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

Soohun Kim† Aaron S. Yoon‡

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 large increase in fund flow to signatories regardless of their prior fund-level ESG. However, signatories do not improve fund-level ESG while exhibiting a decrease in alpha. Funds that are quant-driven, larger, and operated by a single manager are more likely to sign PRI, but only quant funds improve ESG post signing. Overall, most signatories use the PRI to attract capital without making notable changes to ESG.

JEL classification codes: G20

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

*We thank Hans Christensen, Caroline Flammer, Ravi Jagannathan, Robert Korajczyk, Sangwook Nam, James Naughton, Andreas Neuhierl, 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.

†Assistant Professor, College of Business, KAIST, Seoul, South Korea 02455. E-mail: soohun.kimi@gmail.com.

‡Assistant Professor, Kellogg School of Management, Northwestern University, Evanston, IL 60208. E-mail: aaron.yoon@kellogg.northwestern.edu.

Conflict of Interest Disclosure Statement

Soohun Kim

I do not have potential conflicts to disclose.

Aaron Yoon

I do not have potentail conflicts to disclose.

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 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 2020, this number grew to more than $110 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. Given that

[1] BlackRock. Sustainability as BlackRock's New Standard for Investing. 2020.
[2] The US market capitalization was roughly $35 trillion in the beginning of 2020.

a crucial equalibrating mechanism for mutual fund market is the decision of capital allocation by investors (Berk and Green [2004]), we view this exercise as an important step to justify our research setting and question. To do so, we compare the fund flows during the six quarters pre and post signing and find that PRI signatories exhibit a surprising spike, an average of 4.9% increase in fund flows per quarter. We note that this increase in flows is evenly distributed across the subsequent six quarters and is robust to considering eight and twelve quarters ex-post as the post period. Overall, this first set of evidence confirms that there is a significant allocation of new capital to the UN PRI signatories.

We then examine whether signatory asset managers change their portfolio holdings to incorporate ESG. Prima facie, signing PRI would suggest that investment professionals will make visible changes to their portfolios, because PRI is a commitment signed by senior executives of the asset management firm. However, there are reasons to expect otherwise. For example, incorporating ESG could be used as a self-promoting mechanism (Roussanov et al. [2018]). If so, some asset managers would use PRI as a marketing tool without making meaningful changes to their portfolio. This is quite plausible, because PRI never penalized its signatories for noncompliance and only started the tightening after this working paper.[3] In some sense, such deficiency in monitoring is not surprising because complying to UN PRI is largely voluntary and that there are disagreements in defining and quantifying ESG (Berg et al. [2019], Serafeim and Yoon [2020]). Moreover, according to CFA Institute Survey on asset managers conducted in 2017, most asset managers do not receive any ESG-related training and complain about the lack of comparable quantitative ESG information.[4] The same group of respondents also pointed out that there is little demand from asset owners on ESG investing because

[3]Institutional Investors. June 17, 2020. UN PRI Revamps Reporting Rules to Focus on 'Real-World' Outcomes `https://www.institutionalinvestor.com/article/b1m3jxxs6hyxnm/UN-PRI-Revamps-Reporting-Rules-to-Focus-on-Real-World-Outcomes`.

[4]CFA Institute Survey 2017.

they perceive ESG issues to be financially irrelevant. If so, we may observe no changes in ESG from asset managers due to inadequate monitoring from the asset owners.

To address the issue of ESG ratings disagreement across different data vendors (Berg et al. [2019]), we utilize an extensive set of stock-level ESG scores that are commonly used by asset managers. Specifically, we use MSCI, Sustainalytics, and TruValue Labs to calculate fund-level ESG scores at each quarter by value-weighting stock level ESG scores in each portfolio. In this set of tests, we do not observe any notable improvements in fund-level ESG scores regardless of the dataset used and the result is robust to considering various sub-ESG scores (i.e., those related to environment, social, or governance separately, or to financial materiality) to construct fund-level ESG scores.[5]

We also consider other fund-level ESG performance measures because the fund-level ESG scores examined above capture only the average effect. Prior literature found that proxy voting is an important mechanism used by active owners to shape firm outcomes (e.g., Dimson et al. [2015], Grewal et al. [2016]). So, we consider signatory funds' proxy voting as well as the number of controversies experienced by the stocks in their portfolio. We find that signatory funds do not make changes to their voting behavior and vote more with the management on ESG related issues. In addition, we do not observe a decrease in the number of total controversies when examining the signatories' holdings.

One potential reason for no improvements in fund-level ESG could be that ESG is not related to generating returns and that mutual fund managers may be prioritizing alpha generation over ESG issues (Bansal et al. [2018]). To rule out this potential concern, we examine portfolio return and alpha post signing, but find no improvements in portfolio return and alpha at best.[6]

[5]When we conduct propensity score matching to identify non-signatories that are similar to signatories and use a difference-in-differences model, we find that signatories decrease ESG performance vis-à-vis non-signatories. We do not present this result because matching could be sensitive to the covariates used.

[6]This result is robust to controlling for fund size (i.e., diseconomies of scale) and also without a reduction in management fee, which suggests that signatories enjoy higher aggregate revenue from

Next, we examine the fund characteristics that increase the likelihood for a fund to sign UN PRI. We note that signatories could be superior performers in ESG before signing PRI. If so, none of the above results on no improvements in ESG would be surprising. To address such a concern, we consider past ESG performance in addition to a battery of other fund characteristics to examine their influence on funds becoming signatories. For example, larger funds may sign PRI because they have the resources that could be devoted towards ESG. Similarly, funds that believe in their expertise to generate higher returns may sign PRI (Bansal et al. [2018]). On the other hand, funds with cheaper management fee may face more competition and are likely to sign PRI to attract more capital (Roussanov et al. [2018]) and funds that are not team-managed may sign PRI, because ESG incorporation decision can be made more efficiently. Lastly, quant funds may sign, because ESG analysis has often been done in a quant setting rather than through fundamental analysis (Khan et al. [2016]).

