Analyzing Active Managers' Commitment to ESG: Evidence from United Nations Principles for Responsible Investment *

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*We thank Hans Christensen, Ravi Jagannathan, Robert Korajczyk, Sangwook Nam, James Naughton, Andreas Neuhierl, George Serafeim, Beverly Walther and a number of anonymous asset managers for very helpful discussions. We also thank Sustainalytics and TruValue Labs for generously providing the ESG data. All errors are our sole responsibility.

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Abstract

We analyze active managers' commitment to ESG using United Nations Principles for Responsible Investment (PRI), which is the largest global initiative to incorporate ESG. We find a significant increase in fund flow to signatory funds regardless of their prior fund-level ESG score. However, signatories do not improve fund-level ESG score while exhibiting a decrease in return. Further, they vote less on environmental issues and stocks in their portfolio experience increased environmental controversies. Funds that are smaller, younger, and had higher historical alpha are more likely to sign PRI but only quant-driven and institution-only funds improve ESG post signing. Overall, only a small number of funds improve ESG while many others use the PRI status to attract capital without making notable changes to ESG.

JEL classification codes: G20

Keywords: ESG, SRI, UN PRI, Asset Manager, Mutual Funds

1 Introduction

Environmental, social, and governance (ESG) has been one of the fastest growing phenomena and debated issues in the recent decade and much attention has been paid not just by academics but also by firms and investors in the real world. For example, in August 2019, the Business Roundtable that represents nearly 200 CEOs of America's biggest companies claimed the end to shareholder primacy and redefined the role of a corporation to be more stakeholder focused. Similarly, many asset managers and owners now claim that ESG is an integral part of their investment decision making process. For example, BlackRock CEO Larry Fink recently sent a letter to investors detailing his plans to incorporate ESG as a new standard for investing.[1]

One of the most notable and commonly cited phenomena that speaks for this rapid growth in ESG in both the real world and academia is the United Nations Principles for Responsible Investment (henceforth "PRI") that was launched in 2006. PRI was initiated by a group of international institutional investors to reflect the increasing relevance of ESG issues to investment practices; it called for responsible investment and active ownership. The signatories of PRI committed to incorporating ESG issues into investment analyses and decision making processes. When PRI was launched, signatories' total assets under management (AUM) were just a few hundred billion dollars, and by 2019, this number grew to more than $80 trillion across the globe.[2]

In this paper, we analyze active US asset managers' commitment to ESG using UN PRI as a setting. We examine active managers (i.e., not ETFs or index funds), because we want to focus on the asset managers' actual adoption of ESG factors without being constrained to track a specific index. We start by verifying the saliency of PRI by examining whether there are visible changes to fund flows after signing. We compare

[1] BlackRock. Sustainability as BlackRock's New Standard for Investing. 2020.
[2] The US market capitalization was roughly $33 trillion in the beginning of 2019.

six quarters pre and post signing and find an average of 4.3% increase in flows per quarter. This confirms the allocation of new capital to the signatories that committed to incorporate ESG.

Prima facie, all the growing interest in and commitment to ESG and PRI would suggest that investment professionals would make substantial changes to their portfolios and actively incorporate ESG. This expectation is natural because the PRI commitment is signed by senior executives who set the firm's direction and are concerned about their reputation (Benkhoff [1997]). However, there are reasons to expect otherwise. First, funds that sign PRI may be superior performers in ESG and already have been actively incorporating ESG. If so, there are no reasons to expect signatories to further improve on ESG. Second, ESG is hard to quantify and there are disagreements in measuring ESG (Berg et al. [2019], Christensen et al. [2019], Khan et al. [2016], Schanzenbach and Sitkoff [2020]). For example, 2017 CFA Institute Survey documents that more than half of the surveyed asset managers did not receive any ESG-related training and complained about the lack of quantitative ESG information. In such cases, asset managers may not have a clear sense on how to incorporate ESG into the portfolio. Third, there could simply be a lack of demand from asset managers' clientele. For example, half of the surveyed professionals in the survey shared a lack of asset owners' demand on ESG investing and deemed ESG issues to be financially immaterial. Fourth, the execution of UN PRI is subjective and also largely voluntary (Cheng et al. [2019]).

To explore the above tension, we first examine whether signatory asset managers change their portfolio holdings to incorporate ESG. We source stock-level ESG scores from MSCI, Sustainalytics, and TruValue Labs, which are of the most commonly used by asset managers, and calculate fund-level ESG scores at each quarter by value-weighting stock level ESG scores in each portfolio. We note that do not observe any notable improvements in fund-level ESG scores regardless of the dataset used and that this is

robust to considering each individual sub-ESG scores (i.e., those related to financial materiality, environment, social, or governance) separately to construct fund-level ESG scores.

Our previous specification on fund-level ESG score may not sufficiently capture signatories' effort to be active owners. So, we consider signatory funds' proxy voting behavior because this channel is another important mechanism for funds to actively engage companies (Dimson et al. [2015], Grewal et al. [2016]). We find that signatory funds vote less on environment related issues after signing and that stocks held in their portfolio subsequently exhibit an increase in environment related controversies. We find this interesting because environmental controversies have been documented to be tail risks that have significant negative implications to stock prices (Jagannathan et al. [2018], Hoepner et al. [2019]).

So far, we find that signatories do not exhibit meaningful improvements in ESG while enjoying a notable increase in flow. This might occur if active asset managers prioritize delivering superior returns over actively incorporating ESG issues (Bansal et al. [2018]). If so, we would expect signatories to exhibit higher returns. This is likely if PRI managers do not reduce management fee, enjoy an increased total management fee from more fund inflow, and use that resource to enhance investment decisions. On the other hand, it is possible to expect no improvements in returns, because returns are hard to generate and if more AUM would lead to diseconomies of scale and make alpha generation difficult (Berk and Green [2004]).

To examine this tension, we analyze management fee, but do not find a decrease in the fee charged. Taken together with the flow results, this suggests that signatories enjoy higher aggregate revenue from managing more capital. Next, we examine portfolio returns, but find no increase in returns. We actually find that both return and alpha substantially decrease after signing and that this result is robust to controlling for fund

size (i.e., diseconomies of scale).

Next, we examine whether pre-period ESG influences fund inflow post signing PRI. We separate the funds into two groups (i.e., high and low pre-period ESG) and find that all signatories experience an increase in fund flows regardless of their pre-period ESG performance. We also examine whether fund flow positively influences fund-level ESG, but find no evidence that the increase in flow leads to improvements in fund-level ESG score. Further, we examine whether higher fund-level ESG score is associated with superior returns but do not find any evidence consistent with this conjecture.

Last, we examine what determines a fund to sign PRI. For example, a fund may sign PRI if it already had high ESG performance. If so, all of the previous no results on improvements in ESG may be expected. In addition, a fund may sign PRI for self-promotion and marketing (Roussanov et al. [2018]). If so, funds that are smaller in size and younger in age (or that do not have an established reputation) may be more likely to sign and attract capital. On the other hand, funds that have open culture or that are retail investor dominant may care more about ESG issues (Scholtens and Sievänen [2013]). If so, managers with more diverse opinions may sign PRI. Also, funds that believe in their expertise to generate higher returns may sign (Bansal et al. [2018]). In such a case, funds with a stronger alpha track record may sign.

We find evidence that confirms and contradicts some of the above conjectures. First, we find that funds with higher ESG performance are not more likely to sign PRI. This is an interesting finding because prior ESG performance does not influence a fund to sign. We also find that funds that are smaller in size, have a high alpha track record, are younger in age, and have more funds in the family are more likely to sign PRI.

We ensure robustness of the above findings using a battery of different ESG scores and also using a difference-in-differences design on a propensity score matched sample. All of our results are similar to the main results. However, we would like to note that

our paper is not intended to discredit PRI's effort, but only intended to show that there are no meaningful improvements in ESG, at least on average, using the readily available ESG metrics.

Notwithstanding, our paper makes following contributions. First, our paper is related to studies that examine whether and why investors consider ESG in their portfolio. For example, literature has long debated whether ESG is value enhancing or not and focused on how to tie certain ESG investments to abnormal stock returns (Khan et al. [2016], Riedl and Smeets [2017], Jagannathan et al. [2018], Bolton and Kacperczyk [2019], Hoepner et al. [2019]). We add by suggesting a need for a systematic way to measure and assess how asset managers execute ESG. We view this as important in light of increasing amount of capital being committed into ESG (Ammann et al. [2019], Ceccarelli et al. [2019], Hartzmark and Sussman [2019]). Our paper calls the regulators for more scrutiny on asset managers' ESG execution and the asset owners for more awareness in capital allocation to ESG. In addition, our results suggest that asset managers may need to provide clearer communications on their ESG incorporation.

In addition, our paper is related to work that examines the increase in flow post an ESG event. For example, Hartzmark and Sussman [2019] find an increase in fund flows post Morningstar Globe ESG fund ratings. We want to reemphasize that our paper documents a 4.3% per quarter increase in flows after signing UN PRI vis-a-vis the pre period. This magnitude is at least three times larger than the flow increase documented in Hartzmark and Sussman [2019]. We view this magnitude meaningful and sensible given that PRI is the largest global initiative on ESG.

