Mutual Funds going Green: What is the Impact?

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Abstract

Environmental, Social and Governance (ESG) principles have grown in popularity lately causing a surge in assets managed under the green mandate. In our study we examine the impact on capital flows and performance of U.S. equity mutual funds that signaled an ESG connection. We use two different greening events to examine investor's response, the first event is by becoming a PRI signatory and the second event is when a fund changes their name to include an ESG indicative word. Our study reveals that one of the two events analyzed had a significant impact on fund flows, increasing the annual fund flow by 11%. However, we did not find any significant impact on returns.

Keywords: ESG, Sustainability, Mutual Funds, Fund flows, Fund performance

JEL Classification: G03, G02, G11

1 Introduction

We have seen an accelerating growth in recent years in the establishment and encouragement towards implementing policies that supports responsible behavior from individuals and institutions, as people around the world have become more aware of the risks associated with neglecting social and environmental duties. Sustainable investments have become a trillion dollar industry and continues to be on the rise. In a report published by the Global Sustainable Investment Alliance they revealed that the industry has grown to US$35.3 trillion in AUM, a growth of 15% in the last two years, this means that sustainable investment make up a total of 35.9% of total assets under management globally (GSIA, 2020). Sustainable investing have been growing at a different pace in different regions, the United States and Europe continue to represent more than 80% of global sustainable investments during 2018 to 2020. In the United States, the US SIF foundation reached a $17.1 trillion of assets managed in accordance with sustainable investing strategies, a 42.5% increase from the $12.0 trillion identified in the two previous years (USSIF, 2020).

More prominently, in 2006 the United Nations launched the Principles for Responsible Investment (PRI), which works to promote sustainable investment through the incorporation of environmental, social and governance elements. In 2006 there were only about 250 PRI signatories whereby in 2021 the number of PRI signatories surged to more than 4000 signatories with over US$100 trillion in asset under management (UNPRI, 2021). The PRI is one of the largest global networks that includes a variety of financial firms that are publicizing their commitment to integrating ESG elements into their strategic planning and investment process, and thereby the PRI signatories will play a crucial role in our study.

Due to the substantial growth of the capital allocation power that institutional investors hold in the capital markets and the upraise of green finance we find it extremely important to examine how capital is being deployed in this new era where non-financial motive have become an essential consideration to investors next to return generation. Quoting James Purcell, the global head of sustainable and impact investing at UBS: “Sustainable investing has moved out of the shadows and into the mainstream. Clients want to know where their money is invested and, increasingly, what the impact is” (UBS, 2019)

In a recent survey study, moral and reputational motives were among the highest reasoning for in-

vestors to choose to be involved in climate risk reduction (Krueger et al., 2019). We will discuss the investor perspective in association with the ESG factors in further detail in the literature review section, as well as other challenges that face ESG, which will include reporting and disclosure, followed by the mixed conclusions that are present in the literature regarding return generation in sustainable finance.

We aim in our study to contribute to current literature through showing empirical results on how fund flows respond to ESG connections. In light of the wide variance in results regarding ESG ratings and the divergence in methodologies promoted, we shift our focus away from investors' reaction towards the ESG ratings and instead we conduct an analysis covering two different events where mutual funds signal an association with ESG. The first event is by becoming a PRI signatory, and the second event is by changing the fund's name from an original non-ESG name to a new name that includes an ESG indicative keyword, which could signal a sustainable investment mandate. In addition to fund flows reaction, we measure the performance of those funds that incurred a greening event, and whether those events have materially influenced returns.

This paper is organized as follows. In Section 1 we cover the literature surrounding ESG and sustainable investing, followed by our data construction, in section 3 we show our methodology, in section 4 we present the results found, and finally section 5 concludes our study.