We find evidence that confirms and contradicts some of the above conjectures. First, we find that funds with higher past ESG performance are not more likely to sign PRI. This is important because it rules out the notion that PRI signatories may be better performers in ESG to begin with. We also find that funds that are larger in size, cheaper in fees, not team-managed, and quant driven are more likely to sign PRI. We then take these four drivers and see if these factors influence the fund-level ESG score post signing. We find that only quant-driven funds are more likely to improve their ESG performance after becoming signatories, but do not find the other fund characteristics to drive changes in ESG.

We view that this paper makes the following contributions to the existing literature. First, literature has long debated whether ESG is value enhancing or not and focused on how to tie certain ESG investments to abnormal stock returns at the firm level

managing more capital but exhibits no change in ESG as well as in fund performance.

(Khan et al. [2016], Jagannathan et al. [2018], Welch and Yoon [2020]). In contrast, we focus on ESG at the fund level, which has been ignored despite the significant amout of capital invested in ESG funds, and call for a need to systematically measure and assess how asset managers are executing ESG. Our findings are important because increasing amount of capital is being committed into ESG. It also calls the regulators for more scrutiny on asset managers' ESG execution, the asset owners for more awareness in capital allocation to ESG, and the asset managers to provide clearer communications on their ESG incorporation, if any. Our paper could be viewed along with Raghunandan and Rajgopal [2020], which is a contemporaneous working paper that points out green washing of Business Roundtable 200 signatory companies.

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 the release of Morningstar Globe ESG fund ratings; the highest rating experience a 4% greater inflow than those with the lowest rating over the following 11 months (i.e., 1.1% greater inflow per quarter). We want to note that our paper documents a 4.9% per quarter increase in flows after signing UN PRI vis-a-vis the pre period, which is roughly four 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 their 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 and create a single ESG Score. 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.[7] So, we use the ESG scores from different vendors as is and also by sub scores and examine how active managers perform on these different dimensions. Third, we consider different facets of ESG implementation such as 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 PRI 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 into 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

[7] In an interview with Financial Times on May 28, 2020, SEC Chairman Jay Clayton pointed out that ESG ratings may be noisy and would lead to imprecise investment analysis especially when considered in aggregate.

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 $110 trillion by 2020.

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.[8] 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 to meet these guidelines over a two-year grace period, following extensive engagement

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

with the PRI, would result in delisting.[9]

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. 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 low-risk-exposure issue would not be penalized. Regarding opportunities, exposure in-

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

dicates 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.[10]

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, 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 is the quarterly return net of fees. We focus on active mutual fund managers in the US and our data

[10]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.

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 environmental, social, or governance issues.

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 448 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 58.5 and a standard deviation of 5.0. TVL Score (TVL Material Score) ranges from 0 to 100 and has a mean of 52.0 (52.2) and a standard deviation of 6.2 (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 6.4. 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 0.020. Did Not Vote with Management, which is the proportion of agenda items that a fund did not vote with the management, has a mean of 0.005 and a standard deviation of 0.035.

Panel B reports the summary statistics of other fund level characteristics. Fee (in annual percentage) has a mean of 1.04 and a standard deviation of 0.42. Fund flow 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.[11] 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 -0.004 and standard deviation of 0.028. On average, the log of fund size is 4.85, the age of a fund is 9.38 years, and a fund holds roughly 90 stocks. There are three dummy variables indicating whether a fund is institution-owned, quant driven (holding more than 100 stocks), or team-managed. In our sample, 41% of the funds are institution-owned, 23% 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 from different vendors is low. For example, the correlation between MSCI ESG Score and Sustainalytics ESG Score is only 0.07 and that between MSCI ESG Score and TVL ESG Score is 0.18. The correlation between # of Stocks Held and Total Controversies is 0.47 suggesting that the holdings in portfolio is subject to more issues if there are more stocks held. The correlation between Quant Fund and # of Stocks Held is 0.57 suggesting that quantitatively driven funds hold more stocks.

[11] 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).

The correlation between log(Fund Size) and Fee (%) is -0.38 suggesting that bigger funds charge less in fees.

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 allocation, 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 0.049 (t-stat: 3.129), which suggests a 4.9% 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 0.039 (t-stat: 1.714), 0.055 (t-stat: 2.782), 0.062

(t-stat: 1.927), 0.058 (t-stat: 2.667), 0.061 (t-stat: 2.500), and 0.049 (t-stat: 1.792), respectively. This shows that the fund inflow persists across all quarters of the considered post period.[12]

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 those with the lowest rating over the following 11 months (i.e., 1.1% greater inflow per quarter). We note that the magnitude of fund flow documented in our paper is roughly four times the magnitude presented in Hartzmark and Sussman [2019]. We view this result on one hand surprising because PRI is a voluntary commitment unlike Morningstar's globe-rating which is based on objective ESG metrics, but on the other hand sensible given that UN PRI is the largest global initiative on ESG.

4.2 Changes in Fund-level ESG Performance Post PRI

4.2.1 Value-Weighted Average of ESG Score

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 4a presents the results. Columns 1 and 2 present the results using MSCI ESG Score as the dependent variable. In column 1, the coefficient estimate on Post is -0.039 (t-stat: -1.284) and in column 2, the coefficient estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are -0.022 (t-stat: -0.657), -0.022 (t-stat: -0.467), -0.009 (t-stat: -0.153), 0.006 (t-stat: 0.087), 0.024 (t-stat: 0.308), and 0.030 (t-stat: 0.357), respectively. This suggests that

[12]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.

there is no meaningful change in fund-level ESG score post signing PRI.