We also acknowledge a concurrent working paper by Gibson et al. [2019] that examines the changes in fund-level ESG scores post signing PRI. They find that US mutual funds do not improve fund-level ESG scores while offshore mutual funds exhibit an increase. Though part of this first message is similar to ours, we are different for at

least several reasons.

First, they include passive funds and ETFs. In contrast, we focus on active mutual funds because we want to capture asset managers' actual adoption of ESG without being constrained to replicate an index. Second, they aggregate ESG scores from three different sources. However, there is a large dispersion in ESG scores across vendors (Berg et al. [2019]) and recent studies such as Pedersen et al. [2019] point out that detailed sub-scores in ESG can be more informative in constructing an optimal portfolio. So, we use the ESG scores from different vendors as is and examine how active managers perform on these different dimensions. Third, we consider the total number of controversies faced by the stocks held because using an average fund-level ESG score may wash out actual economic changes within a portfolio. Fourth, we consider proxy voting behaviors of PRI signatories, which is another critical dimension of active ownership (Dimson et al. [2015]). Fifth, we provide evidence on the circumstances in which an investor would sign and highlight the characteristics that would lead them to improve ESG ex post. Sixth, we show a significant increase in fund flows post signing PRI.

The rest of the paper is as follows. Section 2 explains the institutional background and motivation. Section 3 describes the data. Section 4 sets forth the research design and results. Section 5 concludes.

2 Institutional Setting and Motivation

PRI was initiated in 2005 by then United Nations Secretary-General Kofi Annan who invited an international group of institutional investors to develop initiatives to reflect the increasing relevance of ESG issues to investment practices. At the launch in 2006, 20 professionals in the asset management industry were drawn from 12 countries and

were supported by a 70-person group of experts from the investment industry and intergovernmental organizations. Since the initial launch, the number of signatories has grown consistently from 100 to over 2,300 globally, and the total AUM have grown from a few hundred billion to more than $80 trillion by 2019.

As of 2019, PRI classifies signatories into three types: 1) investment management firms (e.g., Blackrock and State Street), 2) asset owners (California Public Employees' Retirement System and California State Teachers' Retirement System), and 3) data service providers (e.g., MSCI, Sustainalytics, and TruValue Lab). According to the UN, PRI's mission is to promote an economically efficient, sustainable global financial system which is necessary for long-term value creation. PRI's goal is to encourage adoption of the following 6 principles: 1) incorporate ESG issues into investment analysis and decision-making processes, 2) be active owners and incorporate ESG issues into ownership policies and practices, 3) seek appropriate disclosure on ESG issues by the entities in which they invest, 4) promote acceptance and implementation of the Principles within the investment industry, 5) work together to enhance the effectiveness in implementing the Principles, and 6) report on activities and progress towards implementing the Principles.

The signing of the actual commitment is made by the CEO or a senior executive of the investment management firm and the firm would commit to voluntarily adhering to PRI by signing the declaration form, paying a nominal annual membership fee, and publicly reporting on their responsible investment activity through a UN-guided reporting framework.[3] In addition, signatories are asked to have an investment policy for more than 50% of their AUM that covers the firm's responsible investment approach, internal/external staffs responsible for implementing responsible investing policy, and senior-level commitment and accountability mechanisms for implementation. Failure

[3]According to the UN PRI website in 2019, the only mandatory requirement was to publicly report their responsible investment activity.

to meet these guidelines over a two-year grace period, following extensive engagement with the PRI, would result in delisting.[4]

PRI guides asset managers on how ESG issues can be incorporated into existing portfolio construction practices using a combination of the following approaches. First, signatories should explicitly and systematically include ESG issues in investment analysis and decisions to better manage risks and improve returns. Second, signatories should apply filters to lists of potential investments to rule companies in or out of contention for investment based on an investor's preferences, values or ethics, and seek to combine attractive risk return profiles with an intention to contribute to a specific environmental or social outcome.

3 Data and Sample

3.1 ESG Scores

We use three sources for ESG scores that are of the most commonly used in the industry. The first source is MSCI ESG Ratings, which are based on 37 key issues corresponding to one of ten macro themes (i.e., climate change, natural capital, pollution and waste, environmental opportunities, human capital, product liability, stakeholder opposition, social opportunities, corporate governance, and corporate behavior). The key issues are selected annually for each of the 156 GICS subindustries and weighted according to MSCI's materiality-mapping framework. Each key-issue score consists of a risk-exposure, risk-management, and opportunity component. The risk-management component score is conditional on the risk exposure faced by the company. For example, a company with greater risk exposure would be required to have strong risk-management practices in place. Conversely, a company with minimal management strategies for a

[4]We however do not find any funds that are delisted from UN PRI during our sample period.

low-risk-exposure issue would not be penalized. Regarding opportunities, exposure indicates the relevance of an opportunity to a given company based on its current business and geographic segments.

MSCI uses such sources as annual reports, investor presentations, and financial and regulatory filings, and NGO databases. Similarly, risk-management and opportunity related data come from corporate documents, government data, news media, relevant organizations and professionals, and an assortment of popular, trade, and academic journals. As part of its data-verification process, MSCI engages in direct communication with companies and invites them to participate in a data-review process, which includes commenting on the accuracy of company data for MSCI ESG research reports. MSCI then aggregates the data to an overall score, in which each issue is weighted according to its assessed materiality in each industry. The final score ranges from 0 to 10.

The second source is Sustainalytics. It analyzes and rates the performance of companies across 42 comparable sub-industries. They identify key ESG issues based on analysis of a company's peer group and its broader value chain, review of the business model, and the key activities associated with environmental and/or social impacts. Performance related to ESG issues is analyzed by looking at a comprehensive set of core and sector-specific metrics, which are weighted to determine a company's overall ESG performance. Sustainalytics' ESG scores range from 0 (most negative) to 100 (most positive).

Sustainalytics also assesses companies for their level of involvement in major controversies or incidents. Each controversy is categorized from Category 1 (low impact, posing negligible risks to the company) to Category 5 (severe impact, posing serious risks to the company) and covers an area such as business ethics, society and community, environmental operations, environmental supply chain, product and service, employee, social supply chain, customer, governance, and public policy. In our paper,

we classify a firm as having an ESG controversy if the firm is in Sustainalytics' Category 4 (highly controversial) or Category 5 (severely controversial).

The last source is TruValue Labs (TVL). It tracks ESG-related information across thousands of companies every day. Specifically, it sources news from outside the organization (i.e., not from the company) including a wide variety of sources such as analyst reports, various media, advocacy groups, and government regulators. To increase transparency and validate the data, it allows users to track the original source of the articles and events that inform the sentiment analysis for each specific issue. It aggregates such unstructured data from over 100,000 sources into a continuous stream of ESG data, and uses natural language processing to interpret semantic content to generate analytics scoring data points that range from 0 (most negative) to 100 (most positive). In addition, it uses Sustainability Accounting Standards Board (SASB) classification to determine materiality of ESG news and separately reports the material ESG score.[5]

3.2 Fund and Voting Data

We follow the procedures suggested in Doshi et al. [2015] to obtain and match mutual fund data from CRSP Survivor Bias-Free Mutual Fund Database and Thomson Financial. In particular, we utilize various fund-level variables (e.g., Lipper fund category, returns, number of funds in family, fund size, management fee, fund age, number of stocks held in a fund, and whether the fund is institution-only, open-ended, quant-driven, and team-managed). We also use Fama French Database to obtain factors to construct portfolio alpha. CAPM Alpha is the market-risk adjusted quarterly excess return where the market beta is computed using the previous 60 month returns. Return

[5]SASB has issued industry-specific disclosure standards identifying, for 79 industries, which ESG issues are financially material. In doing so, SASB has identified evidence of interest and financial impact from emerging regulations, disruptions in the physical environment, changes in consumer preferences, and supply-chain pressures that might generate effects on costs, revenues, assets, liabilities, or costs of financing.

is the quarterly return net of fees. We focus on active mutual fund managers in the US and our data range from 2006 to 2018. We obtain mutual fund voting data from Institutional Shareholder Services (ISS). The data contains each mutual funds' voting record in shareholder meetings and also classifies whether the agenda is related to E, S, or G.

3.3 Descriptive Statistics

We obtain the list of UN PRI members from the PRI website (`www.unpri.org`) and hand-map the list to our CRSP Mutual Fund and ESG Scores dataset. As shown in Table 1, 246 investment management firms, 36 asset owners, and 39 data providers in the US are PRI signatories. We start from these 246 investment management firms, exclude private equity only and passive only investment management firms. For our final sample, we arrive at 474 active funds that represents 86 unique investment management firms.

Table 2 presents the summary statistics. Our unit of observation is at the fund-quarter level and the sample is constructed around the six quarters pre and post signing. Panel A provides information on fund-level ESG scores which are computed as follows:

$$ESG_{iq} = \sum_{s} w_{isq} ESG_{sq}^{(stock)}, \tag{1}$$

where w_{isq} is the portfolio weight of stock s for fund i in quarter q and $ESG_{sq}^{(stock)}$ is ESG score for stock s in quarter q.