1.1 Defining and understanding ESG

ESG which refers to the incorporation of the three elements surrounding the environmental impact, social responsibility and governance is a relatively new keyword used in the industry. Nevertheless, the concept has always been present in previous decades but was referred to differently. In a recent report by the CFA institute research foundation, they summarize the elements of E, S and G in the following manner; the environmental element includes everything that revolves around climate change, carbon emissions, water and energy management, the use of natural resources, pollution and waste. The social aspect which has also been known in different terminologies, like corporate social responsibility (CSR) and social responsible investment (SRI) in the past, revolves around workforce health and safety, diversity, customer and product responsibility, community relations and charitable activities. Finally governance, which was the most important element of E, S and G in the past, covers shareholder rights,

composition of board of directors, management compensation policy, bribery and fraud (Matos, 2020).

Recently, one of the world's largest asset management firms BlackRock have conducted a survey to examine which element of the three components is more important to investors. Previous findings as well as the survey has suggested that investors gave the largest weight of importance towards governance in prior years, however in recent years this interest has shifted towards the environmental impact as well as social responsibility. "Survey responses show that climate change is perceived as the most urgent issue that investors wish to address. Over the next 3-5 years, we see climate remaining the main focus but with a growing emphasis on social. This may in part be due to greater societal awareness that has stemmed from COVID-19 and from other developments nationally and internationally; and in part due to greater transparency by companies on these social issues." (BlackRock, 2020).

The noticeable interest towards sustainability calls for further understanding of the financial ecosystem that have caused the institutionalization of ESG factors. A recent report conducted by the Organization for Economic Co-operation and Development (OECD) suggests that the ESG financial ecosystem is inclusive of the following: 1. financial issuers, those who will receive an ESG rating, meaning an issuer that supplies equity or debt to the financial markets. 2. ESG rating providers who publish a rating for the financial issuers based on certain quantitative and qualitative methodologies that take into account the issuers' own disclosure of information. There are several well known ESG rating providers such as Sustainalytics, Bloomberg , Refintive (previously known as ASSET 4) and MSCI. 3. ESG index providers, who develop ESG indices after the ratings are established. Those indices are used by several institutional investors, as well as other parties in the industry where it creates an opportunity to track and benchmark the performance of ESG assets, use them in ETF products, etc. Some examples of ESG index providers include MSCI and FTSE. 4. ESG users such as investors, asset managers and regulatory bodies, all of which whom might use the ESG ratings to conduct further action (Boffo and Patalano., 2020).

To say the least, ESG ratings have played an essential role in sustainable finance as well as the financial ecosystem, where the ratings have been used by different parties in the industry, however the methodologies adopted by the rating agencies have raised major concerns as well as different challenges which we will discuss in further detail in the literature section and give reasons to why

we have shifted our focus away from these ratings.

In terms of implementation, there are different investment approaches to integrate ESG into a user's mandate, that is to be more involved in responsible investments and incorporate that into their investment framework. The approaches are not mutually exclusive and users could simultaneously apply more than one. The least aggressive form of involvement can be done through a screening process which can either be positive or negative screening. Positive screening is where investors focus on including stocks that meet their ESG requirements. Moreover, negative screening which is the most widely applied sustainable investment strategy, is where investors exclude stocks that are from cretin sectors, and most likely away from sin stocks, such as companies that operate in gambling, tobacco, weapons, etc. The next level of involvement can be achieved through integrating ESG factors into the financial analysis of stock picking, this approach has been growing at a relatively high speed per year according to a report by (MckinseyCompany, 2020.). The final and most impactful way to be involved as an investor would be through active engagement in the firm, that is through inclusion of ESG considerations into all or some key aspects of an investors' investment process. Usually a sign of such integration would include a dedicated governance to oversee the validity of such process. Some examples of this approach could include using the shareholder power to influence activities conducted in the line of business, or by internal voting, or by collaborations and co-investments, etc. A study suggests that major institutional investors with larger AUM and ownership play prominent role in adding value to the firm by becoming more engaged in ESG compliant activities which then results in stronger fundamentals for the company (Dimson et al., 2015).

