high level of integration, and fund performance. This is robust to including a vast set of fund-family, individual fund, and even fund manager fixed effects. Also, controlling for the funds' exposure to regional ESG-factors does not explain this out-performance, nor does controlling funds' portfolio sustainability ratings. We argue that the out-performance we observe is driven by awareness as opposed to taste: Our results are concentrated among conventional funds with high ESG integration – those that are ESG-aware – instead of the sample of socially conscious funds – that are ESG-motivated.

Is the out-performance a coincidence or is driven by investment skill? To answer this question, we leverage the measure of active fundamental performance developed by Jiang and Zheng (2018) to identify active investment skill. Our findings suggest that only mutual funds with high degree of ESG integration exhibit ESG-specific investment skill, especially in the presence of ESG uncertainty or unexpected events.

In the last part of the paper we also show *how* this out-performance is achieved. Mutual funds tend to be over-exposed to stocks whose ESG performance is uncertain and at the same time also under-trade these firms. Overall, our findings support the conjecture that ESG-aware investors can utilize their ESG informational advantage to identify lucrative investment opportunities.

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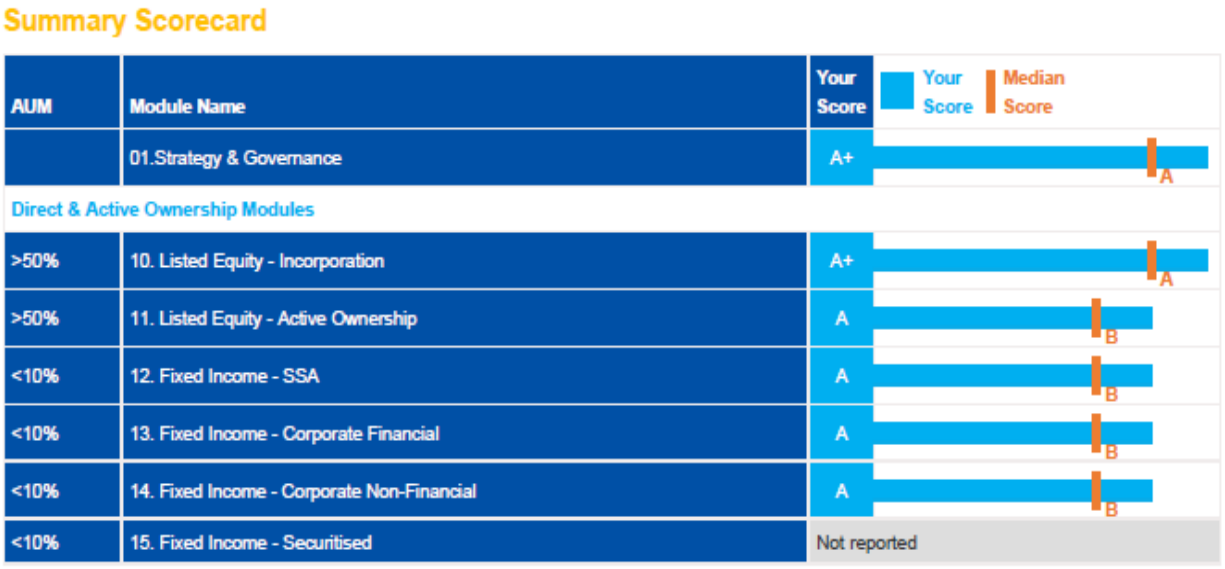
Figures

Figure 1: Example of Reporting and Assessment Scorecard
This figure shows an example of a Reporting and Assessment Scorecard that is voluntarily published by a PRI signatory.

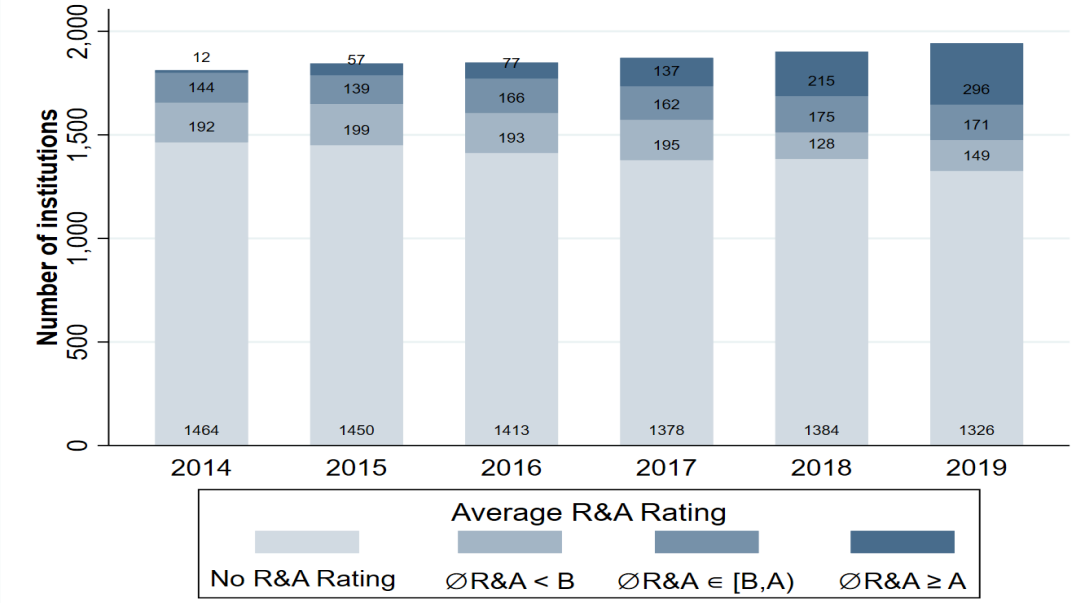


Summary Scorecard

AUM	Module Name	Your Score	Your Score / Median Score
	01.Strategy & Governance	A+	A
Direct & Active Ownership Modules			
>50%	10. Listed Equity - Incorporation	A+	A
>50%	11. Listed Equity - Active Ownership	A	B
<10%	12. Fixed Income - SSA	A	B
<10%	13. Fixed Income - Corporate Financial	A	B
<10%	14. Fixed Income - Corporate Non-Financial	A	B
<10%	15. Fixed Income - Securitised	Not reported	

Figure 2: Distribution of R&A ratings by year
This figure plots the Reporting & Assessment (R&A) rating for the mutual fund sample from January 2014 to December 2019. Panel A plots the number of institutions by rating category, while Panel B plots the number of funds by rating category .