We document similar findings when considering Sustainalytics (columns 3 and 4) and TVL ESG Score (columns 5 and 6). In column 3 and 5, the coefficient estimate on Post are 0.031 (t-stat: 0.128) and 0.086 (t-stat: 0.188), respectively. In columns 4 and 6, we break the post period to six quarters but do not find any meaningful improvements in fund-level ESG score vis-a-vis the pre period.

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 scores and present the results in Table 4b. Columns 1 and 2 present results using MSCI Environmental Score as the dependent variable. In column 1, the coefficient estimate on Post is -0.075 (t-stat: -1.602) and in column 2, the coefficient estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are -0.059 (t-stat: -1.024), -0.051 (t-stat: -0.720), -0.035 (t-stat: -0.402), 0.004 (t-stat: 0.038), -0.010 (t-stat: -0.076), and 0.019 (t-stat: 0.129), respectively. We also consider MSCI Social Score, MSCI Governance Score, Sustainalytics Environmental Score, Social Score, Governance Score, and TVL Materiality Score but do not find any meaningful changes in fund-level performance (see columns 3-14).

4.2.2 Voting Patterns / ESG Controversies

We note that the above method of averaging firm-level ESG score may not fully reflect the efforts made by PRI signatories. Another very important mechanism for actively incorporating ESG is through voting (Dimson et al. [2015, 2018], Grewal et al. [2016]). For example, a Catholic fund purchased shares of Sturm Ruger, a firearm manufacturing company, and demanded substantial changes in its business model through shareholder

proposals.[13] As such, PRI signatories may hold stocks with low ESG scores to induce real changes and engage the company actively make material changes to the firms' ESG policy. To evaluate whether PRI signatories voice their opinion through activism, we examine whether there are changes to voting behaviors.

Table 4c 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: 1.678). Taken together with the mean value of Did note Vote (0.0027, 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 -0.007 (t-stat: -2.271), which suggests that PRI signatories sometimes voice their concerns on social issues.

One potential concern with the above (i.e., Table 4c) however is that PRI signatories on average are already voting 99.7% of the time (see Table 2). So, we consider Did Note Vote with Management as the dependent variable and present the results in Table 4d. In column 1, we consider voting with management on all ESG issues and the coefficient estimate on Post is -0.003 (t-stat: -1.941). This suggests that funds tend to agree with management after signing PRI. This is a significant number given that the average of Did Not Vote with Management is 0.0054 (see Table 2). In columns 3-8, we consider environmental, social, and governance issues separately and find statistically meaning coefficients for Social and Governance issues, which suggests that funds are voting synchronously with the management. Overall, our conclusion is that PRI signatories on average are not incorporating ESG as promised when it comes to voicing their opinions through voting.

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

Next, we consider the possibility that fund managers use ESG metrics to manage tail risk due to ESG related controversies. To this end, we aggregate total number of controversies among stocks held in a portfolio to use it as the dependent variable. This measure could be informative not only, because it aggregates ESG-related negative events instead of presenting an average effect as in Table 4a, but also because it may potentially reflect an asset manager's efforts to identify and divest stocks with serious ESG issues.

Table 4e presents the results. We consider all ESG controversies (columns 1-2), environment related controversies (columns 3-4), social related controversies (columns 5-6), and governance related controversies (columns 7-8), but do not observe any meaningful decrease in controversies experienced in signatories' portfolio holdings. We note that in column 4 where we use environment related controversies as the dependent variable, the coefficient estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are 0.061 (t-stat: 0.954), 0.097 (t-stat: 1.353), 0.131 (t-stat: 1.457), 0.226 (t-stat: 2.121), 0.261 (t-stat: 2.112), and 0.296 (t-stat: 2.113), respectively. This suggests that signatory funds experience more environment related controversies starting the third quarter post signing PRI, which speaks against ESG improvements in signatories' portfolios.

4.3 Changes in CAPM Alpha and Return

In this section, we examine whether there are meaningful changes to portfolio return and present the results in Table 5. In columns 1 and 2, we use CAPM Alpha as the dependent variable. Interestingly, we find a general decrease in fund-level alpha after signing UN PRI. For example, the coefficient estimate on Post is -0.003 (t-stat: -1.017) and the estimates on $q+1$, $q+2$, $\cdots$, $q+6$ are -0.003 (t-stat: -1.026), -0.007 (t-stat: -1.829), -0.004 (t-stat: -0.960), -0.009 (t-stat: -2.017), -0.011 (t-stat: -2.307), and -0.013 (t-stat: -2.804), respectively. This suggests that signatory funds experience a

notable decrease in alpha post signing while enjoying a increase in fund flow (Table 3). Our results remain unchanged when we add log(Fund Size) to control for a possible diseconomies of scale (Berk and Green [2004]) and also when we use Return as an alternative dependent variable.