Fund-level MSCI Score ranges from 0 to 10 and has a mean of 4.7 and a standard deviation of 0.7. Sustainalytics Score ranges from 0 to 100 and has a mean of 58.6 and a standard deviation of 5. TVL Score (Material Score) ranges from 0 to 100 and has a mean of 51.9 (52.1) and a standard deviation of 6.3 (7.5). Total Controversies, which is the aggregate number of highly and severely controversial issues, has a mean of 4.1

and a standard deviation of 6.3. Did Not Vote, which is the proportion of agenda items that a fund did not vote on, has a mean of 0.003 and a standard deviation of 0.02.

Panel B reports the summary statistics of other fund level characteristics. Fund flows is defined as the following:

$$Flow_{iq} = \frac{AUM_{iq} - AUM_{iq-1}(1 + R_{iq})}{AUM_{iq-1}} \tag{2}$$

where AUM is the AUM of the fund, and R is the net return of fund.[6] Flow is winsorized at the 0.5% level and has a mean of -0.01 and a standard deviation of 0.16. Return (net of fees) has a mean of 0.02 and a standard deviation of 0.09 and CAPM Alpha has a mean of -0.005 and standard deviation of 0.03. Fee (%) is 1.04 on average and the log(FundSize) has a mean of 4.89. On average, number of funds in a family is 78, age of a fund is 9.62 years, and a fund holds roughly 90 stocks. There are three dummy variables indicating whether a fund is open-ended, quant driven (holding more than 100 stocks), or team-managed. In our sample, 95% of the funds are open-ended, 24% are quant-driven, and 66% are team-managed.

Panel C reports the correlation table. As suggested in Berg et al. [2019], the correlation between ESG scores between vendors correlation is low. For example, the correlation between MSCI ESG Score and Sustainalytics ESG Score is 0.07 and that between MSCI ESG Score and TVL ESG Score is 0.18. The correlation between Stocks Held and Total Controversies is 0.46 suggesting that the holdings in portfolio is subject to more issues if there are more stocks held. The correlation between Quant Fund and Stocks Held is 0.57 suggesting that quantitatively driven funds hold more stocks. The correlation between log(Fund Size) and Fee (%) is -0.38 suggesting that bigger funds charge less in fees.

[6]Flow is a function of return and as discussed in section 3.2, we require previous 60 months returns for alpha and return calculation. This leads to lower sample size in results that examine flows, returns, and alpha (e.g., Table 3).

4 Research Design and Results

4.1 Change in Flows Post PRI

We start our empirical analysis by verifying the saliency of PRI. Specifically, we examine whether there are visible changes to fund flows after signing PRI. Given that the ultimate decision by fund investors is manifested through their capital allocations, this exercise would show how asset allocators would respond to fund managers' commitment to ESG. We estimate the following specifications:

$$Dep\ \ Var_{iq} = a + b * Post_{iq} + time\, f.e. + fund\, f.e. + e_{iq} \tag{3}$$

$$Dep\ \ Var_{i\tilde{q}} = a + \sum_{j=1}^{6} b_j * \mathbf{1}\left(\tilde{q} = q + j\right) + time\, f.e. + fund\, f.e. + u_{i\tilde{q}} \tag{4}$$

where the dependent variable is Flow, which is computed as in equation (2). Post equals to one for the six quarters after signing PRI and to zero for the prior seven quarters. $\mathbf{1}(\cdot)$ is an indicator function, and q is the quarter during which fund i joins UN PRI. We also control for time (fund) fixed effect to mitigate the effect of any time (fund) specific and fund (time) invariant omitted variables.

Table 3 presents the results. Column 1 presents the results from equation (3). The coefficient estimates on Post is 0.043 (t-stat: 2.978), which suggests a 4.3% increase in fund flows per quarter post signing the PRI vis-a-vis the pre period. Column 2 presents the results from equation (4) that breaks down the post variable. The coefficient estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are 0.036 (t-stat: 1.728), 0.046 (t-stat: 2.551), 0.056 (t-stat: 1.866), 0.053 (t-stat: 2.599), 0.058 (t-stat: 2.506), and 0.047 (t-stat: 1.839), respectively. This shows that the increase is observed across all quarters of the post period.

To put the magnitude in context, we compare our result to that documented in Hartzmark and Sussman [2019]. They use the initiation of Morningstar globe-rating and find that funds with the highest rating experience a 4% greater inflow than that with the lowest rating over the following 11 months (i.e., 1.1% greater inflow per quarter). It is interesting to note the relative economic magnitude presented in our findings given that PRI is a voluntary commitment whereas Morningstar's globe-rating is determined based on objective ESG metrics.

One concern with the above results is that whether six quarters pre and post is a pertinent window. To address this concern, we try 4 and 8 quarter windows. Our results are nearly the identical so we omit reporting them for brevity. To further address this concern, we also include all observations before $q-6$ and after $q+6$ to embrace the descriptive nature of our exercise. The results again confirm our findings and are presented in Figure 1.

4.2 Changes in Fund-level ESG Score Post PRI

We examine whether signatory asset managers change their portfolio holdings to incorporate ESG. Because a fund is a basket of individual assets, we naturally start by measuring whether a fund incorporates ESG factors by observing ESG factors of individual assets. Specifically, we create the fund-level ESG score as in equation (1).

Table 4 presents the results. Columns 1 and 2 present results using MSCI ESG Score as the dependent variable. In column 1, the coefficient estimate on Post is -0.031 (t-stat: -1.058) and in column 2, the coefficient estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are -0.018 (t-stat: -0.553), -0.028 (t-stat: -0.636), -0.024 (t-stat: -0.437), -0.013 (t-stat: -0.192), -0.003 (t-stat: -0.043), and 0.000 (t-stat: 0.002), respectively. This suggests that there is no meaningful change in fund-level ESG score post signing PRI. Such findings are robust to using Sustainalytics ESG Score (columns 3 and 4), and TVL

ESG Score (columns 5 and 6) as the dependent variable. As in Section 4.1, we again present our results in a graphical format (see: Figure 2).

While the above results can be the initial assessment of ESG implementation, ESG score may not reflect an asset managers specific focus on a focal ESG topic (e.g., a fund manager may be focused on CO2 emission rather than gender inequality issue). To partially address such an issue, we use sub ESG score and present the results in Table 5. Columns 1 and 2 present results using MSCI E Score as the dependent variable. In column 1, the coefficient estimate on Post is -0.054 (t-stat: -1.1224) and in column 2, the coefficient estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are -0.043 (t-stat: -0.791), -0.040 (t-stat: -0.605), -0.032 (t-stat: -0.387), 0.004 (t-stat: 0.040), -0.016 (t-stat: -0.134), and 0.008 (t-stat: 0.060), respectively. In sum, we do not find any meaningful changes in fund-level ESG performance and our results are robust to considering other subscores (see columns 3-14).

4.3 Changes in Voting Patterns Post PRI

We note that the above method of averaging firm-level ESG score may not fully reflect the efforts made by PRI signatories and another very important mechanism for actively incorporating ESG is through voting (Dimson et al. [2015, 2018], Grewal et al. [2016]). For example, a religious organization purchased shares of the holding company of Sturm Ruger and demanded substantial changes in its business model through shareholder proposals.[7] As such, PRI signatories may hold stocks with low ESG scores to induce real changes and engage the company as activists to make a material change in the firms' ESG policy. To evaluate whether PRI signatories voice their opinion through activism, we examine whether there are changes to voting behaviors.

[7]Sturm Ruger Shareholders Adopt Measure Backed by Gun Safety Activists. NY Times. May 9, 2018.

Table 6 reports the estimation results from equations (3) and (4) using Did Note Vote as the dependent variable. In columns 1 and 2 where we consider all voting agendas, we do not observe a meaningful change. However, the coefficient estimate on Post using environment related agenda is 0.001 (t-stat: 1.687). Taken together with the mean value of Did note Vote (see Table 2), this suggests that PRI signatories are 30% more likely to be silent on environmental issues. We also consider voting on a social related agenda as the dependent variable. The coefficient estimate on $q + 4$ is -0.006 (t-stat: -2.303), which suggests that PRI signatories sometimes voice their concerns on social issues.

We then aggregate total number of controversies among stocks held in a portfolio to use it as a dependent variable. This measure could be informative not only, because it considers every ESG-related negative event instead of averaging it out but also because it may capture an asset manager's efforts to avoid tail risk and identify stocks without serious ESG issues.

Table 7 presents the results from equations (3) and (4). In column 4, we use Environmental Controversies as the dependent variable and the coefficient estimates on $q+1$, $q + 2$, $\cdots$, $q + 6$ are 0.073 (t-stat: 1.251), 0.110 (t-stat: 1.641), 0.150 (t-stat: 1.786), 0.238 (t-stat: 2.370), 0.268 (t-stat: 2.303), and 0.309 (t-stat: 2.351), respectively. This suggests that signatory funds experience more environment related controversies starting the third quarter post signing PRI. In Column 6, we use Social Controversies as the dependent variable and the coefficient estimates on $q + 1$, $q + 2$, $\cdots$, $q + 6$ are -0.150 (t-stat: -1.203), -0.292 (t-stat: -1.700), -0.312 (t-stat: -1.540), -0.372 (t-stat: -1.590), -0.511 (t-stat: -1.908), and -0.527 (t-stat: -1.727), respectively. This suggests that signatory funds experience less social controversies on some of the subsequent quarters.