Panel A: Number of institutions



Panel B: Number of funds

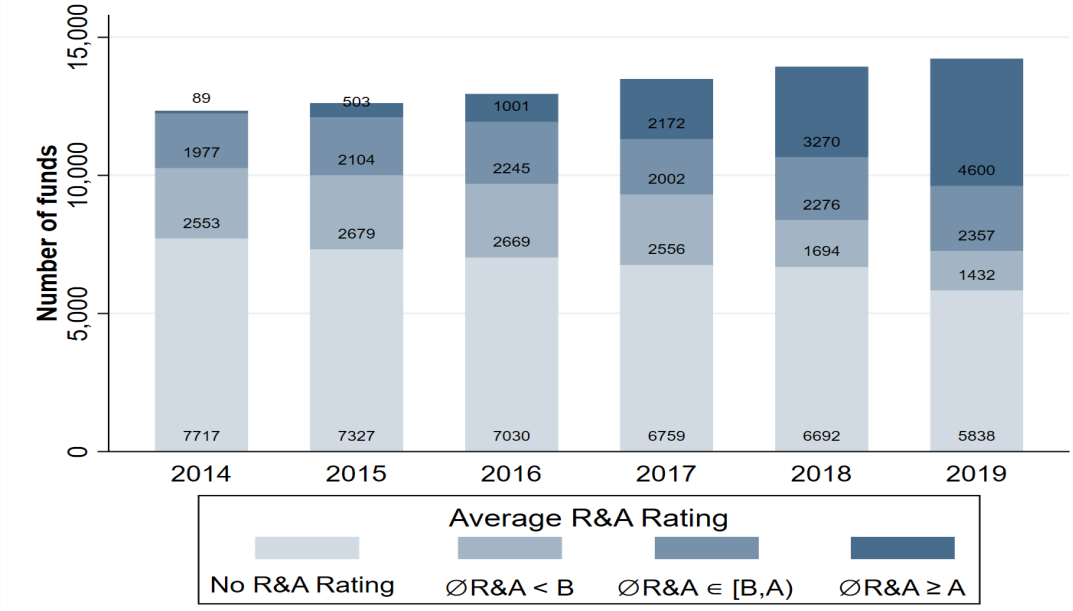
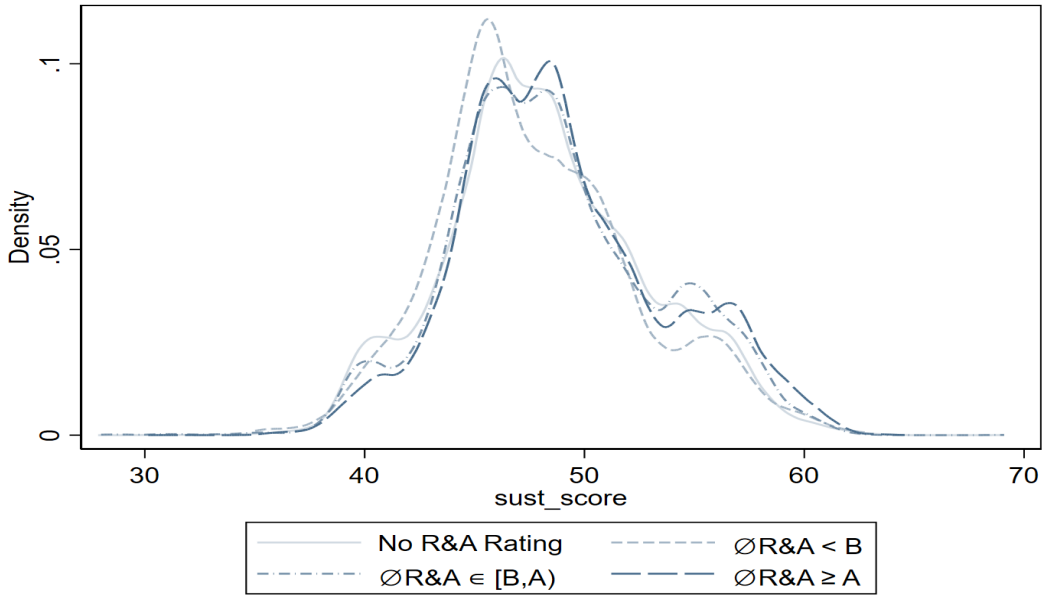
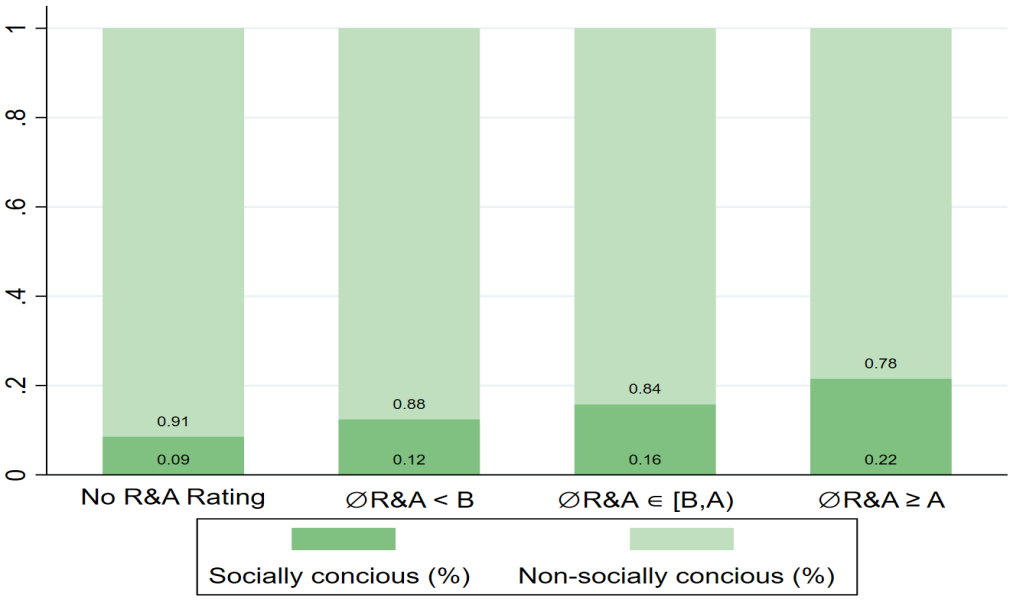


Figure 3: Distribution of funds' portfolio ESG footprint by average R&A rating Panel A of this figure plots the distribution of the portfolio ESG footprint of signatories by average R&A rating. The footprint is computed as the weighted average ESG score of funds' portfolio holdings. Panel B shows the fraction of funds that self-classify as "socially conscious" by R&A rating.

Panel A: ESG score distribution by R&A ratings



Panel B: Fraction of socially conscious funds by R&A ratings



Tables

Table 1: Descriptive statistics
This table shows summary statistics for the sample of Morningstar mutual funds used in our analysis. The sample is at the fund-month level and covers the period from 2014 to 2019. Panel A reports the sample descriptive statistics. Panel B reports the sample average Spearman correlation coefficients. Appendix Table A1 provides variable definitions.

Panel A: Summary statistics

	Obs	Mean	S.D.	p25	p50	p75
Fund characteristics						
Gross Return	838,042	0.56	3.66	-1.68	0.72	2.90
Mstar categ-adj Return	838,042	-0.01	1.31	-0.63	0.00	0.61
Alpha 1F	838,042	-0.09	1.90	-1.09	-0.09	0.90
Alpha 3F	838,042	-0.09	1.85	-1.04	-0.10	0.84
Alpha 4F	838,042	-0.11	1.88	-1.06	-0.11	0.83
Log Fund Assets$_{t-1}$	838,042	18.49	1.94	17.18	18.51	19.85
Log Fund Age$_{t-1}$	838,042	2.47	0.58	2.05	2.55	2.92
Fund-family characteristics						
Log Family Assets$_{t-1}$	838,042	23.09	2.18	21.75	23.44	24.72
$\varnothing R\&A_{t-1}$	431,416	4.34	0.96	3.60	4.40	5.08
$\varnothing R\&A_{t-1} \geq A$	838,042	0.15	0.35	0.00	0.00	0.00
$\varnothing R\&A_{t-1} \in [B, A)$	838,042	0.16	0.37	0.00	0.00	0.00
$\varnothing R\&A_{t-1} < B$	838,042	0.17	0.38	0.00	0.00	0.00
No R&A Rating	838,042	0.52	0.50	0.00	1.00	1.00

Panel B: Sample average Spearman correlation coefficients

	(1)	(2)	(3)	(4)	(5)
(1) Alpha 4F	1				
(2) Log Fund Assets$_{t-1}$	0.0152	1			
(3) Log Fund Age$_{t-1}$	0.0028	0.1375	1		
(4) Log Family Assets$_{t-1}$	0.0198	0.4094	0.0618	1	
(5) $\varnothing R\&A_{t-1}$	0.0205	0.1345	0.0237	0.3902	1

Table 2: ESG integration and fund performance: Univariate descriptive statistics
This table reports average fund returns, separately by mutual funds' Reporting & Assessment (R&A) ratings. Funds' gross returns are calculated before deducting fees and expenses. Category-adjusted returns are the the difference between the gross returns and the returns of the fund's benchmark, as provided by Morningstar. Risk-adjusted returns are computed using the CAPM model (Alpha 1F), the Fama-French model (Alpha 3F), the Carhart model (Alpha 4F). Appendix Table A1 provides variable definitions.