4.4 Determinants of Signing UN PRI

Although the above analysis provides interesting empirical patterns, we do not know whether signing PRI triggers the inflow of capital because a fund does not randomly sign UN PRI. Hence, this section is to understand the fund-level characteristics that influence a non-PRI asset manager to sign PRI. To do so, we separate non-PRI funds until quarter $q-1$ and then estimate the following hazard model:

$$\Pr\left(SignPRI_{iq}=1\right)=h\left(a+b*FundCharacteristics_i+time\,f.e.+fund\,category\,f.e.\right), \tag{5}$$

where $h(\cdot)$ is the Cox proportional hazard function, $SignPRI_{iq}$ equals to one if fund i signs UN PRI in quarter q. We use log(Fund Size), CAPM Alpha, Fee, log(Age), ESG Score, Institution-Only, Team-Managed, and Quant Fund as explanatory variables. All of them are defined as in the previous specifications except CAPM Alpha where we take the average CAPM alpha of the past 6 quarters to proxy for the alpha track record. We also include fund-category (time) fixed effect to mitigate the effect of fund-category (time) specific and time (fund-category) invariant omitted variables.[14]

We use the above fund characteristics as determinants for the following reasons. For example, PRI signatories could be superior performers in ESG before signing PRI. If so, it would be natural to observe most of the above no results in fund-level ESG performance. We consider past ESG performance for such a reason. In addition, larger

[14]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.

funds may be more likely to sign PRI because they have the resources that could be devoted towards ESG. Similarly, funds with better alpha track record may sign PRI because they have confidence in their expertise to generate higher returns (Bansal et al. [2018]). On the other hand, funds with cheaper management fee may face more competition and are likely to sign PRI to attract more capital (Roussanov et al. [2018]) and funds that are not team-managed may sign, because ESG incorporation decision can be made more efficiently. Lastly, quant funds may sign, because ESG analysis has mainly been done using different ESG signals to create long/short portfolios rather than through fundamental analysis (Khan et al. [2016]).

Table 6 presents the results from equation (5). In columns 1, 2, and 3, we use ESG Scores from MSCI, Sustainalytics, and TruValue Labs, respectively. In column 1, we where use MSCI ESG Score as the ESG Score, the coefficient estimate on ESG Score is -0.038 (t-stat: -0.150). This result suggests that funds with higher ESG performance are not more likely to sign PRI. Next, the coefficient estimates on log(Fund Size), Fee, Team-Managed, and Quant Funds are 0.203 (t-stat: 2.625), -1.006 (t-stat: -3.119), -0.546 (t-stat: -2.506), and 0.578 (t-stat: 2.456), respectively. These results suggest that funds that are larger, have a lower fee, are team-managed, and are quant-oriented are more likely to sign PRI. We do not find meaningful coefficients on other variables such as CAPM Alpha, fund age, institution-owned. This result is also robust to considering other ESG scores (see columns 2 and 3), so we skip detailed discussion for brevity.

4.5 Robustness

So far, we examine the fund flow (Table 3), fund-level ESG performances (Tables 4a-4e) and alpha (Table 5) post signing PRI and the fund characteristics associated with signing PRI (Table 6). Our main message that funds experience significant inflow but do not improve their ESG performance post signing PRI. In this subsection, we first

examine the robustness of some of our findings by splitting the sample on the fund characteristics used in section 4.4. Specifically, we consider the following specification:

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

We consider two dependent variables: Fund Flow and Fund-level ESG Performance. For Fund Dummy, we use the drivers of signing PRI identified in Table 6, indicating whether a fund is a quant-fund, small fund, high-fee fund, team-managed fund, and a fund with high ESG score during the six quarters prior to signing UN PRI. These characteristics, along with prior period ESG score, were important drivers of signing PRI identified in Table 6. Quant-fund and team managed fund are defined as in previous specifications and other variables are equal to one if the fund is above the average fund in the characteristics considered.

We report the results from this specification in Tables 7a-7e. In Table 7a, we find that quant funds improve MSCI and TVL ESG scores post signing PRI. We view this as reflective of quant funds' willingness and capability to analyze and and incorporate ESG into their investment decisions. However, we note with interest that quant funds do not attract more flows post signing vis-a-vis the control group.

In subsequent tables (Tables 7b-7e), we consider fund size, fee, team-managed, and ESG score as the fund dummy. We find that small funds and high fee funds are more likely to attract more fund flows. However, we do not find these characteristics to positively influence fund-level ESG performance post signing. Lastly, we do not find team-managed status and prior level ESG scores to positively influence fund flow nor fund-level ESG performance.

As our final robustness test, we address two potential concerns. First, we have

thus far assigned the average score of the portfolio to these stocks with missing firm-level ESG scores. However, as Giglio and Shue [2014] argue, information disclosure is endogenously determined, and hence no news may signal bad news. To circumvent this issue, we assign the lowest possible ESG score to observations with missing ESG scores and recreate our fund-level ESG score. We find similar results to our main findings and present them in Table 8 Panel A.

Second, many funds, and those PRI funds that are in our dataset, use a benchmark and our specification thus far ignores fund-level ESG performance vis-a-vis the benchmark's ESG performance. To address this concern, we consider the deviation of fund-level ESG scores using S&P 500's ESG scores as a benchmark, because most of the funds in our sample use S&P500 as their benchmark. We present the results in Table 8 Panel B but avoid detailed discussion because we again do not observe any improvements in fund-level ESG scores.

5 Conclusion

In this paper, we use the United Nations Principles for Responsible Investment, which is one of the largest collective effort in the world by asset managers to incorporate ESG, to empirically assess how asset managers perform on their commitments to ESG. Our findings can be broadly summarized as follows. First, we find that signatory funds experience a large fund inflow, and note 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 no improvements in portfolio return and alpha. Third, signatories do not vote more on ESG related proposals and actually vote more with the management post signing PRI. Also, we note that signatories' stock holdings do not experience a decrease in ESG controversies.

Last, funds that are larger in size, cheaper in fees, not team-managed, and quantitative-driven are more likely to sign PRI, but only quant-driven 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 a controversial topic, but also been 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 some of these efforts because we document little follow through from the asset manager signatories. Overall, we hope that our findings will not only inform regulators but also suggest the asset managers to clearly communicate their ESG execution or execute ESG as promised.

References

Bansal, R.; D. A. Wu; and A. Yaron. "Is Socially Responsible Investing a Luxury Good?" *Available at SSRN 3259209* (2018).