4.4 Changes in Fee, CAPM Alpha, and Return

Next, we examine whether there are meaningful changes to fee and portfolio return and present the results in Table 8. In columns 1 and 2, we use Fee (%) as the dependent variable but do not find a meaningful change. Taken together with the flows result, this suggests that signatory managers may be enjoying a higher total dollar revenue because they are managing more capital but fee did not change. In columns 3 and 4, we use CAPM Alpha as the dependent variable. Interestingly, we find a general decrease in fund-level returns after signing UN PRI. For example, the coefficient estimate on Post is -0.005 (t-stat: -1.736) and the estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are -0.005 (t-stat: -1.672), -0.009 (t-stat: -2.396), -0.006 (t-stat: -1.543), -0.010 (t-stat: -2.361), -0.013 (t-stat: -2.920), and -0.014 (t-stat: -3.230), respectively. This suggests that fund returns significantly deteriorate post signing the PRI despite signatories' enjoying higher aggregate dollar revenue. Our results remain unchanged when we add log(Fund Size) for a possible diseconomies of scale (Berk and Green [2004]) and when we use Return as an alternative dependent variable.

4.5 Additional Tests

4.5.1 Cross-sectional Tests

In this section, we examine for cross-sectional characteristics that drive improvements in flow, ESG Score, and portfolio return. Thus far, we have documented that signatories experience a fund inflow but a question remains as to whether pre-signing ESG score positively influences fund inflow (i.e., whether asset allocators are able to allocate money to funds with better ESG performance or funds with higher ESG performance are able to attract more capital post PRI). To test this, we use the following specification:

$$Flow_{iq} = a + b * Post_{iq} * High\ Pre\text{-}Period\ ESG_i + c * Post_{iq} + d * High\ Pre\text{-}Period\ ESG_i + time\ f.e. + fund\ f.e. + e_{iq} \quad (5)$$

where Flow and Post are defined as previously. $High\ Pre\text{-}Period\ ESG_i$ indicates funds with above average fund level ESG score during the pre-period. Table 9 presents the results. The coefficient estimates on Post * High Pre-Period ESG for the ESG variables MSCI, Sustainalytics, and TVL are all statistically insignificant. We conclude that all signatories experience an increase in fund flows regardless of their pre-period ESG score.

Next, we verify whether funds that experience more fund inflow exhibit higher ESG score ex post. To test this, we use the following specification:

$$ESG_{iq} = a + b * Post_{iq} * Flow + c * Post_{iq} + d * Flow + time\ f.e. + fund\ f.e. + e_{iq} \quad (6)$$

where ESG, Post, Flow are defined as previously. But note that we consider both $Flow_{iq-1}$ and $Flow_{iq}$ in columns 1-3 and 4-6, respectively. Table 10 presents the results. The coefficient estimates on Post * Flow using both lagged and contemporaneous Flow are all statistically insignificant. We conclude that there is no relationship between fund inflow and ESG score.

Further, we examine whether ESG score is related to portfolio returns. To test this, we use the following specification:

$$Dep\ \ Var_{iq} = a + b * Post_{iq} * ESG_{iq} + c * Post_{iq} + d * ESG_{iq} + time\ f.e. + fund\ f.e. + e_{iq} \tag{7}$$

where dependent variables are CAPM Alpha, Return, Post, and ESG, which are defined as previously. Note that ESG indicates contemporaneous fund-level ESG Score. Table 11 presents the results. In columns 1 and 2, we use MSCI and Sustainalytics ESG scores as the ESG variable and the coefficient estimates on Post * ESG are not statistically significant. In column 3, we use TVL ESG score as the ESG variable and the coefficient estimate on Post * ESG is -0.001 (t-stat: -1.948). This suggests that having a higher TVL ESG score actually leads to lower contemporaneous portfolio returns.

Last, we explore the effect of pre-period fund characteristics on fund-level ESG Score. To do so, we consider the following specification:

$$ESG_{iq} = a + b * Post_{iq} * High_i + c * Post_{iq} + d * High_i + time\ f.e. + fund\ f.e. + e_{iq} \tag{8}$$

High indicates funds that exhibit above average fund characteristics during the 6 quarters prior to signing the PRI. All other variables are defined as previously.

Table 12 presents the results. In Panel A, we use MSCI ESG Score as the dependent variable. The coefficient estimates on Post * High for CAPM Alpha, Quant, and Open-Ended are 0.139 (t-stat: 1.902), 0.092 (t-stat: 1.845), and -0.277 (t-stat: -2.085). This suggests that funds that have high CAPM Alpha track record, are quant funds, and are close-ended exhibit higher MSCI ESG Score after signing PRI. In Panel B, we use Sustainalytics ESG Score as the dependent variable. The coefficient estimates on Post * High for CAPM Alpha, Return, Fee, log(Fund Size), and Institution-Only are -0.508

(t-stat: -2.114), -0.578 (t-stat: -2.097), -0.563 (t-stat: -1.795), -0.798 (t-stat: -2.762), and 0.662 (t-stat: 1.862). This suggests that funds that have lower CAPM Alpha, return, fee, smaller in size, and are institution-only exhibit higher Sustainalytics ESG Score after signing PRI.

In Panel C, we use TVL ESG Score as the dependent variable. The coefficient estimates on Post * High for institution-only and open-ended are 1.050 (t-stat: 2.585) and 1.199 (t-stat: 1.654). This suggests that funds that are institution-only and open-ended exhibit high TVL ESG Score after signing PRI. In Panel D, we use Total Controversies as the dependent variable but do not find any pre-period characteristics to drive meaningful changes in the number of controversies. We acknowledge that some of the cross-sectional variables produce conflicting results depending on ESG variable used. So, we conclude that funds that are institution-only and quantitatively driven improve ESG scores post signing PRI.

4.5.2 Determinants of Signing UN PRI

In this section, we examine the fund-level characteristics that influence an asset manager to sign PRI. To do so, we first conduct propensity score matching (1-1 matching without replacement with a caliper of 0.01) on log(Fund Size) to identify a group of non-PRI funds that are similar in size to signatories at the time of signatories' signature. This would lead to identifying a control fund (e.g., 1st quarter of 2015) that has similar size to a PRI fund at the time of the PRI fund's signature (e.g., 1st quarter of 2015). We then estimate the following specification:

$$SignedPRI_{iq} = a + b * FundCharacteristics_i + time\ f.e. + fund\ category\ f.e. + e_{iq} \quad (9)$$

$SignedPRI_{iq}$ equals to one for the six quarters after signing PRI for the signatory, and to zero for all other cases. We use log(Fund Size), Return, CAPM Alpha, Fee, log(# of Funds in Family), log(Age), TVL ESG Score, Open-Ended, Institution-Only, Team-Managed, and Quant Fund as explanatory variables. All of them are defined as in the previous specifications and we take the average during the pre-period. We include fund-category (time) fixed effect to mitigate the effect of fund-category (time) specific and time (fund-category) invariant omitted variables. We use fund-category fixed effect (i.e., not fund fixed effect) because we are interested in exploring the variation in fund-level characteristics that explain why funds sign the UN PRI.

We use the above fund characteristics as determinants for the following reasons. For example, a fund may sign PRI for self-promotion (Roussanov et al. [2018]). If so, funds that are smaller in size and younger in age (or that do not have an established reputation) may be more likely to sign and attract capital inflow. On the other hand, funds that have an open culture or that are retail investor dominant would care more about ESG issues (Scholtens and Sievänen [2013]). If so, asset managers with more diverse opinions might sign the PRI. Also, funds that believe in their superior expertise to generate excess returns may enter this space (Bansal et al. [2018]). In that case, funds with a stronger alpha track record would sign the UN PRI.

Table 13 presents the results from equation (9). Column 1 presents the results using the 6 quarters prior to signing the PRI. First of note is the coefficient estimate on TVL ESG Score, which is -0.061 (t-stat: -1.108). This result suggests that funds with higher ESG performance are not more likely to sign PRI. This result is robust to considering all other ESG scores used in this study. Next of note are the coefficient estimates on CAPM Alpha and Institution-Only. They are 6.838 (t-stat: 3.115) and 0.179 (t-stat: 10.077), respectively. These results suggest that funds that have a high alpha track record and that are institution-only are more likely to sign PRI. Last of note are the

coefficient estimates on log(Fund Size), Return, log(Number of Funds in Family), and Team-Managed, which are -0.081 (t-stat: -3.338), -4.201 (t-stat: -2.286), -0.156 (t-stat: -1.989), and -0.115 (t-stat: -2.602), respectively. These results suggest that funds that are smaller, have a lower return track record, have fewer funds in the fund family and not team-managed are more likely to sign PRI. In columns 2 and 3, we present the results using prior 4 and 8 quarters for robustness but skip the discussion as the results are very similar to those presented in column 1.

4.5.3 Robustness Tests

For robustness, we further our attempts to ensure that there is no substantial change in fund-level ESG performance after signing PRI. Our main specification examines the change in fund characteristics by comparing six quarters pre and post signing the PRI. However, it is possible that this thirteen-quarter window is insufficient to fully capture the outcome from the effort and resources devoted by PRI signatories. We alleviate this concern by using eight quarters pre and post for robustness (i.e., seventeen-quarter window). We find nearly identical results to our main results and skip reporting them for brevity.