	No Rating	$\varnothing R\&A < B$	$\varnothing R\&A \in [B, A)$	$\varnothing R\&A \geq A$	Diff. (t-stat)	Diff. (t-stat)
	(1)	(2)	(3)	(4)	(4) - (1)	(4) - (2)
Number of obs.	434,874	142,469	137,377	123,322		
Gross Return	0.481	0.538	0.566	0.850	0.369***	0.312***
					(31.27)	(21.91)
Categ-adj Return	-0.039	-0.004	0.025	0.015	0.054***	0.019***
					(12.60)	(3.91)
Alpha 1F	-0.136	-0.062	-0.038	-0.028	0.108***	0.034***
					(17.86)	(4.63)
Alpha 3F	-0.124	-0.064	-0.054	-0.039	0.084***	0.025***
					(14.33)	(3.48)
Alpha 4F	-0.137	-0.090	-0.076	-0.047	0.090***	0.043***
					(15.08)	(5.83)

Table 3: R&A rating and fund performance

This table reports results from regressions of funds' monthly performance on Reporting & Assessment (R&A) ratings. In model (1), fund returns are calculated before deducting fees and expenses. Model (2) accounts for the difference between the fund gross return and the return of the fund benchmark, as provided by Morningstar. Models (3) to (5) adjust respectively for exposure to the market factor (CAPM), the Fama-French three-factor model, and the Carhart model. All the control variables are lagged by one month and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at both time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

	Gross Return	Mstar categ-adj Return	Alpha 1F	Alpha 3F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)
$\varnothing R\&A_{t-1} \geq A$	0.041**	0.033**	0.041**	0.041**	0.056***
	(2.27)	(2.38)	(2.29)	(2.35)	(3.39)
$\varnothing R\&A_{t-1} \in [B, A)$	0.041***	0.036***	0.040***	0.030*	0.035**
	(2.96)	(4.07)	(2.69)	(1.97)	(2.19)
$\varnothing R\&A_{t-1} < B$	0.017	0.009	0.019	0.015	0.018
	(0.90)	(0.99)	(0.98)	(0.77)	(0.89)
Log Fund Assets$_{t-1}$	0.015***	0.015***	0.018***	0.015**	0.013**
	(2.71)	(5.91)	(3.05)	(2.48)	(2.17)
Log Fund Age$_{t-1}$	-0.005	-0.016**	-0.015*	-0.013	-0.007
	(-0.46)	(-2.32)	(-1.89)	(-1.53)	(-0.81)
Log Family Assets$_{t-1}$	0.011***	0.010***	0.008**	0.007**	0.004
	(3.14)	(3.94)	(2.60)	(2.18)	(1.36)
Categ x Time FE	Yes	Yes	Yes	Yes	Yes
N	828,647	828,647	828,647	828,647	828,647
Adj R2	0.824	0.013	0.368	0.343	0.346

Table 4: R&A rating and fund performance - Fixed Effects

This table reports results from regressions of funds' monthly performance on Reporting & Assessment (R&A) ratings. In model (1) and (2), we further control for fund-family fixed-effects. Model (3) and (4) include fund fixed-effects. Model (5) and (6) include fund manager fixed-effects. All fund control variables are lagged by one month and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

	Gross Return	Alpha 4F	Gross Return	Alpha 4F	Gross Return	Alpha 4F
	(1)	(2)	(3)	(4)	(5)	(6)
$\varnothing R\&A_{t-1} \geq A$	0.058	0.081**	0.062*	0.086**	0.048*	0.063**
	(1.64)	(2.27)	(1.72)	(2.38)	(1.94)	(2.61)
$\varnothing R\&A_{t-1} \in [B, A)$	0.036	0.039	0.040	0.044	0.030	0.031
	(1.40)	(1.37)	(1.56)	(1.55)	(1.48)	(1.49)
$\varnothing R\&A_{t-1} < B$	0.010	0.006	0.013	0.011	0.003	-0.002
	(0.38)	(0.25)	(0.51)	(0.47)	(0.14)	(-0.10)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes				
Fund FE			Yes	Yes		
Manager FE					Yes	Yes
N	828,631	828,631	828,464	828,464	535,439	535,439
Adj R2	0.825	0.350	0.825	0.352	0.847	0.325

Table 5: R&A rating and ESG-factor alpha

This table reports results from regressions of fund performance variables on PRI R&A rating. Fund returns are calculated before (gross) deducting fees and expense, adjusted using the market risk factor and E-, S-, G- and ESG-factor. All fund control variables are lagged by one month and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

		ESG Factor (MSCI IVA data)			
	Alpha 1F (mkt)	Alpha (mkt, E-fac)	Alpha (mkt, S-fac)	Alpha (mkt, G-fac)	Alpha (mkt, ESG-fac)
	(1)	(2)	(3)	(4)	(5)
$\varnothing R\&A_{t-1} \geq A$	0.041**	0.046**	0.037**	0.035**	0.037**
	(2.29)	(2.57)	(2.04)	(2.01)	(2.23)
$\varnothing R\&A_{t-1} \in [B, A)$	0.040***	0.045***	0.035**	0.035**	0.049***
	(2.69)	(2.95)	(2.26)	(2.33)	(3.14)
$\varnothing R\&A_{t-1} < B$	0.019	0.028	0.017	0.008	0.025
	(0.98)	(1.42)	(0.86)	(0.39)	(1.25)
Controls	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes
N	828,647	823,206	823,206	823,206	823,206
Adj R2	0.368	0.345	0.348	0.351	0.346

Table 6: R&A ratings and fund performance - The role of ESG taste

This table reports results from regressions of funds' monthly performance on Reporting & Assessment (R&A) ratings. Panel A partitions the sample by funds that self-designate as "socially conscious" while Panel B splits the funds by their ESG portfolio rating ("Globes"). Morningstar identifies funds as socially conscious when the fund states this in its name or prospectus. The highest ESG rating (5 Globes) is awarded to funds whose portfolio ESG score is among the top 10% in their investment category. All fund control variables are lagged by one month and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

Panel A: Socially conscious funds

	Socially conscious funds		Conventional funds	
	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F
	(1)	(2)	(3)	(4)
$\varnothing R\&A_{t-1} \geq A$	0.051*	0.004	0.072***	0.129***
	(1.90)	(0.06)	(3.13)	(2.76)
$\varnothing R\&A_{t-1} \in [B, A)$	0.010	-0.038	0.052**	0.070*
	(0.38)	(-0.65)	(2.19)	(1.82)
$\varnothing R\&A_{t-1} < B$	0.008	-0.055	0.034	0.012
	(0.35)	(-1.45)	(1.04)	(0.40)
Controls	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes
Family FE		Yes		Yes
N	103,316	103,312	734,726	734,710
Adj R2	0.027	0.031	0.019	0.024

Panel B: Morningstar Sustainability Globes

	5 Globe funds		Remaining funds	
	(1)	(2)	(3)	(4)
$\varnothing R\&A_{t-1} \geq A$	0.075**	0.027	0.068***	0.116**
	(2.58)	(0.39)	(3.26)	(2.57)
$\varnothing R\&A_{t-1} \in [B, A)$	0.039	-0.022	0.045**	0.058
	(1.64)	(-0.34)	(2.07)	(1.56)
$\varnothing R\&A_{t-1} < B$	-0.022	-0.116**	0.033	0.008
	(-0.70)	(-2.10)	(1.07)	(0.26)
Controls	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes
Family FE		Yes		Yes
N	52,327	52,229	785,715	785,698
Adj R2	0.026	0.032	0.019	0.024