Berg, F.; J. F. Kolbel; and R. Rigobon. "Aggregate Confusion: The Divergence of ESG Ratings." *Working Paper* (2019).

Berk, J. B. and R. C. Green. "Mutual Fund Flows and Performance in Rational Markets." *Journal of Political Economy* 112 (2004) 1269–1295.

Dimson, E.; O. Karakaş; and X. Li. "Active Ownership." *The Review of Financial Studies* 28 (2015) 3225–3268.

Dimson, E.; O. Karakaş; and X. Li. "Coordinated Engagements." *Available at SSRN 3209072* (2018).

Doshi, H.; R. Elkamhi; and M. Simutin. "Managerial Activeness and Mutual Fund Performance." *The Review of Asset Pricing Studies* 5 (2015) 156–184.

Gibson, R.; S. Glossner; P. Krueger; P. Matos; and T. Steffen. "Responsible Institutional Investing Around the World." *University of Geneva and University of Virginia* (2019).

Giglio, S. and K. Shue. "No News Is News: Do Markets Underreact to Nothing?" *The Review of Financial Studies* 27 (2014) 3389–3440.

Grewal, J.; G. Serafeim; and A. Yoon. "Shareholder Activism on Sustainability Issues." *Available at SSRN 2805512* (2016).

Hartzmark, S. M. and A. B. Sussman. "Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows." *Journal of Finance* 74 (2019) 2789–2837.

Jagannathan, R.; A. Ravikumar; and M. Sammon. "Environmental, Social, and Governance Criteria: Why Investors Should Care." *The Journal of Investing* 16 (2018) 18–31.

Khan, M.; G. Serafeim; and A. Yoon. "Corporate Sustainability: First Evidence on Materiality." *The Accounting Review* 91 (2016) 1697–1724.

Pedersen, L. H.; S. Fitzgibbons; and L. Pomorski. "Responsible Investing: The ESG-efficient Frontier." *Available at SSRN 3466417* (2019).

Raghunandan, A. and S. Rajgopal. "Do the Socially Responsible Walk the Talk?" *Working Paper* (2020).

Roussanov, N.; H. Ruan; and Y. Wei. "Marketing Mutual Funds." Tech. rep., National Bureau of Economic Research (2018).

Serafeim, G. and A. Yoon. "Which Corporate ESG News does the Market React to?" *Working Paper* (2020).

Welch, K. and A. Yoon. "Corporate Sustainability and Stock Returns: Evidence from Employee Satisfaction." *Working Paper* (2020).

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	448

Panel C		
Year	No. of Unique Entities	No. of Unique Funds
2006	4	21
2007	7	30
2008	7	58
2009	7	36
2010	5	26
2011	8	55
2012	8	95
2013	7	38
2014	11	24
2015	12	46
2016	4	10
2017	6	9
Total	86	448

This table presents the sample selection. Panel A reports the different signatory types. 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 ESG Performance						
MSCI ESG Score	3,617	4.6841	0.6900	4.3773	4.6212	5.0083
Sustainalytics ESG Score	3,451	58.5180	4.9529	55.0000	58.8336	62.1059
TVL ESG Score	4,041	51.9637	6.2327	50.1530	52.1459	54.0721
TVL Material ESG Score	4,015	52.1535	7.4912	49.9284	52.2254	54.8903
Total Controversies	3,451	4.1266	6.3804	0.0000	2.0000	5.0000
Did not Vote	5,245	0.0027	0.0204	0.0000	0.0000	0.0000
Didn't Vote with Management	5,245	0.0054	0.0348	0.0000	0.0000	0.0000
Panel B: Other Variables						
Fee (%)	1,906	1.0444	0.4205	0.7800	1.0000	1.3065
Flow	1,476	-0.0092	0.1638	-0.0497	-0.0237	0.0046
Return	1,476	0.0213	0.0896	-0.0123	0.0330	0.0807
CAPM Alpha	1,476	-0.0044	0.0278	-0.0183	-0.0043	0.0096
log(Fund Size)	2,058	4.8496	1.7011	3.7317	4.7748	5.9979
Age	5,245	9.3855	9.7730	2.0000	6.0000	14.0000
# of Stocks Held	5,245	91.0810	174.3852	18.0000	47.0000	94.0000
Institution-Only	5,245	0.4059	0.4911	0.0000	0.0000	1.0000
Quant	5,245	0.2334	0.4230	0.0000	0.0000	0.0000
Team-Managed	5,245	0.6627	0.4728	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
1	MSCI ESG Score	1.00																
2	Sustainalytics ESG Score	0.07	1.00															
3	TVL ESG Score	0.18	0.08	1.00														
4	TVL Material ESG Score	0.14	0.18	0.67	1.00													
5	Total Controversies	0.19	0.06	-0.01	-0.04	1.00												
6	Did not Vote	0.04	-0.01	0.02	0.01	0.01	1.00											
7	Didn't Vote with Management	0.06	-0.02	0.02	0.01	0.03	0.84	1.00										
8	Fee (%)	-0.02	-0.19	0.07	0.11	-0.21	-0.02	0.00	1.00									
9	Flow	-0.04	0.00	0.04	0.03	-0.05	0.00	-0.01	-0.02	1.00								
10	Return	0.01	0.01	0.05	0.05	0.08	0.00	0.01	-0.12	0.04	1.00							
11	CAPM Alpha	0.07	0.03	0.03	-0.02	0.06	0.03	0.02	-0.02	0.00	0.26	1.00						
12	log(Fund Size)	0.00	0.02	-0.08	-0.09	0.23	0.00	0.01	-0.38	-0.06	0.09	-0.02	1.00					
13	Age	0.09	-0.10	0.04	0.02	0.00	0.01	0.02	-0.14	-0.15	0.04	-0.02	0.35	1.00				
14	# of Stocks Held	0.00	-0.04	0.05	0.05	0.47	0.01	0.01	-0.24	0.02	0.06	0.02	0.19	-0.04	1.00			
15	Institution-Only	-0.02	0.05	0.02	0.00	0.05	0.09	0.10	-0.11	0.07	0.01	0.04	-0.18	-0.30	0.09	1.00		
16	Quant	0.00	-0.04	0.06	0.06	0.46	0.02	0.02	-0.18	0.03	0.04	0.02	0.22	-0.03	0.57	0.06	1.00	
17	Team-Managed	-0.02	0.03	-0.01	-0.02	0.07	0.03	0.03	0.08	0.05	-0.04	0.04	-0.09	-0.26	0.03	0.14	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. Did Not Vote represents the proportion of agenda items that a fund did not vote. Didn't Vote with Management is the proportion of agenda items that a fund did not vote for the management. Fee (%) is the annual 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. 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. 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	0.049***	
	[3.129]	
$q+1$		0.039*
		[1.714]
$q+2$		0.055***
		[2.782]
$q+3$		0.062*
		[1.927]
$q+4$		0.058***
		[2.667]
$q+5$		0.061**
		[2.500]
$q+6$		0.049*
		[1.792]
FE	Time and Fund	
Observations	1,476	1,476
Adj R^2	0.242	0.241