In this regard, we note an evolution of responsible investments in the industry and ESG considerations are growing widely, particularly towards the E (environment) and S (social) elements, and we recognize the key role investors play in the progression of ESG practices.

2 Literature Review

The literature surrounding green finance have been growing at an accelerating pace lately, particularly because sustainable investment have had a wide attention from investors and policymakers, which has been reflected in the growth of assets managed under the green mandate. Previous studies have

covered different aspects of impact investing, however, we would like to shed light on what we believe to be the main issues concerning ESG factors, which are the following: 1. ESG measurement and disclosure, which have helped researchers in quantifying ESG factors, but raised many

discussions and calls from involved parties to address the problems concerning lack of transparency and comparability. 2. The performance of ESG, how the measurement of performance have been inconclusive so far due to various reasons, and finally 3. The investor perspective, and how they are involved in maintaining the rising trend of sustainable investments and what role they carry in the financial ecosystem.

2.1 ESG measurement and disclosure

One of the main problems concerning ESG is that there are numerous measurements of ratings and agency providers to which each has a different criteria and methodology, this issue have caused turbulence in concluding a unified output on the impact of ESG for both academics and asset managers. This phenomena is supported by the literature where a recent study showed a considerable divergence in ESG ratings among seven different data providers which are: Sustainalytics, Bloomberg , Refintive, Inrate, MSCI IVA, KLD, and FTSE. The study found the correlation among those providers to be less than 50% in terms of all combined ESG elements. In terms of separate components of E, S and G, they found that the factor with the lowest correlation to be governance at 15.5%, 33.0% for social and 45.5% for environmental (Gibson et al., 2019). In a relatively recent study, a comprehensive research has been done on multiple academic work in accounting, management, economics and finance showing the impact of corporate social responsibility (CSR) disclosure variations on the results of academic research, which sheds light on the wide variety of results in academia and the industry as well (Christensen et al., 2021) Moreover, recent articles and studies have articulated on the lack of standardization and disagreement among rating providers, as well as inaccurate reflection of the rating in accordance with the actions of firms (Matos, 2020, Doyle, 2018, Chatterji et al., 2015). We recognize that ESG rating providers play a valuable role in quantifying sustainability with firms' associations, however the lack of consistency in ratings rises some concerns, and comparability enhancement is much required. The fact that the ESG ratings are mostly based on companies'

own disclosure through annual reports and public documents, which could lack transparency and truthfulness, suggests a further problem because companies can claim to be environmental friendly or socially responsible through their reporting but not necessarily through their actions. Precisely, some studies have found that good reporting standards is not necessarily equivalent to good practice, particularly when it came to the firms' environmental impact. Suggesting that the disclosures of firms have become more of a marketing gimmick rather than a long-term actionable commitment (Christensen et al., 2021, Li and Wu, 2018, Cho and Patten., 2007). Interestingly one of the studies suggest that firms with more harmful environmental impact are more likely to produce higher levels of disclosure than other firms in less harmful sectors, the authors conclude that such firms use disclosure as a legitimizing tool (Cho and Patten., 2007). In another study, it was intriguingly found that the more information a company discloses the more likely it will have an increased divergence in ratings (Kotsantonis and Serafeim, 2019). These problems call for a serious intervention from regulators and policymakers to set a clear and consistent methodology among firms and agency-rating providers, particularly because greenwashing has also been on the rise due to the demand for sustainable investments (Yang, 2021). To dive deeper into the issue of divergence, a recent study conducted by (Yoo and Managi, 2021) suggested using two different forms of ratings to evaluate how those ratings differ on their impact on firms' financials and performance. They used Bloomberg ratings which is claimed to be based on company disclosures and public data, hence referred to by the authors as a 'media rating' since they are based solely on publications of firms without actual measure of the implementation process of those claims. Then they used the MSCI ratings, which claims to be based on the firm's actual activity, and they referred to it as an 'Action rating'. Thus, the paper concludes the impact on companies' performance in comparison of these two rating agencies. Their results show a different outcome for each rating, suggesting that the media disclosure has an impact on short-term profits while action rating influences long-term financial performance. Some authors also note that different countries around the world has developed different incorporation and interest towards ESG at a different pace and are going forward at a different speed, particularly focusing on developed nations, they are suggesting that the European Union has been ahead in terms of taking serious measures towards the 'E' element of ESG, which is to minimize environmental harm, whereby on