Table 7: Investment skill and ESG Disagreement

This table reports results from regressions of funds' monthly performance on Reporting & Assessment (R&A) ratings interacted with a proxy for investment skill, Active Fundamental Performance (Jiang and Zheng, 2018). AFP captures how profitable a fund's active portfolio choices are during the days surrounding the release of new fundamental information via earning announcements. For every portfolio, the holdings are sorted by the disagreement of their ESG scores and AFP is computed separately for the firms with the highest level of disagreement, AFP_t^{Disag} and for those with a lower level of disagreement AFP_t^{Others}. High level of ESG disagreement is measured differently across models, from the top quintile of firms in (1) and (2), to firms above the sample median in (7) and (8). Fund returns are measured from the second month of a given quarter to the first month of the following quarter. We keep only portfolios where at least 95% of firms report quarterly earnings. All fund control variables arelagged by one quarter and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at the time (year-quarter) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

Stock-level ESG Disagreement:	Top Quintile		Top Quartile		Top Tercile		Above Median	
	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\varnothing R\&A_{t-1} \geq A \times AFP_t^{Disag}$	0.148**	0.128**	0.134**	0.120*	0.145**	0.137**	0.069	0.064
	(2.36)	(2.07)	(2.10)	(1.80)	(2.49)	(2.35)	(1.38)	(1.27)
$\varnothing R\&A_{t-1} \geq A \times AFP^{Others}$		-0.023		-0.030		-0.056		-0.056
		(-0.54)		(-0.63)		(-1.08)		(-0.81)
$\varnothing R\&A_{t-1} \geq A$	0.080**	0.078**	0.079**	0.077**	0.080**	0.078**	0.081**	0.079**
	(2.32)	(2.31)	(2.30)	(2.29)	(2.36)	(2.33)	(2.33)	(2.34)
AFP^{Disag}	0.455***	0.446***	0.473***	0.462***	0.497***	0.486***	0.484***	0.475***
	(9.14)	(9.06)	(10.50)	(10.46)	(12.77)	(12.70)	(15.70)	(14.92)
AFP^{Others}		0.465***		0.460***		0.446***		0.443***
		(16.18)		(16.33)		(13.70)		(11.90)
$\varnothing R\&A_{t-1} \in [B, A)$	0.049	0.046	0.049	0.046	0.049	0.046	0.049	0.046
	(1.39)	(1.30)	(1.40)	(1.30)	(1.40)	(1.30)	(1.39)	(1.30)
$\varnothing R\&A_{t-1} < B$	0.039	0.036	0.038	0.036	0.036	0.036	0.036	0.036
	(1.37)	(1.29)	(1.35)	(1.29)	(1.31)	(1.29)	(1.28)	(1.28)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	126,509	126,509	126,509	126,509	126,509	126,509	126,509	126,509
Adj R2	0.277	0.295	0.278	0.295	0.282	0.295	0.286	0.295

Table 8: Investment skill and RepRisk incidents

This table reports results from regressions of fund performance variables on PRI R&A rating and AFP measure conditioned on RepRisk negative ESG incident, AFP_t^{RR}. AFP_t^{RR} is defined as fund-level monthly correlation of portfolio holdings in the previous quarter and monthly CARs in the month of RepRisk incident occurrence of each portfolio firm. We define RepRisk incident to portfolio firm as an event with the monthly increase in RepRisk score equals the 95th percentile of the sample monthly change in RepRisk score, i.e. $\Delta RepRisk\ score = 8$. Monthly returns are observed in the month following RepRisk incidents. All fund control variables are lagged by one month and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

	AFP_t^{RR}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}
	(1)	(2)	(3)	(4)
AFP_t^{RR}		0.471	0.411	0.403
		(1.37)	(1.15)	(1.10)
$\varnothing R\&A_{t-1} \geq A \times AFP_t^{RR}$			1.924**	2.001**
			(2.15)	(2.30)
$\varnothing R\&A_{t-1} \geq A$	0.000		0.056***	0.050
	(1.04)		(2.82)	(1.26)
$\varnothing R\&A_{t-1} \in [B, A)$	0.000		0.025	0.002
	(0.19)		(1.17)	(0.05)
$\varnothing R\&A_{t-1} < B$	-0.000		0.001	-0.043*
	(-0.73)		(0.05)	(-1.88)
Controls	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes
Family FE				Yes
N	362,158	329,062	329,062	329,062
Adj R2	0.021	0.299	0.299	0.303

Table 9: Funds' holdings and trades conditioned on stock-level ESG disagreement

This table reports results from regressions of funds' monthly performance on Reporting & Assessment (R&A) ratings interacted with measures of active investment decisions. *Over-hold* measures the total holdings of stocks that (a) have high level of ESG disagreement and (b) are over-weighted in a portfolio compared to its benchmark. *Under-trade* measures the total trades of stocks that (a) have high level of ESG disagreement and (b) are under-traded in a portfolio compared to its benchmark. High level of ESG disagreement is measured differently across models, from the top quintile of firms in (1) and (2), to firms above the sample median in (7) and (8). All fund control variables are lagged by one month and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

Stock-level ESG Disagreement:	Top Quintile		Top Quartile		Top Tercile		Above Median	
	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\varnothing R\&A_{t-1} \geq A \times$ Over-hold	0.221*	0.363***	0.177	0.342***	0.167**	0.291***	0.093	0.162**
	(1.98)	(2.80)	(1.66)	(2.81)	(2.05)	(3.09)	(1.61)	(2.45)
$\varnothing R\&A_{t-1} \geq A \times$ Over-hold $\times$ Under-trade		9.319**		11.091**		6.635**		2.489*
		(2.00)		(2.47)		(2.31)		(1.69)
Over-hold	-0.143	-0.166	-0.096	-0.113	-0.082	-0.098	-0.051	-0.068
	(-1.33)	(-1.55)	(-1.01)	(-1.19)	(-1.20)	(-1.43)	(-1.15)	(-1.47)
Over-hold $\times$ Under-trade		-1.931		-1.293		-1.266		-0.924
		(-1.57)		(-1.22)		(-1.41)		(-1.62)
$\varnothing R\&A_{t-1} \geq A \times$ Under-trade		-0.142		-0.856		-0.691		-0.304
		(-0.17)		(-0.88)		(-0.89)		(-0.54)
Under-trade		0.451		0.319		0.495		0.441
		(1.15)		(0.87)		(1.42)		(1.54)
$\varnothing R\&A_{t-1} \geq A$	0.017	0.011	0.018	0.006	0.011	-0.001	0.017	0.008
	(0.80)	(0.52)	(0.76)	(0.24)	(0.48)	(-0.05)	(0.73)	(0.34)
$\varnothing R\&A_{t-1} \in [B, A)$	0.017	0.016	0.016	0.016	0.017	0.016	0.017	0.016
	(0.81)	(0.80)	(0.81)	(0.80)	(0.81)	(0.79)	(0.81)	(0.80)
$\varnothing R\&A_{t-1} < B$	0.004	0.003	0.003	0.003	0.004	0.003	0.003	0.003
	(0.21)	(0.19)	(0.20)	(0.18)	(0.21)	(0.19)	(0.20)	(0.18)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	390,438	390,438	390,438	390,438	390,438	390,438	390,438	390,438
Adj R2	0.303	0.303	0.303	0.303	0.303	0.303	0.303	0.303