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, 5, and 10% levels, respectively.

Table 4a: Trend in Fund-level ESG Score

	MSCI		Sustainalytics		TVL	
Post	-0.039		0.031		0.086	
	[-1.284]		[0.128]		[0.188]	
$q+1$		-0.022		0.048		-0.363
		[-0.657]		[0.184]		[-0.768]
$q+2$		-0.022		-0.118		0.418
		[-0.467]		[-0.334]		[0.755]
$q+3$		-0.009		-0.182		0.029
		[-0.153]		[-0.402]		[0.043]
$q+4$		0.006		-0.122		-0.305
		[0.087]		[-0.235]		[-0.408]
$q+5$		0.024		-0.128		-0.125
		[0.308]		[-0.228]		[-0.150]
$q+6$		0.030		-0.311		-0.484
		[0.357]		[-0.490]		[-0.541]
FE			Time and Fund			
Observations	3,786	3,786	3,662	3,662	4,041	4,041
Adj R^2	0.795	0.796	0.877	0.877	0.536	0.538

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, 5, and 10% levels, respectively.

Table 4b: Trend in Fund-level E, S, G Sub-score

	MSCI						Sustainalytics						TVL	
	Environmental		Social		Governance		Environmental		Social		Governance		Materiality	
Post	-0.075		-0.072		0.051		0.027		0.174		-0.256		-0.593	
	[-1.602]		[-1.416]		[0.822]		[0.082]		[0.600]		[-1.336]		[-1.344]	
$q+1$		-0.059		-0.066		0.024		0.035		0.272		-0.273		-0.590
		[-1.024]		[-1.043]		[0.388]		[0.098]		[0.869]		[-1.300]		[-1.184]
$q+2$		-0.051		-0.088		0.037		-0.124		-0.011		-0.302		-0.234
		[-0.720]		[-1.117]		[0.488]		[-0.257]		[-0.027]		[-1.113]		[-0.413]
$q+3$		-0.035		-0.097		0.030		-0.194		-0.141		-0.225		0.199
		[-0.402]		[-0.962]		[0.309]		[-0.317]		[-0.266]		[-0.626]		[0.289]
$q+4$		0.004		-0.096		-0.035		-0.013		-0.074		-0.224		0.283
		[0.038]		[-0.762]		[-0.306]		[-0.019]		[-0.122]		[-0.535]		[0.339]
$q+5$		-0.010		-0.089		-0.016		-0.029		-0.035		-0.247		0.452
		[-0.076]		[-0.624]		[-0.133]		[-0.038]		[-0.053]		[-0.511]		[0.451]
$q+6$		0.019		-0.100		-0.033		-0.373		-0.126		-0.343		0.497
		[0.129]		[-0.626]		[-0.239]		[-0.428]		[-0.168]		[-0.627]		[0.435]
FE	Time and Fund													
Observations	3,786	3,786	3,786	3,786	3,786	3,786	3,662	3,662	3,662	3,662	3,662	3,662	4,015	4,015
Adj R^2	0.792	0.792	0.713	0.713	0.735	0.736	0.890	0.891	0.852	0.852	0.837	0.837	0.579	0.580

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, 5, and 10% levels, respectively.

Table 4c: Voting Participation Behavior Post UN PRI

	Did Not Vote on							
	All Issues		Environmental Issues		Social Issues		Governance Issues	
Post	-0.000		0.001*		-0.003		-0.000	
	[-0.476]		[1.678]		[-1.026]		[-0.357]	
$q+1$		-0.000		0.002		-0.003		-0.000
		[-0.008]		[1.095]		[-0.913]		[-0.025]
$q+2$		-0.001		0.001		-0.004		-0.001
		[-0.682]		[0.302]		[-1.328]		[-0.549]
$q+3$		0.000		0.000		-0.004		0.000
		[0.252]		[0.222]		[-1.251]		[0.296]
$q+4$		0.000		0.001		-0.007**		0.000
		[0.196]		[0.213]		[-2.271]		[0.298]
$q+5$		0.002		0.001		-0.007		0.002
		[0.888]		[0.421]		[-1.558]		[0.893]
$q+6$		0.000		0.001		-0.008*		-0.000
		[0.028]		[0.190]		[-1.650]		[-0.066]
FE	Time and Fund							
Observations	5,245	5,245	5,245	5,245	5,245	5,245	5,245	5,245
Adj R^2	0.335	0.336	0.233	0.234	0.362	0.362	0.330	0.331

This table presents the results from equations (3)-(4). Did Not Vote on All Issues represents the proportion of agenda items that a fund did not vote. Did Not Vote on Environmental Issues represents the proportion of environmental agenda items that a fund did not vote. Did Not Vote on Social Issues represents the proportion of social agenda items that a fund did not vote. Did Not Vote on Governance Issues 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, 5, and 10% levels, respectively.