the other hand, the United States doesn't have a clear regulatory framework yet, including the U.S. Securities and Exchange Commission (SEC) who have not set any clear standard for ESG disclosure (Matos, 2020). Nevertheless, it is imperative to admit that ESG rating providers have helped in quantifying the ESG factors, making them measurable to allow greater room for further research to be conducted in the area of green finance. Another benefit of publicizing ratings and providing disclosure is the reduction of information asymmetry between firms and investors, where a study found that institutional investors in particular are able to exploit corporate social responsibility (CSR) disclosures to predict long term value and performance (Harjoto and Jo., 2015, Cho et al., 2012)

2.2 The performance of ESG investments

In the previous section, we discussed the main problem that revolves around ESG factors, which was in relation to different criteria and methodologies conducted by different rating providers, this divergence have caused different conclusions and mixed results in the literature regarding the impact of ESG investments on performance. We have found a collection of results in the literature on the return generation aspect of firms and portfolios that integrates ESG factors. Where some studies have found a positive impact of ESG incorporation on mutual funds' performance (Giese et al., 2019, Elghoul et al., 2017, Dimson et al., 2015, Eccles et al., 2014, Margolis and Walsh., 2003, Orlitzky, 2001Giese et al., 2019, Elghoul et al., 2017, Dimson et al., 2015, Eccles et al., 2014, Margolis and Walsh., 2003, Orlitzky, 2001). While others have found a negative impact (Otten et al., 2005, In et al., 2019). At the firm level, some authors have found that strong ESG ratings on critical sustainability issues records a better performance than firms with inferior ratings on the same issues (Kotsantonis and Serafeim, 2019). Additionally, some authors have found that climate change, particularly due to increasing temperatures have impacted firm sales and thereby impacting firms' financials negatively (Addoum et al., 2019). That being said, the majority of the literature surrounding mutual funds and corporations suggests that there is merely any difference between sustainable firms and other conventional ones (Hamilton et al., 1993, Statman, 2000, Schroder, 2003, Geczy et al., 2005, Renneboog et al., 2008, Naffa and Fain, 2022). It is also critical to note that many of the literature covering responsible investing separates the ESG components and conducts

studies of a single component without the other. Meaning some studies focus on the environmental impact while others focus on the social, or the governance alone, this separation can also be a reason for the variance of results we find in prior studies. In the past, studies were heavily focused on the 'S' component of ESG, where their focal point of analysis revolved around corporate social responsibility (CSR). In some studies, the capital asset pricing model (CAPM) was used as means to evaluate the impact of corporate social responsibility (CSR) on return generation (Alexander and Buchholz, 1978). A more recent study examines this phenomena in a similar manner, showing that greener firms tend to earn lower ex ante returns using the capital asset pricing model (Lasse Heje Pedersen and investing:, 2019). In other studies they focused on the firm's financials and the use of profitability ratios to reach a conclusion on the impact of socially responsible investments on the performance of firms, and found very little connection (Aupper and Carroll, 1985). Others have used different empirical models to examine the relationship between corporate social responsibility and performance but found a weak supporting link between CSR and financial performance. (Cochran and Wood, 1984.). Moreover, a study found that there are different economic implications from implementing different elements of CSR, each of which impact financial performance differently (**?**) Furthermore, another study has showed that the time factor can also play a role in reaching a conclusion on the impact of ESG on financial performance, (Borgers et al., 2013) found that there was no impact on performance due to integrating corporate social responsibility from 2004 to 2009, yet in the period covering 1992 till 2004 they found that firms with high CSR integration have outperformed firms with low CSR integration. In terms of the 'E' component of ESG, some authors found that taking environmental consideration into the strategic planning of the firm lowers the long-term cost and therefore strengthens the financial record of the firm (**?**). Some authors have conducted a study on firms operating in the financial and manufacturing sectors, covering 29 countries, and found that it took at least 1 to 2 years for performance to be enhanced through environmental considerations being integrated into the business line of firms, which was then reflected in a robust return on assets and other financial indicators. They also found that incorporating environmental considerations was more likely to benefit firms in developed countries more than other firms in less developed countries (Jo et al., 2015). Likewise, studies have found that the environmental aspect in particular