Appendices

Table A1: Variable definitions

Variable	Definition (Data source)
Fund characteristics	
Gross return	Gross return of fund i in month t, in percentage. (Morningstar Mutual Fund)
Mstar categ-adj return	Difference between the fund's gross return and the return of the Morningstar-category in month t, in percentage
Alpha 1F	Fund's monthly alpha over the CAPM, in percentage. (Morningstar Mutual Fund, AQR benchmark factor)
Alpha 3F	Fund's monthly alpha over the regional Fama-French 3-factor, in percentage. (Morningstar Mutual Fund, AQR benchmark factor)
Alpha 4F	Fund's monthly alpha over the regional Fama-French-Carhart 4-factor in month t, in percentage. (Morningstar Mutual Fund, AQR benchmark factor)
Alpha (mkt, E-fac)	Fund's monthly alpha over the market risk premium and the regional green factor's realization in month t, in percentage. We follow the methodology of Pástor et al. (2021b) to calculate the green factor's realization for each investment region. we construct Alpha (mkt, S-fac), Alpha (mkt, G-fac) and Alpha (mkt, ESG-fac) in a similar factor. (Morningstar Mutual Fund, MSCI IVA ESG)
Log Fund Assets	Natural logarithm of total assets under management (AUM), in US $m. Fund-level AUM is the sum of the assets across all share classes. (Morningstar Mutual Fund)
Log Fund Age	Natural logarithm of the number of years since the fund inception date. (Morningstar Mutual Fund)
Socially conscious	Indicator variable for funds that are classified by Morningstar as "socially conscious".
Fund ESG ranking	The standardised ESG portfolio score [0,1] in a given Category x Time. (Morningstar)
Fund 'Globes'	Morningstar sustainability 'Globes' rating on the scale 1-5, where 5 is the highest sustainability globes. (Morningstar)
Institution characteristics	
Log Family Assets	Natural logarithm of total AUM by the fund-family, in US $m. Fund family-level is the sum of the assets across all funds of the fund family. (Morningstar Mutual Fund)
R&A score	The average PRI R&A module scores. The included module scores are (1) Strategy and Governance, (2) Selection, appointment of managers - SAM: Listed Equity, (3) SAM: Fixed Income, (4) Listed Equity: Screening, (5) Listed Equity: Integration, (6) Listed Equity: Active Ownership, (7) Private Equity, (8) Direct Property, (9) Direct Infrastructure , and (10) Fixed Income. (PRI Reporting and Assessment)
$\varnothing R\&A_{t-1} \geq A$	Indicator variable for funds that have an average score of A or greater across all modules. (PRI Reporting and Assessment)
$\varnothing R\&A_{t-1} \in [B, A)$	Indicator variable for funds that have an average score of B or greater, but smaller than A across all modules. (PRI Reporting and Assessment)
$\varnothing R\&A_{t-1} < B$	Indicator variable for funds that have an average score smaller than B across all modules. (PRI Reporting and Assessment)
No R&A Rating	Indicator variable for funds that do not have PRI R&A rating, consisting of non-PRI funds or funds of first-year being PRI signatories. (PRI Reporting and Assessment)

Appendix A1. [con'd]

Variable	Definition (Data source)
Other variables	
ESG disagreement	Standard deviation of ESG ratings cross four ratings providers or when at least two ratings are available. High ESG disagreement is an indicator variable takes values of 1 if the stock is in the Top Quintile (or Top Quartile/ Tercicle/ Median) of ESG disagreement in a given quarter. (MSCI IVA ESG, Sustainalytics ESG, Thomson Asset4 and S&P Global ESG scores)
AFP^{Disag}	Fund-level quarterly sum of the change in portfolio holdings in the previous quarter and CAR[-1;+1] around quarter earnings announcement date of each portfolio firm with high level of ESG disagreement. (Morningstar Mutual Fund, FactSet monthly holdings, Compustat Security Daily for North America and Global, I/B/E/S Detail History Actuals)
AFP^{Others}	Fund-level quarterly sum of the change in portfolio holdings in the previous quarter and CAR[-1;+1] around quarter earnings announcement date of each portfolio firm with low level of ESG disagreement.
AFP^{RR}	Fund-level monthly correlation of portfolio holdings in the previous quarter and monthly CARs in the month of RepRisk incident occurrence of each portfolio firm. We define a firm RepRisk incident as an event with the monthly increase in RepRisk score equals the 95th percentile of the sample change, i.e. $\Delta RepRisk\,score = 8$ (Morningstar Mutual Fund, FactSet monthly holdings, FactSet monthly returns, RepRisk ESG incidents)
Over/Under-hold	Fund-level total portfolio weights of stocks that a) have high level of ESG disagreement (Top quintile/quartile/tercile or Above Median) and b) are over-held/under-held in a fund portfolio against its benchmark. A stock is considered as being over-held (under-held) in a fund portfolio if the difference between its portfolio weight and its respective Morningstar benchmark weight, i.e. active weight, is in the top tercile (bottom tercile) of the sample difference. Alternative definitions of stock over-holdings in a fund portfolio using quintile or quartile of active weights are reported in the Internet Appendix. (FactSet holdings, ESG Disagreement)
Under/Over-trade	Fund-level total portfolio tradings of stocks that a) have high level of ESG disagreement (Top quintile/quartile/tercile or Above Median) and b) are under-traded/over-traded in a fund portfolio against its benchmark. A stock is considered as being under-traded (over-traded) in a fund portfolio if the difference between its quarterly change in portfolio weight and its quarterly change in benchmark weight is in the bottom tercile (top tercile) of the sample difference. Alternative definitions of stock over-tradings in a fund portfolio using quintile or quartile of change in active weights are reported in the Internet Appendix. (FactSet holdings, ESG Disagreement)

Table A2: Robustness checks

This table reports results from regressions of fund monthly performance variables on PRI R&A rating. Panel A shows results of regressions controlling for additional fund characteristics as in Ferreira, Keswani, Miguel, and Ramos (2013). Panel B presents results of fund alpha over alternative individual country-level risk-factor benchmark on R&A rating. Panel C presents results using the sample of funds that have non-missing holdings data from FactSet. Fund returns are calculated before (gross) deducting fees and expenses. These returns are also adjusted using the CAPM model (Alpha 1F), the Fama-French model (Alpha 3F), the Carhart model (Alpha 4F), or computed as the difference between the fund gross return and the return of the fund benchmark, as provided by Morningstar. All fund control variables are lagged one month and winsorized at 1st and 99th percentiles. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix A provides variable definitions.

Panel A: Controlling for additional fund characteristics

	Gross Return	Mstar categ-adj Return	Alpha 1F	Alpha 3F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)
$\varnothing R\&A_{t-1} \geq A$	0.0347***	0.0249**	0.0289**	0.0218*	0.0227*
	(2.986)	(2.586)	(2.425)	(1.818)	(1.794)
$\varnothing R\&A_{t-1} \in [B, A)$	0.0326***	0.0300***	0.0277***	0.0133	0.0128
	(3.410)	(3.970)	(2.659)	(1.349)	(1.232)
$\varnothing R\&A_{t-1} < B$	0.0016	0.0158*	0.0038	-0.0025	-0.0066
	(0.148)	(1.923)	(0.356)	(-0.267)	(-0.631)
Log Fund Assets$_{t-1}$	0.0079**	0.0078***	0.0068**	0.0065**	0.0047
	(2.272)	(3.149)	(2.279)	(2.365)	(1.663)
Log Fund Age$_{t-1}$	-0.0014	-0.0035	0.0063	0.0034	0.0003
	(-0.181)	(-0.804)	(0.698)	(0.388)	(0.038)
Expense Ratio$_{t-1}$	-0.0483**	-0.0620***	-0.0619***	-0.0496***	-0.0471***
	(-2.592)	(-5.063)	(-3.275)	(-3.035)	(-2.913)
Load Fee$_{t-1}$	0.0012	0.0006	0.0007	-0.0006	-0.0010
	(0.989)	(0.595)	(0.580)	(-0.517)	(-0.861)
Flow$_{t-1}$	0.0029**	0.0021**	0.0031**	0.0019*	0.0016*
	(2.147)	(2.061)	(2.623)	(1.969)	(1.788)
Flow$_{t-2}$	-0.0015	-0.0005	-0.0008	-0.0004	-0.0009
	(-1.220)	(-0.548)	(-0.710)	(-0.439)	(-0.965)
Alpha$_{t-1}$	-0.0251	-0.0137	-0.0144	-0.0175	-0.0085
	(-1.280)	(-1.200)	(-0.732)	(-0.956)	(-0.444)
Alpha$_{t-2}$	0.0138	0.0044	0.0248	0.0271	0.0322*
	(0.779)	(0.407)	(1.491)	(1.593)	(1.920)
Categ x Time FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	485,667	485,667	485,667	485,667	485,667
Adj R2	0.820	0.018	0.464	0.422	0.411