Table 4d: Voting Behavior with respect to Management's Suggestion Post UN PRI

	Did not Vote with Management on							
	All Issues		Environmental Issues		Social Issues		Governance Issues	
Post	-0.003*		0.002		-0.008**		-0.003*	
	[-1.941]		[0.715]		[-1.984]		[-1.736]	
$q+1$		-0.003		0.002		-0.009*		-0.003
		[-1.632]		[0.646]		[-1.836]		[-1.528]
$q+2$		-0.003**		0.000		-0.009**		-0.003*
		[-2.060]		[0.170]		[-2.057]		[-1.866]
$q+3$		-0.002		0.003		-0.010*		-0.002
		[-0.770]		[0.949]		[-1.681]		[-0.641]
$q+4$		-0.001		-0.001		-0.015**		-0.001
		[-0.634]		[-0.145]		[-2.178]		[-0.473]
$q+5$		-0.001		-0.001		-0.017**		-0.000
		[-0.218]		[-0.432]		[-2.018]		[-0.102]
$q+6$		-0.002		0.002		-0.015*		-0.002
		[-0.947]		[0.463]		[-1.688]		[-0.993]
FE	Time and Fund							
Observations	5,245	5,245	5,245	5,245	5,245	5,245	5,245	5,245
Adj R^2	0.419	0.419	0.214	0.214	0.408	0.408	0.410	0.410

This table presents the results from equations (3)-(4). Did not Vote with Management on All Issues represents the proportion of agenda items that a fund did not vote for the management. Did Not Vote with Management on Environmental Issues represents the proportion of environmental agenda items that a fund did not vote for the management. Did Not Vote with Management on Social Issues represents the proportion of social agenda items that a fund did not vote for the management. Did Not Vote with Management on Governance Issues represents the proportion of governance agenda items that a fund did not vote for the management. 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, 5, and 10% levels, respectively.

Table 4e: Trend in Fund-level ESG Controversy

	Total Controversies		Environmental Controversies		Social Controversies		Governance Controversies	
Post	-0.183		0.008		-0.101		-0.072	
	[-0.898]		[0.137]		[-0.755]		[-1.480]	
$q+1$		-0.167		0.061		-0.144		-0.062
		[-0.814]		[0.954]		[-1.084]		[-1.233]
$q+2$		-0.265		0.097		-0.266		-0.076
		[-0.980]		[1.353]		[-1.459]		[-1.282]
$q+3$		-0.200		0.131		-0.272		-0.038
		[-0.621]		[1.457]		[-1.261]		[-0.569]
$q+4$		-0.180		0.226**		-0.323		-0.059
		[-0.485]		[2.121]		[-1.296]		[-0.786]
$q+5$		-0.300		0.261**		-0.469		-0.068
		[-0.703]		[2.112]		[-1.647]		[-0.785]
$q+6$		-0.237		0.296**		-0.471		-0.038
		[-0.482]		[2.113]		[-1.454]		[-0.369]
FE	Time and Fund							
Observations	3,662	3,662	3,662	3,662	3,655	3,655	3,662	3,662
Adj R^2	0.896	0.896	0.869	0.870	0.884	0.884	0.818	0.818

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, 5, and 10% levels, respectively.

Table 5: Trend in Fee, CAPM Alpha, and Return

	CAPM Alpha				Return			
Post	-0.003		-0.003		-0.001		-0.001	
	[-1.017]		[-1.023]		[-0.263]		[-0.270]	
$q+1$		-0.003		-0.003		-0.001		-0.001
		[-1.026]		[-1.039]		[-0.300]		[-0.312]
$q+2$		-0.007*		-0.007*		-0.005		-0.005
		[-1.829]		[-1.834]		[-0.998]		[-1.005]
$q+3$		-0.004		-0.004		-0.002		-0.002
		[-0.960]		[-0.987]		[-0.432]		[-0.457]
$q+4$		-0.009**		-0.010**		-0.007		-0.007
		[-2.017]		[-2.050]		[-1.307]		[-1.338]
$q+5$		-0.011**		-0.012**		-0.009		-0.009
		[-2.307]		[-2.345]		[-1.520]		[-1.550]
$q+6$		-0.013***		-0.013***		-0.011*		-0.011*
		[-2.804]		[-2.830]		[-1.893]		[-1.915]
log(Fund Size)			0.002	0.003			0.002	0.003
			[1.250]	[1.403]			[0.948]	[1.053]
FE								
Observations	1,476	1,476	1,476	1,476	1,476	1,476	1,476	1,476
Adj R^2	0.209	0.214	0.210	0.214	0.906	0.906	0.906	0.906

This table presents the results from equations (3)-(4). 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, 5, and 10% levels, respectively.