Another potential issue of our paper is that not all companies have ESG scores for every single period. Thus, we have so far ignored firm-level ESG scores that are missing and assigned the average score of the portfolio to these stocks. However, as Giglio and Shue [2014] argue, information disclosure is endogenously determined, and hence no news may signal bad news. To take this possibility into account, we assign the lowest possible ESG score to observations with missing ESG scores and recreate our fund-level ESG score. In addition, we consider the deviation of fund-level ESG scores using S&P500's ESG scores as a benchmark. Many of the PRI funds in our dataset use S&P500 as the benchmark. In such a case, it may be reasonable to compare the

signatory funds' ESG performance to that of S&P500 for fair evaluation in fund-level ESG performance. We present the results for the two cases in Table 14 but avoid detailed discussion because we do not observe any improvements in fund-level ESG scores.

Finally, we also compare fund-level ESG scores of PRI funds against the propensity score matched control group.[8] We estimate the following difference-in-differences regression:

$$ESG_{iq} = a + b * Treat_i * Post_{iq} + c * Post_{iq} + time\ f.e. + fund\ f.e. + e_{iq} \tag{10}$$

where $Treat_i$ indicates the signatories and $Post_{iq}$ indicates quarters post signing the UN PRI for treated fund or matched control fund. All others are defined as in previous specifications.

Table 15 presents the results. We find that signatory funds actually perform worse than the matched non-signatory funds. Specifically, the coefficient estimates on Treat * Post for dependent variables MSCI, Sustainalytics, and TVL Scores are -0.206 (t-stat: -1.962), -0.376 (t-stat: -0.649), and -0.844 (t-stat: -1.928), respectively. Overall, the matched results suggest that there is a *decrease* in fund-level ESG scores among PRI signatories after signing vis-a-vis a group of funds that are similar in size. However, we choose to put this result in the robustness section because the results can be sensitive to the covariates used in matching.

[8] As in many observational studies, propensity score matching is sensitive to the covariates used in the matching process and thus we use the results of a decrease in ESG score from matching only for robustness.

5 Conclusion

In this paper, we use PRI, which is the largest collective effort in the world by asset managers to incorporate ESG, to empirically assess how asset managers perform on their commitments. Our findings can be broadly summarized as follows. First, we find that signatory funds experience a large fund inflow, and that this increase in fund flow happens regardless of prior ESG performance. Second, PRI funds on average do not exhibit improvements in fund-level ESG scores after signing, while showing a decrease in portfolio return and alpha. Third, signatories vote less on environmental issues and their stock holdings experience increased environment related controversies. Last, funds that are smaller, younger, and had higher historical alpha are more likely to sign PRI but only quant-driven and institution-only funds improve ESG post signing. Overall, our conclusion is that only select signatories make visible changes to ESG while most are using PRI as a mechanism to attract capital.

Environmental, social, and governance (ESG) has been very debated but also one of the fastest growing phenomena in recent times. Much effort has been paid (e.g., EU Taxonomy of Harmonizing ESG taxonomy and UN Global Compact signed by more than 9,500 listed companies to be more ESG focused) not only to better understand ESG but also to increase comparability and transparency. We believe that our paper has implications to all of these efforts because it suggests that asset managers need to clearly communicate their ESG execution or execute on ESG as promised. This is crucial because tremendous amount of wealth and resources are flowing into ESG. We hope our findings can inform the regulators who oversee asset managers and the asset owners and ordinary day-to-day investors who allocate their capital.

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Table 1: Sample Selection

Panel A	
Signatory Type	No. of Unique Entities
Investment Management Firms	246
Asset Owners	36
Data Service Providers	39

Panel B		
Signatory Type	No. of Unique Entities	No. of Unique Funds
Total UN PRI Investment Management Firms	246	
(Less: Private Equity)	-83	
(Less: Passive Managers)	-68	
(Less: Active Funds without ESG data)	-9	
Active Funds	86	474

Panel C		
Year	No. of Unique Entities	No. of Unique Funds
2006	4	22
2007	7	30
2008	7	63
2009	7	37
2010	5	28
2011	8	55
2012	8	101
2013	7	44
2014	11	27
2015	12	48
2016	4	10
2017	6	9
Total	86	474

This table presents the sample selection. Panel A reports different signatory types of UN PRI. Panel B shows the number of active managers in the US that signed PRI during our sample period. Panel C shows the distribution of those managers by year.

Table 2: Summary Statistics

	N	Mean	S.D.	25%	50%	75%
Panel A: Fund-level Performance						
MSCI ESG Score	3,824	4.6855	0.6871	4.3776	4.6244	5.0029
Sustainalytics ESG Score	3,646	58.5589	4.9865	55.0000	58.8830	62.1272
TVL ESG Score	4,270	51.9312	6.2640	50.1530	52.1515	54.0994
TVL Material ESG Score	4,244	52.1443	7.4693	49.9370	52.2588	54.9345
Total Controversies	3,646	4.0664	6.2898	0.0000	2.0000	5.0000
Did not Vote	5,563	0.0027	0.0204	0.0000	0.0000	0.0000
Panel B: Other Variables						
Fee (%)	2,055	1.0359	0.4204	0.7724	1.0000	1.2954
Flow	1,622	-0.0101	0.1588	-0.0497	-0.0236	0.0045
Return	1,622	0.0218	0.0885	-0.0122	0.0328	0.0798
CAPM Alpha	1,622	-0.0046	0.0279	-0.0182	-0.0043	0.0100
log(Fund Size)	2,209	4.8942	1.7035	3.7748	4.8245	6.0176
# of Funds in Family	5,449	78.1123	81.2855	19.0000	52.0000	91.0000
Age	5,473	9.6198	9.8076	2.0000	7.0000	14.0000
# of Stocks Held	5,563	89.6088	170.1897	18.0000	47.0000	95.0000
Institution-Only	5,501	0.4012	0.4902	0.0000	0.0000	1.0000
Open-Ended	5,501	0.9535	0.2107	1.0000	1.0000	1.0000
Quant	5,563	0.2357	0.4245	0.0000	0.0000	0.0000
Team-Managed	5,501	0.6584	0.4743	0.0000	1.0000	1.0000

Panel C: Correlation Table

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	MSCI ESG Score	1.00																	
2	Sustainalytics ESG Score	0.07	1.00																
3	TVL ESG Score	0.18	0.06	1.00															
4	TVL Material ESG Score	0.14	0.16	0.67	1.00														
5	Total Controversies	0.19	0.07	-0.01	-0.04	1.00													
6	Did not Vote	0.04	-0.01	0.02	0.01	0.01	1.00												
7	Fee (%)	-0.03	-0.21	0.05	0.08	-0.20	-0.02	1.00											
8	Flow	-0.03	0.00	0.04	0.03	-0.04	0.00	-0.02	1.00										
9	Return	-0.01	0.00	0.05	0.05	0.08	-0.01	-0.11	0.04	1.00									
10	CAPM Alpha	0.06	0.03	0.02	-0.03	0.06	0.03	-0.03	0.00	0.28	1.00								
11	log(Fund Size)	-0.01	0.01	-0.07	-0.08	0.21	0.00	-0.38	-0.06	0.09	-0.02	1.00							
12	# of Funds in Family	-0.02	-0.01	0.02	0.02	-0.03	0.01	-0.21	-0.03	0.05	-0.06	0.42	1.00						
13	Age	0.10	-0.08	0.05	0.03	-0.01	0.02	-0.16	-0.15	0.03	-0.03	0.33	0.29	1.00					
14	# of Stocks Held	0.00	-0.04	0.06	0.05	0.46	0.01	-0.23	0.02	0.06	0.03	0.18	0.03	-0.04	1.00				
15	Institution-Only	-0.03	0.02	0.03	0.00	0.04	0.09	-0.10	0.07	0.01	0.03	-0.16	-0.09	-0.29	0.09	1.00			
16	Open-Ended	0.00	-0.03	0.02	0.00	0.04	0.00	0.10	0.05	-0.02	0.01	-0.12	0.01	-0.11	0.02	0.04	1.00		
17	Quant	-0.01	-0.05	0.07	0.06	0.46	0.02	-0.18	0.03	0.05	0.03	0.22	0.07	-0.04	0.57	0.07	-0.04	1.00	
18	Team-Managed	-0.01	0.02	0.00	-0.02	0.08	0.03	0.08	0.05	-0.05	0.04	-0.07	-0.35	-0.26	0.03	0.13	0.04	0.09	1.00