continues to play a risk and cost reduction role in the long-term for firms (Ilhan et al., 2020, Hoepner et al., 2020). More notably, when it comes to environmental impact, studies have found that climate risk have been reflected in asset pricing models and that the market factors in environmental risks like carbon emission into stock prices (Bansal et al., 2017, Engle et al., 2019, Kruttli et al., 2019). Additionally, the 'G' component of ESG, revolving around corporate governance used to impact the generation of abnormal returns prior to the era of the 2000s, however this empirical finding no longer holds, this is due to increased attention towards governance from market participants. Nonetheless, some studies concluded that the well-governed firms tend to have lower cost of capital and appealing market valuations (Bebchuk et al., 2013). In another light, some authors have based their research on the risk premium theory, which in simple terms suggests that the greater the risk an asset carries, the greater the return that should be generated. Thus, they concluded that there is greater risk associated with sin stocks therefore those stocks should earn greater return (Hong and Kacperczyk, 2009) to further investigate this theory we preset a somewhat similar research framework where the authors conducted a recent study on environmental risk, particularly on carbon emission, and found that stocks with higher carbon emissions have a higher stock return in Europe, Asia and the US (Bolton and Kacperczyk, 2021). Likewise, other authors have found that firms with high ESG ratings tend to have lower return due to the lower risk associated with the asset, suggesting that the asset pricing model rewards investors for bearing higher risk, and thereby investors who are ESG compliant should not expect greater returns (Cornell, 2020). Consequently, in another study the authors reconfirm to the fact that firms with higher ESG ratings have lower risk and hence lower return, which is also aligned with the risk premium theory, suggesting that ESG investments could be used as a risk management tool but not particularly a mean to generate alpha or excess return (Hoepner et al., 2020, Dunn et al., 2018Hoepner et al., 2020, Dunn et al., 2018). In support of this phenomena recent research showed that high ESG rating stocks have had a lesser hit from covid-19 pandemic, suggesting that such stocks carry less downside and financial risk which enabled them to reduce the exposure to market turmoil (Loof et al., 2021). Conjointly, funds that are seeking a sustainable approach to their investments are more likely to have a smaller universe of investment opportunities, thereby reducing their ability to pick the best performing stocks based on fundamentals, but rather

make a choice based on sustainability involvement or negative/positive screening, which then could cause lower chances of earning higher return (Pena and Cortez, 2009). Additionally, other studies have showed that there are greater costs associated with implementing an ESG compliant portfolio due to monitoring costs and other expenses that can be economically significant (Geczy et al., 2005, Otten et al., 2005). Studies suggest that ESG compliant investors are more likely to give up abnormal returns for their moral incentives, and they are more likely to incur agency costs. (Renneboog et al., 2008) Finally, we looked at various meta-analysis studies that covered ESG literature, one of which conducted by (Friede et al., 2015) where the authors covered 2200 publications of which 90% of the studies reviewed resulted in proving that there is no negative relationship between ESG and financial performance. However, it is essential to note the limits of the meta-analysis, since the comparison of those studies seemed somewhat problematic, that is because not all three ESG factors were used across all studies, some included a single factor without the other, the time period of the studies differed substantially, the methodologies used were not standardized, all of those points make the conclusion of the meta-analysis somewhat questionable. It seems that even the studies surroundings ESG factors cannot be comparable, yet again, due to the lack of standardization.