Panel B: Fund alpha over alternative risk-factor benchmark

	Alpha 1F	Alpha 3F	Alpha 4F
	(1)	(2)	(3)
$\varnothing R\&A_{t-1} \geq A$	0.038**	0.037**	0.051***
	(2.24)	(2.27)	(3.27)
$\varnothing R\&A_{t-1} \in [B, A)$	0.039***	0.030**	0.034**
	(3.01)	(2.31)	(2.55)
$\varnothing R\&A_{t-1} < B$	0.016	0.011	0.015
	(0.87)	(0.62)	(0.81)
Controls	Yes	Yes	Yes
Categ x Time FE	Yes	Yes	Yes
N	828,305	828,305	828,305
Adj R2	0.290	0.246	0.246

Panel C: R&A rating and fund performance: Sample of non-missing stock holdings

	Gross Return	Mstar categ-adj Return	Alpha 1F	Alpha 3F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)
$\varnothing R\&A_{t-1} \geq A$	0.041**	0.037**	0.030	0.025	0.045**
	(2.00)	(2.64)	(1.54)	(1.27)	(2.40)
$\varnothing R\&A_{t-1} \in [B, A)$	0.037*	0.038***	0.030	0.008	0.017
	(1.92)	(3.52)	(1.54)	(0.42)	(0.83)
$\varnothing R\&A_{t-1} < B$	0.020	0.018	0.018	0.003	0.003
	(1.22)	(1.65)	(1.08)	(0.14)	(0.19)
Controls	Yes	Yes	Yes	Yes	Yes
Categ x Time FE	Yes	Yes	Yes	Yes	Yes
N	390,438	390,438	390,438	390,438	390,438
Adj R2	0.843	0.010	0.358	0.302	0.303

Table A3: R&A module rating and fund performance

This table reports results from regressions of fund monthly performance variables on R&A module rating. Listed Fund returns are calculated before (gross) deducting fees and expenses. These returns are also adjusted using the CAPM model (Alpha 1F), the Fama-French model (Alpha 3F), the Carhart model (Alpha 4F), or computed as the difference between the fund gross return and the return of the fund benchmark, as provided by Morningstar. All fund control variables are lagged one month and winsorized at 1st and 99th percentiles. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix A provides variable definitions.

Panel A: Equity-funds: Avg score based on a subset of R&A modules: SG, LEI, LEA

	Gross Return	Mstar categ-adj Return	Alpha 1F	Alpha 3F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)
$\varnothing R\&A_{t-1}^{restr.} \geq A$	0.0300**	0.0260***	0.0331**	0.0341**	0.0436***
	(2.049)	(2.825)	(2.148)	(2.143)	(2.748)
$\varnothing R\&A_{t-1}^{restr.} \in [B, A)$	0.0345**	0.0248***	0.0300*	0.0141	0.0157
	(2.222)	(2.694)	(1.831)	(0.831)	(0.905)
$\varnothing R\&A_{t-1}^{restr.} < B$	0.0334	0.0208	0.0342	0.0292	0.0336
	(1.285)	(1.653)	(1.401)	(1.212)	(1.387)
Constant	0.0283	-0.5053***	-0.5957***	-0.4940***	-0.4370***
	(0.209)	(-5.545)	(-4.320)	(-3.895)	(-3.478)
Controls	Yes	Yes	Yes	Yes	Yes
Categ x Time FE	Yes	Yes	Yes	Yes	Yes
N	828,647	828,647	828,647	828,647	828,647
Adj R2	0.824	0.013	0.368	0.343	0.346

Panel B: Equity-funds: Avg score based on a subset of R&A Listed Equity (LE) modules: LEI, LEA

	Gross Return	Mstar categ-adj Return	Alpha 1F	Alpha 3F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)
$\varnothing R\&A_{t-1}^{LE} \geq A$	0.0212	0.0161*	0.0275*	0.0348**	0.0426***
	(1.426)	(1.887)	(1.807)	(2.236)	(2.720)
$\varnothing R\&A_{t-1}^{LE} \in [B, A)$	0.0235*	0.0116	0.0142	0.0160	0.0257*
	(1.787)	(1.211)	(1.052)	(1.095)	(1.845)
$\varnothing R\&A_{t-1}^{LE} < B$	0.0357	0.0142	0.0344	0.0247	0.0344*
	(1.546)	(1.351)	(1.624)	(1.237)	(1.729)
Constant	0.0011	-0.5296***	-0.6204***	-0.5069***	-0.4536***
	(0.008)	(-5.569)	(-4.553)	(-4.059)	(-3.637)
Controls	Yes	Yes	Yes	Yes	Yes
Categ x Time FE	Yes	Yes	Yes	Yes	Yes
N	828,647	828,647	828,647	828,647	828,647
Adj R2	0.824	0.013	0.368	0.343	0.346

Figure A1: Country of headquarter of institutions with A/A$^+$ R&A rating
This figure plots the sample fraction of PRI signatory institutions with A/A$^+$ R&A rating over the total number of institutions in the respective country of headquarter in 2018.

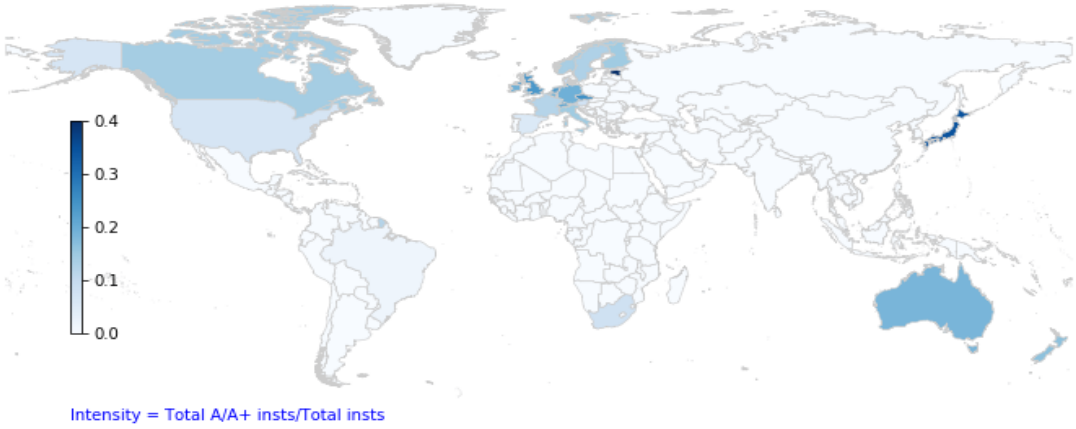


Table A4: R&A Rating and fund performance by fund domicile
This table reports results from regressions of fund monthly performance variables on PRI R&A rating by fund domicile. Fund returns are calculated before (gross) deducting fees and expenses. These returns are also adjusted using the Carhart model (Alpha 4F). All fund control variables are lagged one month and winsorized at 1st and 99th percentiles. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix A provides variable definitions.