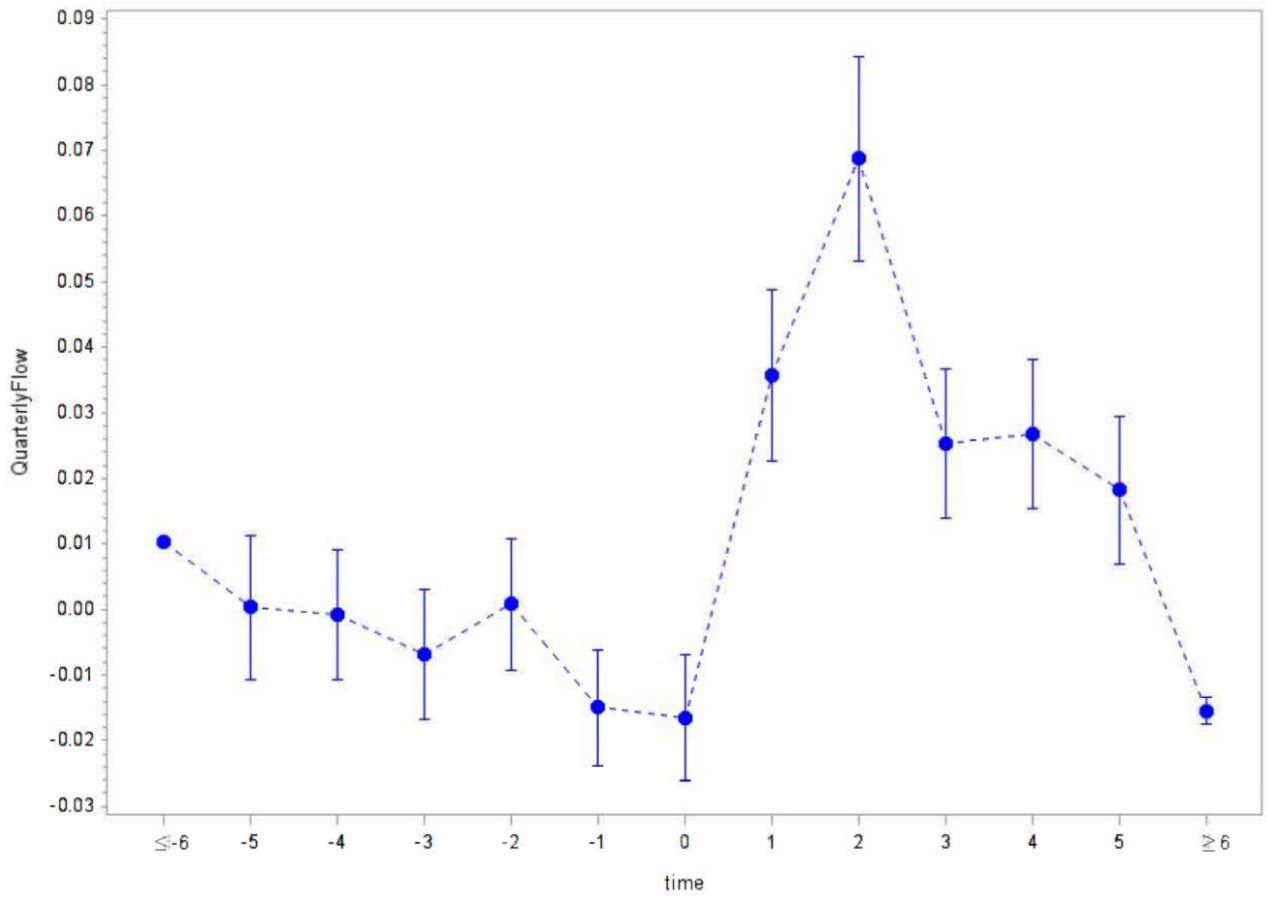
This table presents summary statistics and correlation of the key variables used. All variables are at the fund-quarter level. MSCI ESG Score, Sustainalytics ESG Score, TVL ESG Score, and TVL Material ESG Score are derived via value-weighting the respective firm-level ESG scores according to their market capitalization at quarter end. Total Controversies is the number of total controversies experience by stocks held in a portfolio. Did Not Vote represents the proportion of agenda items that a fund did not vote. Fee (%) is the management fee in percentage. Flow is the total AUM at the end of quarter minus last quarter's AUM times this quarter's return divided by last quarter's AUM. Return is the quarterly return net of fees. CAPM Alpha is the market-risk-adjusted quarterly excess return where the market beta is computed using the previous 60 month returns. log(Fund Size) is logarithm of fund size. # of Funds in Family is the number of funds in the asset management firm. Age is the fund age. # of Stocks Held is the number of stocks held in the portfolio. Institution-Only indicates funds that are open only to institutional investors. Open-Ended indicates whether a fund is open to new investors. Quant indicates funds that have more than 100 stocks in the portfolio. Team-Managed indicates funds that are managed by a team of portfolio managers.

Table 3: Trend in Fund Flow

	Flow	
Post	0.043***	
	[2.978]	
$q+1$		0.036*
		[1.728]
$q+2$		0.046**
		[2.551]
$q+3$		0.056*
		[1.866]
$q+4$		0.053**
		[2.599]
$q+5$		0.058**
		[2.506]
$q+6$		0.047*
		[1.839]
FE	Time and Fund	
Observations	1,622	1,622
R^2	0.245	0.245

This table presents the results from equations (3)-(4). Flow is the total AUM at the end of quarter minus last quarter's AUM times this quarter's return divided by last quarter's AUM. Post indicates the six quarters post signing the PRI. $q+j$ indicates the j-th quarter after signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Figure 1: Trend in Quarterly Flow



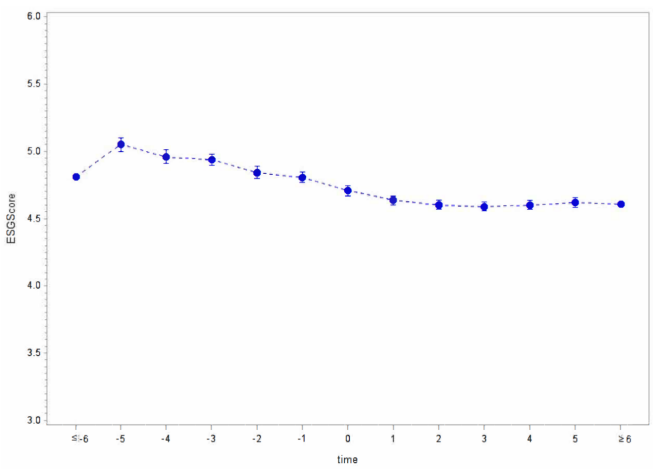
This graph presents the trend in quarterly flow. $\leq$-6 ($\geq$6) represents the 6th quarter before (after) signing the PRI and beyond. j indicates the j-th quarter after signing the PRI.

Table 4: Trend in Fund-level ESG Score

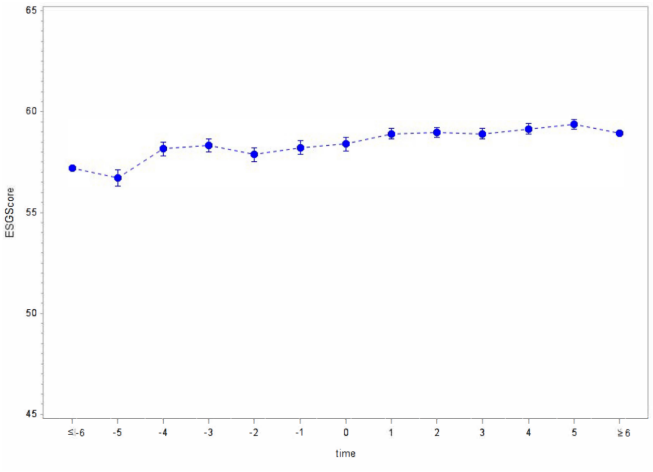
	MSCI		Sustainalytics		TVL	
Post	-0.031		0.033		0.064	
	[-1.058]		[0.143]		[0.148]	
$q+1$		-0.018		0.066		-0.361
		[-0.553]		[0.272]		[-0.815]
$q+2$		-0.028		-0.128		0.332
		[-0.636]		[-0.390]		[0.637]
$q+3$		-0.024		-0.182		0.035
		[-0.437]		[-0.433]		[0.055]
$q+4$		-0.013		-0.125		-0.401
		[-0.192]		[-0.260]		[-0.567]
$q+5$		-0.003		-0.117		-0.215
		[-0.043]		[-0.225]		[-0.272]
$q+6$		0.000		-0.304		-0.525
		[0.002]		[-0.514]		[-0.618]
FE			Time and Fund			
Observations	4,001	4,001	3,863	3,863	4,270	4,270
R^2	0.760	0.760	0.862	0.862	0.472	0.473

This table presents the results from equations (3)-(4). MSCI ESG Score, Sustainalytics ESG Score, and TVL ESG Score are value-weighted scores of respective firm-level scores according to their market capitalization at quarter end. Post indicates the six quarters post signing the PRI. $q+j$ indicates the j-th quarter after signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

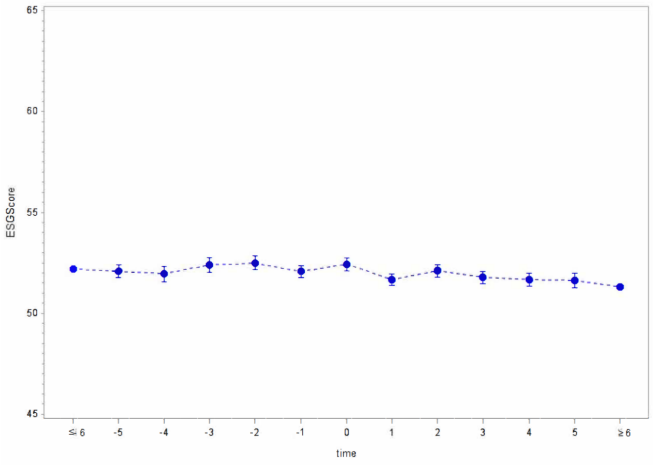
Figure 2: Trend in Fund Level ESG Score



(a) Trend in MSCI ESG Score



(b) Trend in Sustainalytics ESG Score



(c) Trend in TVL ESG Score

This graph presents the trend in quarterly ESG Score. Panel A, B, and C use MSCI, Sustainalytics, and TVL ESG Scores respectively. $\leq$-6 ($\geq$6) represents the 6th quarter before (after) signing the PRI and beyond. j indicates the j-th quarter after signing the PRI.