2.3 The investor perspective

So far we have addressed the attention green finance has received from parties involved in the industry, and the studies conducted have been relatively new and continue to be on the rise where a considerable number of working papers have been analyzing different areas of sustainable finance. We particularly recognize the importance of understanding the investors perspective towards responsible and ESG compliant investments and find it an essential section to be further explored, as investors play a key role in shifting the industry and changing investment mandates. We also recognize a shortage in the literature in understanding and predicting investors' behavior. Nevertheless, in this section we will discuss the recent studies conducted by various authors and where we believe our study can add additional value to the literature. In a recent survey study done by (Krueger et al., 2019) they found that some investors are keen to address the environmental impact of their investments due to one of the following key reasons: ethical considerations, protecting their reputation as investors, and

finally the belief that the portfolio's risk will be reduced by being considerate of climate change. They also found that those investors, especially the larger long-term orientated ones who are interested in reducing climate risk are more likely to approach those risks by becoming actively engaged, rather than by divestment. Relevantly, some authors have found that asset managers invest their capital into environmental friendly stocks so they would not lose their current investors (Ceccarelli et al., 2021). Ethical considerations are not per se a recent motive for stakeholders, economists (Benabou and Tirole., 2010) have conducted research on the psychological reasons concerning pro-social behavior and found that stakeholders tend to be motivated by three reasons to engage in responsible activities, which were: intrinsic altruism, material incentives and image concerns as well as self-esteem. We might be seeing an increased sentiment towards investors image and how they want to be perceived, or investors might be actually realizing the role that they can play in capital markets to mitigate the social and environmental risks facing the world. According to Harvard Business Review, ESG elements have become a major consideration for institutional investors. Their study included the biggest asset managers such as BlackRock, Vanguard, and State Street, as well as giant asset owners such as the California Public Employees' Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS). They reassure in their study that those investors are taking serious steps into incorporating sustainability into their investment mandate and that they are acting upon the green framework (Eccles and Klimenko, 2019). Moreover, investors with a long term horizon tend to hold portfolios with higher ESG ratings (Gibson et al., 2019) they are also are more likely to unlock value from sustainable investments and be able to benefit from ESG integration, as those integrations take some time to be reflected in the financial performance of firms. In another study by (Hartzmark and Sussman., 2019) , they have shown valuable results of the investor perspective towards sustainability. They show that investors have reacted heavily to ESG ratings which were published by Morningstar in 2016. Especially when the ratings were at the extreme ends, where US funds that received the highest ESG score have had an increase of net fund flow to more than $24bn, while those that have received the lowest ESG score have faced net fund redemptions of about $12bn. They also show that those reactions were not premierly from institutional investors alone, but also were inclusive of retail investors as well. The study also found that there was no improvement in

performance of funds that received a high ESG rating. This raises an important question; has the perception and reputation of investors become more important to them than return generation in recent years due to regulatory authorities and social pressure. So far we can establish that the non-financial motive have played a key role in green finance, not only for institutional investors but for individuals as well, a study concerning a pension fund have showed that 68% of participants would rather have their funds invested in responsible assets (Bauer et al., 2021). Moreover, individual investors are found to be less motivated by return generation, and are more influenced by placing their wealth into socially responsible mutual funds (Riedl and Smeets, 2017). Following our coverage of the investor perspective in relation to ESG integration, we find it extremely important to examine the flow of capital and to understand how investors react to such trends in the market, we find a shortage in the literature concerning fund flows, practically towards 'signaling' greening events. We have come across a wide range of studies that focus particularly on the ESG ratings and how they relate to performance, we on the other hand believe there's further room to examine more than just the impact on financial performance in relation to the ratings published by ESG agency providers, but to also measure the investor behavior, as they play an eminent role in capital transfer. We shift our focus away from ESG ratings due to the limitations we have discussed in the previous section and rather focus on 'greening' events that signal to investors an ESG connection. In the next sections we will discuss in details how greening events impacted capital flows as well as funds' performance.