	US-domiciled		EU-domiciled		Other	
	Gross Return	Alpha 4F	Gross Return	Alpha 4F	Gross Return	Alpha 4F
	(1)	(2)	(3)	(4)	(5)	(6)
$\varnothing R\&A_{t-1} \geq A$	0.001	0.010	0.073***	0.085***	0.014	0.036
	(0.06)	(0.49)	(3.42)	(4.23)	(0.45)	(1.10)
$\varnothing R\&A_{t-1} \in [B, A)$	0.016	0.022	0.066***	0.048**	0.030	0.034
	(1.18)	(1.56)	(3.67)	(2.45)	(1.01)	(1.07)
$\varnothing R\&A_{t-1} < B$	0.007	0.001	0.024	0.017	0.008	0.030
	(0.42)	(0.06)	(1.38)	(0.89)	(0.25)	(0.89)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time FE	Yes	Yes	Yes	Yes	Yes	Yes
N	182,257	182,257	432,509	432,509	213,731	213,731
Adj R2	0.868	0.307	0.841	0.298	0.789	0.495

Table A5: R&A rating and ESG-factor alpha

This table reports results from regressions of fund performance variables on PRI R&A rating. Fund returns are calculated before (gross) deducting fees and expense, adjusted using the market risk factor and E/S/G factor. All fund control variables are lagged one month and winsorized at 1st and 99th percentiles. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix A provides variable definitions.

		ESG Factor (Sustainalytics ESG data)			
	Alpha 1F (mkt)	Alpha (mkt, E-fac)	Alpha (mkt, S-fac)	Alpha (mkt, G-fac)	Alpha (mkt, ESG-fac)
$\varnothing R\&A_{t-1} \geq A$	0.041**	0.037*	0.033*	0.039*	0.036*
	(2.29)	(1.89)	(1.69)	(1.96)	(1.83)
$\varnothing R\&A_{t-1} \in [B, A)$	0.040***	0.040**	0.037**	0.042**	0.040**
	(2.69)	(2.48)	(2.27)	(2.59)	(2.47)
$\varnothing R\&A_{t-1} < B$	0.019	0.014	0.016	0.021	0.015
	(0.98)	(0.69)	(0.76)	(1.01)	(0.74)
Controls	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes
N	828,647	771,565	771,565	771,565	771,565
Adj R2	0.368	0.347	0.359	0.346	0.352

Table A6: Control for portfolio ESG ranking

This table reports results from regressions of fund monthly performance variables on PRI R&A rating. In model (1) and (2), we further control for fund portfolio ESG score. *ESG score ranking* is the standardised ranking [0,1] within the same Category x Time, and *ESG score ranking (missing)* takes value of 1 when *ESG score ranking* is missing. Model (3) and (4) include fund Morningstar 'Globes' sustainability rating on the scale 1-5 (highest sustainability rating). All fund control variables are lagged by one month and winsorized at the 1st and 99th percentile. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

	Fund ESG ranking		Fund 'Globes' ranking	
	Gross Return	Alpha 4F	Gross Return	Alpha 4F
	(1)	(2)	(3)	(4)
$\varnothing R\&A_{t-1} \geq A$	0.040**	0.056***	0.040**	0.056***
	(2.28)	(3.47)	(2.31)	(3.37)
$\varnothing R\&A_{t-1} \in [B, A)$	0.040***	0.035**	0.040***	0.035**
	(2.86)	(2.18)	(2.87)	(2.13)
$\varnothing R\&A_{t-1} < B$	0.017	0.018	0.017	0.018
	(0.91)	(0.89)	(0.89)	(0.88)
Log Fund Assets$_{t-1}$	0.014***	0.013**	0.015***	0.013**
	(2.86)	(2.43)	(3.09)	(2.60)
Log Fund Age$_{t-1}$	-0.005	-0.007	-0.005	-0.007
	(-0.48)	(-0.81)	(-0.46)	(-0.83)
Log Family Assets$_{t-1}$	0.010***	0.004	0.010***	0.004
	(3.12)	(1.35)	(3.12)	(1.37)
ESG score ranking	-0.005	-0.005		
	(-0.30)	(-0.44)		
ESG score ranking (missing)	-0.044	-0.018		
	(-0.74)	(-0.39)		
Globes ranking			-0.033	0.004
			(-0.50)	(0.09)
Globes ranking (missing)			-0.033	0.007
			(-0.78)	(0.23)
Categ x Time	Yes	Yes	Yes	Yes
N	828,647	828,647	828,647	828,647
Adj R2	0.824	0.346	0.824	0.346

Table A7: Fund active fundamental performance (AFP)

This table reports results from regressions of fund performance variables on PRI R&A rating and index-based AFP measure. The mutual fund index-based AFP is defined as the sum of the product of active portfolio weights (difference between portfolio weights and corresponding passive benchmark weights) and portfolio stocks' subsequent 3-day abnormal returns surrounding earning announcements. Fund returns are observed in the second month in each quarter to the first quarter in the following quarter after construct quarterly AFP, when more than 95% of holding firms report firm quarterly earnings. We employ α^{4F}_{t+1} as the main return measure in the similar fashion as Jiang and Zheng (2018). All fund control variables are observed in the quarter prior to the AFP measure and winsorized at 1st and 99th percentiles. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

	AFP_t	α^{4F}_{t+1}	α^{4F}_{t+1}	α^{4F}_{t+1}
	(1)	(2)	(3)	(4)
AFP_t		0.475***	0.476***	0.475***
		(20.38)	(21.02)	(21.15)
$\varnothing R\&A_{t-1} \geq A \times AFP$			-0.006	-0.003
			(-0.16)	(-0.09)
$\varnothing R\&A_{t-1} \geq A$	-0.001		0.081**	0.011
	(-0.08)		(2.35)	(0.16)
$\varnothing R\&A_{t-1} \in [B, A)$	0.009		0.046	-0.031
	(1.24)		(1.29)	(-0.59)
$\varnothing R\&A_{t-1} < B$	0.005		0.036	-0.035
	(1.05)		(1.28)	(-0.80)
Log Fund Assets$_{t-1}$	-0.002	0.019*	0.018*	-0.001
	(-1.20)	(1.85)	(1.81)	(-0.31)
Log Fund Age$_{t-1}$	0.007**	-0.015	-0.013	0.007
	(2.49)	(-1.11)	(-1.03)	(0.61)
Log Family Assets$_{t-1}$	0.002	0.007	0.002	-0.069
	(1.34)	(1.32)	(0.41)	(-1.60)
Categ x Time	Yes	Yes	Yes	Yes
Family FE				Yes
N	173,337	126,509	126,509	126,480
Adj R2	0.113	0.301	0.301	0.309

Table A8: R&A Rating and ESG-specific AFP measure by investment region

This table reports results from regressions of fund performance variables on PRI R&A rating and specific AFP measure by investment region. Panel A reports the results from regression of fund returns on PRI rating and AFP_t^{Disag} in a similar fashion as Table 7 by sub-sample of investment regions. Panel B reports the results from regression of fund returns on PRI rating and AFP_t^{RR} in a similar fashion as Table 8 by sub-sample of investment regions. We employ α_{4F} as the main return measure in the similar fashion as Jiang and Zheng (2018). All fund control variables are observed in the quarter prior to the AFP measure and winsorized at 1st and 99th percentiles. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

Panel A: R&A rating and Highest ESG Disagreement (AFP_t^{Disag} is defined by *Top Quintile*)