Table 5: Trend in Fund-level E, S, G Sub-score

	MSCI						Sustainalytics						TVL	
	Environmental		Social		Governance		Environmental		Social		Governance		Materiality	
Post	-0.054		-0.074		0.039		0.071		0.146		-0.242		-0.574	
	[-1.224]		[-1.528]		[0.680]		[0.227]		[0.535]		[-1.341]		[-1.365]	
$q+1$		-0.043		-0.069		0.013		0.094		0.263		-0.239		-0.588
		[-0.791]		[-1.193]		[0.210]		[0.278]		[0.903]		[-1.214]		[-1.247]
$q+2$		-0.040		-0.099		-0.001		-0.042		-0.078		-0.321		-0.325
		[-0.605]		[-1.358]		[-0.020]		[-0.093]		[-0.199]		[-1.259]		[-0.603]
$q+3$		-0.032		-0.113		-0.024		-0.089		-0.209		-0.233		0.167
		[-0.387]		[-1.215]		[-0.267]		[-0.157]		[-0.426]		[-0.689]		[0.254]
$q+4$		0.004		-0.112		-0.091		0.111		-0.158		-0.248		0.117
		[0.040]		[-0.971]		[-0.840]		[0.169]		[-0.278]		[-0.631]		[0.147]
$q+5$		-0.016		-0.113		-0.088		0.121		-0.114		-0.253		0.228
		[-0.134]		[-0.862]		[-0.732]		[0.169]		[-0.186]		[-0.557]		[0.238]
$q+6$		0.008		-0.127		-0.109		-0.223		-0.198		-0.353		0.316
		[0.060]		[-0.859]		[-0.810]		[-0.276]		[-0.285]		[-0.684]		[0.289]
FE	Time and Fund													
Observations	4,001	4,001	4,001	4,001	4,001	4,001	3,863	3,863	3,863	3,863	3,863	3,863	4,244	4,244
R^2	0.763	0.762	0.673	0.673	0.693	0.693	0.877	0.877	0.831	0.831	0.818	0.818	0.515	0.515

This table presents the results from equations (3)-(4). MSCI Environmental Score, Social Score, Governance Score, Sustainalytics Environmental Score, Social Score, Governance Score, TVL Materiality Score are value-weighted scores of respective firm-level scores according to their market capitalization at quarter end. Post indicates the six quarters post signing the PRI. $q+j$ indicates the j-th quarter after signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 6: Voting Behavior Post UN PRI

	Did Not Vote on							
	All Issues		E		S		G	
Post	-0.000		0.001*		-0.002		-0.000	
	[-0.269]		[1.687]		[-1.029]		[-0.142]	
$q+1$		0.000		0.002		-0.003		0.000
		[0.083]		[1.071]		[-0.880]		[0.085]
$q+2$		-0.001		0.001		-0.003		-0.000
		[-0.506]		[0.308]		[-1.241]		[-0.359]
$q+3$		0.000		0.000		-0.004		0.001
		[0.297]		[0.257]		[-1.172]		[0.359]
$q+4$		0.000		0.001		-0.006**		0.000
		[0.183]		[0.236]		[-2.303]		[0.293]
$q+5$		0.002		0.001		-0.006		0.002
		[0.913]		[0.430]		[-1.517]		[0.937]
$q+6$		0.000		0.001		-0.007		-0.000
		[0.056]		[0.197]		[-1.588]		[-0.006]
FE	Time and Fund							
Observations	5,563	5,563	5,563	5,563	5,563	5,563	5,563	5,563
R^2	0.225	0.225	0.126	0.125	0.272	0.272	0.220	0.220

This table presents the results from equations (3)-(4). Did Not Vote represents the proportion of agenda items that a fund did not vote. Did Not Vote on E represents the proportion of environmental agenda items that a fund did not vote. Did Not Vote on S represents the proportion of social agenda items that a fund did not vote. Did Not Vote on G represents the proportion of governance agenda items that a fund did not vote. Post indicates the six quarters post signing the PRI. $q+j$ indicates the j-th quarter after signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 7: Trend in Fund-level ESG Controversy

	Total		Environmental		Social		Governance	
Post	-0.164		0.025		-0.111		-0.063	
	[-0.858]		[0.472]		[-0.874]		[-1.359]	
$q+1$		-0.149		0.073		-0.150		-0.054
		[-0.782]		[1.251]		[-1.203]		[-1.233]
$q+2$		-0.268		0.110		-0.292*		-0.076
		[-1.063]		[1.641]		[-1.700]		[-1.282]
$q+3$		-0.212		0.150*		-0.312		-0.038
		[-0.709]		[1.786]		[-1.540]		[-0.569]
$q+4$		-0.211		0.238**		-0.372		-0.059
		[-0.610]		[2.370]		[-1.590]		[-0.786]
$q+5$		-0.327		0.268**		-0.511*		-0.068
		[-0.824]		[2.303]		[-1.908]		[-0.785]
$q+6$		-0.271		0.309**		-0.527*		-0.038
		[-0.591]		[2.351]		[-1.727]		[-0.369]
FE	Time and Fund							
Observations	3,863	3,863	3,863	3,863	3,856	3,856	3,863	3,863
R^2	0.878	0.878	0.845	0.846	0.864	0.864	0.787	0.786

This table presents the results from equations (3)-(4). Total Controversies is the number of total controversies in a portfolio. Environmental Controversies is the number of environmental controversies in a portfolio. Social Controversies is the number of social controversies in a portfolio. Governance Controversies is the number of governance controversies in a portfolio. Post indicates the six quarters post signing the PRI. $q+j$ indicates the j-th quarter after signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 8: Trend in Fee, CAPM Alpha, and Return

	Fee (%)		CAPM Alpha				Return			
Post	-0.001		-0.005*		-0.005*		-0.004		-0.004	
	[-0.141]		[-1.736]		[-1.731]		[-1.169]		[-1.165]	
$q+1$		-0.007		-0.005*		-0.005*		-0.003		-0.003
		[-1.182]		[-1.672]		[-1.676]		[-0.941]		[-0.945]
$q+2$		-0.002		-0.009**		-0.009**		-0.009*		-0.009*
		[-0.315]		[-2.396]		[-2.390]		[-1.823]		[-1.819]
$q+3$		-0.003		-0.006		-0.006		-0.006		-0.006
		[-0.355]		[-1.543]		[-1.554]		[-1.264]		[-1.276]
$q+4$		-0.012		-0.010**		-0.010**		-0.010**		-0.010**
		[-1.242]		[-2.361]		[-2.372]		[-2.007]		[-2.019]
$q+5$		-0.015		-0.013***		-0.013***		-0.012**		-0.012**
		[-1.308]		[-2.920]		[-2.941]		[-2.263]		[-2.281]
$q+6$		-0.018		-0.014***		-0.014***		-0.013**		-0.013**
		[-1.446]		[-3.230]		[-3.233]		[-2.566]		[-2.571]
log(Fund Size)					0.002	0.002			0.002	0.002
					[0.945]	[1.075]			[0.869]	[0.967]
FE						Time and Fund				
Observations	2,055	2,055	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,622
R^2	0.984	0.984	0.191	0.195	0.191	0.195	0.898	0.898	0.898	0.898

This table presents the results from equations (3)-(4). Fee (%) is the management fee in percentage. CAPM Alpha is the market-risk-adjusted quarterly excess return where the market beta is computed using the previous 60 month returns. Return is the quarterly return net of fees. Post indicates the six quarters post signing the PRI. $q+j$ indicates the j-th quarter after signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 9: Impact of Pre-period ESG Score on Flow

	Flow		
	MSCI	Sustainalytics	TVL
Post * High Pre-Period ESG	0.002	-0.070	0.018
	[0.079]	[-1.449]	[0.591]
Post	0.069**	0.124**	0.054**
	[2.287]	[2.326]	[2.090]
High Pre-Period ESG	-0.014	0.168	-0.018
	[-0.634]	[1.125]	[-0.565]
FE	Time and Fund		
Observations	1,622	1,622	1,622
R^2	0.214	0.217	0.214

This table presents the results from equation (5). Flow is the total AUM at the end of quarter minus last quarter's AUM times this quarter's return. Post indicates periods after signing the PRI. High Pre-Period ESG indicates funds with above average ESG score during pre period. ESG Score is the value-weighted firm level ESG score according to their market capitalization at quarter end. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 10: Effect of Flow on ESG Score