3 Data

3.1 Sample selection

We sourced our sample from two different databases. First, we use the Center for Research in Security Prices (CRSP) Survivorship-Bias-Free US Mutual Fund Database to extract mutual fund information. We focus particularly on actively managed U.S domestic equity funds, and thereby we omit fixed income, money market, balanced, index, exchange-traded, and variable annuity funds. Additionally, we only keep funds with the following CRSP objectives code to classify the domestic equity funds in our sample into seven categories which are: large-cap funds (EDCL), mid-cap funds (EDCM),

small-cap funds (EDCS), micro-cap funds (EDCI), growth style funds (EDYG), growth and income style funds (EDYB) and income style funds (EDYI). Our sample period spans from January 2003 to December 2020. The CRSP database contains monthly data on returns and total net asset value, however the summary characteristics of mutual funds such as fund name, portfolio turnover, expense ratios and inception date, are published on annual basis. Therefore we merge these two datasets using the funds' unique identifier number. To adjust for any biases in the CRSP database we exclude returns where the report date of the previous non-missing return is more than 35 days, and we keep funds that have at least 60 monthly return observations with no gaps greater than a year. Following the literature (e.g.,Kosowski et al., 2006), for funds with multiple share classes, we aggregate data to the fund level by taking a weighted average of the share class-level characteristics, with weights equal to the beginning-of-month total net asset value of each class. After adjusting our dataset, we start screening for funds that have changed their name to include a word that signals their involvement with the ESG factors or sustainability. We used the CRSP identification number to spot the name changes across the years, as the identification number does not change for each fund even when the name of the fund changes. A total of 11 words were used in our screening process which are the following: Ethical, Social, ESG, Sustainable, Green, Environment, Sustainability, SRI, Impact, Responsible, Governance.

After scanning for these keywords across our dataset, we extract a total of 33 funds which have changed their name across the span of our sample period. In Appendix 1, we show a full list of the funds that changed their name. The table shows the original names of the funds and what they changed into, in addition to the funds' identification number as represented in the CRSP dataset for further reference. After identifying the funds that have included an ESG word into their fund name, we create a new variable that computes the exact month where the event took place to be able to generate a timeline for our scope of analysis. Because the CRSP dataset offers the fund names on annual basis we extracted the exact month of the event date (the name change event) from the U.S securities and exchange commission (SEC) [1] where we screened for each fund's prospectus and exported the exact date for the name change to get more precise data.

We notice an upward slopping trend of funds changing their name over the years to include an

[1]We extracted mutual funds prospectus from U.S securities and exchange commission (SEC) website which can be accessed through the following link: https://www.sec.gov/

ESG indicating word, which is in line with (Cooper et al., 2005) where they showed that mutual funds have the desire to follow hot styles or what is trending in the industry. As recent studies and reports showed an increased interest in the market towards ESG and sustainability (Matos, 2020).

Figure 1. shows the cumulative number of funds that have changed their name during the span of our sample period which is from 2003 till 2020. We notice an increased number of funds that changed their name to include an ESG indicative word particularly in last few years. Figure 2. shows the most frequent words that were used by funds who have changed their name to include an ESG compliant word. The most frequent word used by funds after changing their name is "Sustainable" followed by the word "ESG", where 16 funds have changed their name to include the word "Sustainable" and 11 funds changed their name to include "ESG" followed by 3 funds that changed their name to include the word "Impact." We also notice that none of the funds in our sample have used the following words: Sustainability, Green, Governance, Ethical and Environment. Second, we extract the Principles for Responsible Investment (PRI) data from the UNPRI website. The Principles for Responsible Investment were created by the United Nations on 27 April 2006, to encourage and support investors and policymakers to understand the investment implications of environmental, social and governance (ESG) factors, and to incorporate those principles into their policies and investment framework. The PRI dataset includes the following: The name of entity that signed the PRI, signatory category, headquartered country and signature date. Signatory categories include asset owners, investment managers, and service providers.