Table 6: Determinants of Signing UN PRI

	Dep Var = Sign UN PRI		
ESG Scores	MSCI	Sustainalytics	TVL
log(Fund Size)	0.203***	0.182**	0.212***
	[2.625]	[2.322]	[2.892]
CAPM Alpha	0.094	0.080	0.051
	[1.316]	[1.037]	[0.798]
Fee (%)	-1.006***	-0.982***	-0.677**
	[-3.119]	[-2.995]	[-2.233]
log(Age)	-0.008	-0.006	-0.004
	[-0.771]	[-0.598]	[-0.421]
ESG score	-0.038	0.027	-0.015
	[-0.150]	[0.775]	[-0.451]
Institution-Only	-0.017	0.085	-0.037
	[-0.074]	[0.363]	[-0.167]
Team-Managed	-0.546**	-0.668***	-0.397*
	[-2.506]	[-3.012]	[-1.918]
Quant Fund	0.578**	0.557**	0.535**
	[2.456]	[2.283]	[2.398]
FE	Time and Fund Category		
Observations	16,147	15,382	19,360

This table presents the results from estimating equation (5). Signed PRI indicates the fund-quarters after signing the PRI. log(Fund Size) is logarithm of fund size. CAPM Alpha is the market-risk-adjusted quarterly excess return where the market beta is computed using the previous 60 month returns and measured as an average during the six quarters prior to signing UN PRI. Fee (%) is the annual management fee in percentage. log(Age) is the logarithm of fund age. ESG Score is the value-weighted scores of respective firm-level scores according to their market capitalization at quarter end. 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, 5, and 10% levels, respectively.

Table 7a: Robustness on the pre PRI characteristics: Quant

	Flow	MSCI	Sustainalytics	TVL
Post*Quant Fund	0.016	0.079**	0.238	0.579*
	[0.981]	[2.256]	[0.810]	[1.773]
Post	0.045***	-0.057**	-0.051	-0.338
	[2.949]	[-2.045]	[-0.305]	[-1.073]
Quant Fund	0.007	0.028	0.388	-0.037
	[0.264]	[0.553]	[0.932]	[-0.106]
FE		Time and Fund		
Observations	1,476	1,316	1,271	1,476
Adj R^2	0.237	0.896	0.939	0.553

This table presents the results from equations (6). 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. 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. Quant Fund indicates funds that have more than 100 stocks in the portfolio during the prior six quarters. 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, 5, and 10% levels, respectively.

Table 7b: Robustness on the pre PRI characteristics: Fund Size

	Flow	MSCI	Sustainalytics	TVL
Post*Small Fund	0.032***	0.046	0.179	-0.230
	[2.626]	[0.958]	[0.568]	[-0.669]
Post	0.027	-0.061	-0.098	0.059
	[1.564]	[-1.469]	[-0.361]	[0.174]
Small Fund	0.030	0.035	0.198	1.693***
	[1.309]	[0.400]	[0.606]	[4.582]
FE		Time and Fund		
Observations	1,476	1,316	1,271	1,476
Adj R^2	0.239	0.895	0.939	0.556

This table presents the results from equations (6). 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. 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. Small Fund indicates funds with below average in size during the prior six quarters. 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, 5, and 10% levels, respectively.

Table 7c: Robustness on the pre PRI characteristics: Fee

	Flow	MSCI	Sustainalytics	TVL
Post*Hi Fee Fund	0.049**	0.051	-0.236	0.343
	[2.121]	[1.202]	[-0.769]	[0.796]
Post	0.030**	-0.045	0.135	-0.270
	[2.147]	[-1.460]	[0.766]	[-0.737]
Hi Fee Fund	-0.014	0.064	0.551	-0.864
	[-0.562]	[1.243]	[1.406]	[-1.322]
FE		Time and Fund		
Observations	1,476	1,316	1,271	1,476
Adj R^2	0.240	0.895	0.939	0.553

This table presents the results from equations (6). 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. 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. High Fee Fund indicates funds with above average fee during the prior six quarters. 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, 5, and 10% levels, respectively.

Table 7d: Robustness on the pre PRI characteristics: Team Management

	Flow	MSCI	Sustainalytics	TVL
Post*Team-Managed Fund	0.017	0.052	0.012	-0.193
	[0.925]	[1.448]	[0.041]	[-0.542]
Post	0.039**	-0.060*	0.031	-0.002
	[2.080]	[-1.915]	[0.123]	[-0.006]
Team-Managed Fund	0.003	0.011	0.142	0.241
	[0.142]	[0.190]	[0.371]	[0.678]
FE	Time and Fund			
Observations	1,476	1,316	1,271	1,476
Adj R^2	0.237	0.895	0.939	0.551

This table presents the results from equations (6). 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. 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. Team-Managed Fund indicates funds that are team-managed during the prior six quarters. 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, 5, and 10% levels, respectively.

Table 7e: Robustness on the pre PRI characteristics: ESG

post PRI Dep Var	Flow			MSCI	Sustainalytics	TVL
pre PRI ESG score	MSCI	Sustainalytics	TVL	MSCI	Sustainalytics	TVL
Post*Hi ESG Fund	0.009	-0.045	0.014	0.015	-0.092	0.756
	[0.416]	[-1.612]	[0.561]	[0.206]	[-0.278]	[0.647]
Post	0.044**	0.085***	0.039*	-0.039	0.122	-0.799
	[2.315]	[3.160]	[1.740]	[-0.506]	[0.340]	[-0.659]
Hi ESG Fund	-0.015	0.051	-0.036	-0.018	0.161	0.609
	[-0.681]	[0.822]	[-1.163]	[-0.400]	[0.401]	[0.992]
FE	Time and Fund					
Observations	1,316	1,271	1,476	1,316	1,271	1,476
Adj R^2	0.236	0.238	0.237	0.894	0.939	0.553

This table presents the results from equations (6). 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. 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. Hi ESG Fund indicates funds with above average ESG Scores during the prior six quarters. 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, 5, and 10% levels, respectively.

Table 8: Robustness to Alternative ESG Performance Metrics

	MSCI	Sustainalytics	TVL
Panel A: Deviation from S&P500 Score			
Post	-0.047	0.033	0.064
	[-1.339]	[0.143]	[0.148]
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, 5, and 10% levels, respectively.