	US-domiciled			EU-domiciled		
	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}	α_{t+1}^{4F}
	(1)	(2)	(3)	(4)	(5)	(6)
AFP_t^{Disag}	0.480***	0.478***	0.482***	0.444***	0.421***	0.416***
	(8.06)	(7.87)	(8.26)	(5.68)	(5.48)	(5.47)
AFP_t^{Others}	0.513***	0.514***	0.516***	0.436***	0.431***	0.429***
	(13.43)	(14.18)	(14.27)	(10.53)	(10.18)	(11.03)
$\varnothing R\&A_{t-1} \geq A \times AFP_t^{Disag}$		0.055	0.058		0.161*	0.160*
		(0.41)	(0.42)		(1.88)	(1.87)
$\varnothing R\&A_{t-1} \geq A \times AFP_t^{Others}$		-0.029	-0.019		0.018	0.019
		(-0.40)	(-0.24)		(0.31)	(0.31)
$\varnothing R\&A_{t-1} \geq A$	0.002	0.002	-0.009	0.028**	0.025**	0.002
	(0.33)	(0.30)	(-1.63)	(2.22)	(2.17)	(0.40)
$\varnothing R\&A_{t-1} \in [B, A)$	0.012	0.013	0.030	-0.028	-0.029	-0.008
	(0.64)	(0.65)	(1.33)	(-1.55)	(-1.59)	(-0.60)
$\varnothing R\&A_{t-1} < B$	0.003	0.000	-0.029	0.016	0.006	-0.135***
	(0.74)	(0.10)	(-0.63)	(1.36)	(0.67)	(-2.92)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes	Yes
Family FE			Yes			Yes
N	47,051	47,051	47,049	75,503	75,503	75,479
Adj R2	0.337	0.337	0.346	0.290	0.290	0.298

Table A8: [con'd]

Panel B: R&A rating and RepRisk negative ESG incidents

	US-domiciled			EU-domiciled		
	α^{4F}_{t+1}	α^{4F}_{t+1}	α^{4F}_{t+1}	α^{4F}_{t+1}	α^{4F}_{t+1}	α^{4F}_{t+1}
	(1)	(2)	(3)	(4)	(5)	(6)
AFP^{RR}_t	1.480***	1.504***	1.524**	0.240	0.160	0.153
	(2.73)	(2.82)	(2.64)	(0.96)	(0.66)	(0.62)
$\varnothing R\&A_{t-1} \geq A \times AFP^{RR}_t$		-2.197	-2.362		2.207**	2.235**
		(-1.19)	(-1.26)		(2.16)	(2.26)
$\varnothing R\&A_{t-1} \geq A$		-0.003	-0.034		0.090***	0.086
		(-0.13)	(-0.98)		(3.94)	(1.65)
$\varnothing R\&A_{t-1} \in [B, A)$		0.023	0.005		0.042	0.004
		(1.32)	(0.16)		(1.63)	(0.12)
$\varnothing R\&A_{t-1} < B$		-0.002	-0.021		0.011	-0.064**
		(-0.14)	(-0.82)		(0.40)	(-2.09)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes	Yes
Family FE			Yes			Yes
N	116,448	116,448	116,447	203,463	203,463	203,460
Adj R2	0.328	0.328	0.333	0.298	0.299	0.302

Table A9: Funds' strategies conditioned on stock-level ESG disagreement

This table reports results from regressions of fund 4-factor alpha on R&A rating and different fund investment strategies. Panel A shows the regression results of the effect of fund strategies on high stock-level ESG disagreement across different R&A ratings on fund risk-adjusted returns. Panel C shows the regression results of the effect of fund holdings (Column 1-4) or tradings (Column 5-8) on high stock-level ESG disagreement by the highest R&A rating funds on fund risk-adjusted returns. The holding (trading) strategy is in the opposite direction to that presented in Table 9. All fund control variables are lagged one month and winsorized at 1st and 99th percentiles. t-statistics based on standard errors clustered at the time (year-month) and fund level, are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Appendix Table A1 provides variable definitions.

Panel A: Fund strategies on high stock-level ESG disagreement with Family FE

Stock-level ESG Disagreement:	Top Quintile		Top Quartile		Top Tercile		Above Median	
	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\varnothing R\&A_{t-1} \geq A \times$ Over-hold	0.233**	0.380***	0.182*	0.345***	0.184**	0.310***	0.106*	0.179**
	(2.16)	(2.98)	(1.75)	(2.86)	(2.29)	(3.27)	(1.84)	(2.63)
$\varnothing R\&A_{t-1} \geq A \times$ Over-hold $\times$ Under-trade		9.636**		10.807***		6.804**		2.725*
		(2.16)		(2.66)		(2.47)		(1.87)
Over-hold	-0.187*	-0.213**	-0.130	-0.150*	-0.122*	-0.140**	-0.085**	-0.102**
	(-1.89)	(-2.16)	(-1.45)	(-1.67)	(-1.92)	(-2.21)	(-2.02)	(-2.40)
Over-hold $\times$ Under-trade		-1.956		-1.253		-1.196		-0.817
		(-1.63)		(-1.21)		(-1.37)		(-1.42)
$\varnothing R\&A_{t-1} \geq A \times$ Under-trade		-0.111		-0.778		-0.718		-0.356
		(-0.14)		(-0.82)		(-0.93)		(-0.62)
Under-trade		0.341		0.189		0.387		0.331
		(1.05)		(0.62)		(1.24)		(1.22)
$\varnothing R\&A_{t-1} \geq A$	0.004	-0.003	0.005	-0.007	-0.004	-0.017	0.001	-0.009
	(0.10)	(-0.07)	(0.12)	(-0.17)	(-0.10)	(-0.42)	(0.02)	(-0.21)
$\varnothing R\&A_{t-1} \in [B, A)$	-0.006	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007
	(-0.23)	(-0.24)	(-0.24)	(-0.24)	(-0.24)	(-0.25)	(-0.24)	(-0.25)
$\varnothing R\&A_{t-1} < B$	-0.033	-0.033	-0.033	-0.033	-0.033	-0.033	-0.033	-0.034
	(-1.39)	(-1.40)	(-1.40)	(-1.41)	(-1.39)	(-1.40)	(-1.40)	(-1.42)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	390,430	390,430	390,430	390,430	390,430	390,430	390,430	390,430
Adj R2	0.307	0.307	0.307	0.307	0.307	0.307	0.307	0.307

Table A9. [con'd]

Panel B: Opposite investment strategies on stock-level ESG disagreement

Fund strategy =	Under-hold				Over-trade			
Stock-level ESG Disagreement:	Top Quintile		Top Quartile		Top Quintile		Top Quartile	
	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F	Alpha 4F
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fund strategy	0.034	0.130	0.037	0.130	-0.866**	-0.708**	-0.734**	-0.576**
	(0.18)	(0.72)	(0.23)	(0.84)	(-2.62)	(-2.44)	(-2.42)	(-2.18)
$\varnothing R\&A_{t-1} \geq A \times$ Fund strategy	-0.107	-0.178	-0.107	-0.182	0.043	-0.027	-0.093	-0.186
	(-0.44)	(-0.74)	(-0.52)	(-0.90)	(0.08)	(-0.05)	(-0.20)	(-0.41)
$\varnothing R\&A_{t-1} \geq A$	0.048**	0.037	0.049**	0.038	0.044**	0.032	0.045**	0.033
	(2.30)	(1.04)	(2.32)	(1.08)	(2.31)	(0.91)	(2.38)	(0.95)
$\varnothing R\&A_{t-1} \in [B, A)$	0.017	-0.007	0.017	-0.007	0.017	-0.007	0.016	-0.007
	(0.83)	(-0.25)	(0.83)	(-0.25)	(0.81)	(-0.26)	(0.81)	(-0.27)
$\varnothing R\&A_{t-1} < B$	0.003	-0.034	0.003	-0.034	0.003	-0.034	0.003	-0.034
	(0.19)	(-1.43)	(0.19)	(-1.43)	(0.17)	(-1.44)	(0.17)	(-1.44)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Categ x Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family FE		Yes		Yes		Yes		Yes
N	390,438	390,430	390,438	390,430	390,438	390,430	390,438	390,430
Adj R2	0.303	0.306	0.303	0.306	0.303	0.306	0.303	0.306