	MSCI	Sustainalytics	TVL	MSCI	Sustainalytics	TVL
		$Flow_{q-1}$			$Flow_q$	
Post * Flow	0.021	-0.196	0.135	0.018	0.029	0.118
	[1.345]	[-1.162]	[0.889]	[1.211]	[0.363]	[0.945]
Post	-0.026	0.007	-0.160	-0.026	0.007	-0.164
	[-0.898]	[0.048]	[-0.638]	[-0.920]	[0.051]	[-0.651]
Flow	-0.016	0.133	0.127	-0.007	0.067	0.183**
	[-1.180]	[0.797]	[1.112]	[-0.614]	[0.534]	[1.977]
FE			Time and Fund			
Observations	1,453	1,402	1,622	1,453	1,402	1,622
R^2	0.865	0.942	0.548	0.865	0.942	0.548

This table presents the results from equation (6). ESG Score is the value-weighted firm level ESG score according to their market capitalization at quarter end. Post indicates periods after signing the PRI. Flow is the total AUM at the end of quarter minus last quarter's AUM times this quarter's return return divided by last quarter's AUM. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 11: ESG Score and Return

	CAPM Alpha			Return		
	MSCI	Sustainalytics	TVL	MSCI	Sustainalytics	TVL
Post * ESG	-0.004	0.000	-0.001*	-0.004	0.000	-0.001
	[-1.106]	[0.315]	[-1.948]	[-0.834]	[0.109]	[-1.159]
Post	0.014	-0.011	0.053*	0.014	-0.005	0.035
	[0.872]	[-0.400]	[1.831]	[0.723]	[-0.154]	[1.079]
ESG	-0.004	-0.001	0.000	-0.000	-0.001	0.000
	[-0.966]	[-1.254]	[0.482]	[-0.031]	[-0.736]	[0.210]
FE	Time and Fund					
Observations	1,454	1,403	1,622	1,454	1,403	1,622
R^2	0.208	0.213	0.194	0.888	0.893	0.898

This table presents the results from equation (7). CAPM Alpha is the market-risk-adjusted quarterly excess return where the market beta is computed using the previous 60 month returns. Return is the quarterly return net of fees. Post indicates periods after signing the PRI. ESG Score is the value-weighted firm level ESG score according to their market capitalization at quarter end. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 12: Effect of Pre-period Fund Characteristics on ESG Score

Panel A: MSCI ESG Score										
	Cross-sectional grouping variable during the pre-period									
	CAPM Alpha	Return	# of Funds in Family	Age	Fee (%)	log(Fund Size)	Institution Only	Quant	Open Ended	Team Managed
Post * High	0.139*	0.105	0.054	-0.017	0.081	0.013	0.104	0.092*	-0.277**	0.074
	[1.902]	[1.572]	[0.795]	[-0.228]	[1.442]	[0.239]	[1.375]	[1.845]	[-2.085]	[0.970]
Panel B: Sustainalytics ESG Score										
	Cross-sectional grouping variable during the pre-period									
	CAPM Alpha	Return	# of Funds in Family	Age	Fee (%)	log(Fund Size)	Institution Only	Quant	Open Ended	Team Managed
Post * High	-0.508**	-0.578**	-0.152	-0.198	-0.563*	-0.798***	0.662*	-0.362	0.372	-0.296
	[-2.114]	[-2.097]	[-0.468]	[-0.599]	[-1.795]	[-2.762]	[1.862]	[-1.410]	[0.723]	[-0.943]
Panel C: TVL ESG Score										
	Cross-sectional grouping variable during the pre-period									
	CAPM Alpha	Return	# of Funds in Family	Age	Fee (%)	log(Fund Size)	Institution Only	Quant	Open Ended	Team Managed
Post * High	0.107	-0.359	-0.017	-0.212	-0.217	0.098	1.050**	0.391	1.199*	0.610
	[0.265]	[-0.837]	[-0.033]	[-0.404]	[-0.456]	[0.243]	[2.585]	[1.141]	[1.654]	[1.340]
Panel D: Total Controversies										
	Cross-sectional grouping variable during the pre-period									
	CAPM Alpha	Return	# of Funds in Family	Age	Fee (%)	log(Fund Size)	Institution Only	Quant	Open Ended	Team Managed
Post * High	-0.502	-0.607	0.278	0.278	0.528	-0.670	0.272	-0.781	-0.756	0.324
	[-1.251]	[-1.614]	[0.604]	[0.604]	[1.281]	[-1.451]	[0.694]	[-1.526]	[-1.447]	[0.946]

This table presents the results from estimating equation (8). ESG Score is the value-weighted firm level ESG score according to their market capitalization at quarter end. Post indicates periods after signing the PRI. High indicates funds that exhibit are above average in the following cross-sectional variables during the pre-period (6 quarters prior to signing PRI). CAPM Alpha is the market-risk-adjusted quarterly excess return where the market beta is computed using the previous 60 month returns. Return is the quarterly return net of fees. # of Funds in Family is the number of funds in the asset management firm. Age is the fund age. Fee (%) is the management fee in percentage. log(Fund Size) is logarithm of fund size. Institution-Only indicates funds that are open only to institutional investors. Quant indicates funds that have more than 100 stocks in the portfolio. Open-Ended indicates whether a fund is open to new investors. Team-Managed indicates funds that are managed by a team of portfolio managers. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively. Post indicates periods after signing the PRI.

Table 13: Determinants of Signing UN PRI

	Signed PRI		
Pre-period average	6 Quarters	4 Quarters	8 Quarters
log(Fund Size)	-0.081***	-0.080***	-0.081***
	[-3.338]	[-3.297]	[-3.359]
Return	-4.201**	-2.737*	-3.353
	[-2.286]	[-1.904]	[-1.610]
CAPM Alpha	6.838***	4.764***	7.064***
	[3.115]	[2.842]	[2.839]
Fee	-15.313	-13.441	-15.713
	[-1.567]	[-1.379]	[-1.644]
log(# Of Funds in Family)	-0.156**	-0.169**	-0.146*
	[-1.989]	[-2.149]	[-1.851]
log(Age)	-0.058	-0.062	-0.063
	[-0.883]	[-0.936]	[-0.955]
TVL ESG score	-0.061	-0.056	-0.062
	[-1.108]	[-1.018]	[-1.132]
Open-Ended	0.028	0.027	0.027
	[0.430]	[0.411]	[0.399]
Institution-Only	0.179***	0.180***	0.179***
	[10.077]	[10.071]	[10.027]
Team-Managed	-0.115***	-0.113**	-0.117**
	[-2.602]	[-2.591]	[-2.585]
Quant Fund	0.007	0.005	0.008
	[1.076]	[0.745]	[1.302]
FE	Time and Fund Category		
Observations	2,198	2,198	2,198
R^2	0.361	0.355	0.362

This table presents the results from estimating equation (9). Signed PRI indicates the fund-quarters after signing the PRI. Pre-periods are 6 (column 1), 4 (column 2), or 8 (column 3) quarters prior to signing the PRI. All fund-level controls are average during the pre-period. log(Fund Size) is logarithm of fund size. Return is the quarterly return net of fees. CAPM Alpha is the market-risk-adjusted quarterly excess return where the market beta is computed using the previous 60 month returns. Fee (%) is the management fee in percentage. log(# of Funds in Family) is the logarithm of number of funds in the asset management firm. log(Age) is the logarithm of fund age. TVL ESG Score is value-weighted score of firm-level TVL ESG scores according to their market capitalization at quarter end. Open-Ended indicates whether a fund is open to new investors. Institution-Only indicates funds that are open only to institutional investors. Team-Managed indicates funds that are managed by team of portfolio managers. Quant Fund indicates funds that have more than 100 stocks in the portfolio. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 14: Robustness to Alternative ESG Performance Metrics

	MSCI	Sustainalytics	TVL
Panel A: Deviation from S&P500 Score			
Post	-0.377	-0.495	-0.238
	[-1.261]	[-1.018]	[-1.157]
Panel B: Treating Missing ESG Score as zero			
Post	-0.044	-0.098	0.211
	[-0.678]	[-0.142]	[0.334]

This table presents the results from equations (3)-(4). MSCI ESG Score, Sustainalytics ESG Score, and TVL ESG Score are value-weighted scores of respective firm-level scores according to their market capitalization at quarter end. Post indicates the six quarters post signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.

Table 15: Difference-in-differences Model

	MSCI	Sustainalytics	TVL
Treat * Post	-0.206*	-0.376	-0.844*
	[-1.962]	[-0.649]	[-1.928]
Post	0.094	0.275	0.374
	[1.365]	[0.558]	[1.114]
FE		Time and Fund	
Observations	2,257	2,257	2,591
R^2	0.832	0.940	0.825

This table presents the results from equations (10). MSCI ESG Score, Sustainalytics ESG Score, and TVL ESG Score are value-weighted scores of respective firm-level scores according to their market capitalization at quarter end. Treat indicates propensity score matched set of funds that sign PRI. Post indicates the six quarters post signing the PRI. Standard errors are robust to heteroskedasticity and clustered at the fund level. ***, **, * are statistically significant at the 1, 2, and 5% levels, respectively.