PRI signatories are expected to commit to the following six principles [2] : (1) to incorporate ESG issues into investment analysis and decision-making processes. (2) to be active owners and incorporate ESG issues into their ownership policies and practices. (3) to seek appropriate disclosure on ESG issues by the entities in which they invest.(4) to promote acceptance and implementation of the Principles within the investment industry. (5) to work together to enhance the effectiveness in implementing the Principles. (6) to report their activities and progress towards implementing the Principles. The PRI signatories are expected to adhere to these principles and are required to provide detailed reports on their involvement with ESG compliant activates and how they have been incorporating those factors into their investment mandate on annual basis. The PRI signatories can

[2]We extracted PRI principles from UNPRI website which can be accessed through the following link: https://www.unpri.org/

be removed from the list if they do not maintain their engagement with the PRI principles.

The number of PRI signatories available from April 2006 (the establishment date of the PRI) till the end of our sample period December 2020, were 4,864 global PRI signatories. From this list we start identifying the signatory category that we are interested in keeping for our scope of research. After obtaining the data from the PRI website, we continue on by manually matching the name of family names in the PRI signatory list with the family names available in our CRSP dataset. After our matching process we recognize that we were able to match 137 family firms that signed the PRI with our CRSP dataset. The total number of families in our CRSP sample totaled to 905, thus we able to mtach 21.9% of funds in our sample which totals to 1,189 out of 5,424 funds. There was rapid growth in the number of PRI signatories over the years which we illustrate in Figure 3. by showing the number of cumulative PRI signatories from 2006 till 2020. After the matching process and finalizing the PRI signatory list, we create another timeline for our PRI signatory data to be able to construct our event analysis in the following sections

3.2 Variable construction

We first start by creating dummy variables for our ESG funds and PRI funds where the variable ESG will take a value of 1 on the event date of the name change and thereafter, and 0 for funds that never changed their name to include an ESG indicative word or a value of 0 before the name change. Similarly, our PRI variable takes a value of 1 on the event date of the PRI signatory and onwards, and a value of 0 before the event date or for funds that never signed the PRI. In our analysis we focus on fund flows and performance, consequently to measure the flows for each fund we use the following formula:

$$Flows_{j,t} = \frac{TNA_{j,t} - TNA_{j,t-1}(1 + R_{j,t})}{TNA_{j,t-1}}$$

$Flows_{j,t}$ t is defined as the net growth in fund assets beyond accumulated return, which reflects the percentage growth of a fund in excess of the growth that would have occurred had no new funds flowed in and had all dividends been reinvested. $TNA_{j,t}$ is the fund total net assets or the dollar value of all shares outstanding at time t , and $R_{j,t}$ is the fund's return at time t for fund j. To

reduce the effect of outliers, we winsorize the monthly flows at the 1% and 99% levels.

We also use other variables that are widely used in the mutual fund literature to control for various fund characteristics (Cooper et al., 2005, Carhart, 1997) These include: (i) fund size measured by the total net asset value (TNAV) of the fund, (ii) expense ratio that is defined as total annual management, administrative, and 12b-1 fees and expenses divided by year-end total net asset value, (iii) portfolio turnover ratio that is defined as the minimum of aggregate purchases and sales of securities divided by the average total net asset value over the calendar year and is commonly used as a proxy for trading costs, and (iv) fund age measured as the number of months since the fund's inception.

3.3 Descriptive statistics

In our sample, we have $5,424$ total number of funds, $1,189$ of which signed the PRI and 33 funds have changed their name to include an ESG indicative word. Table 1 reports descriptive statistics for our set of variables. Panel A summarizes our full sample, which includes $603,733$ average number of observations with an average total net asset (TNA) of \$1785.5 million, average expense ratio of 1.0% per year and an average turnover ratio of 73% per year. In terms of performance and fund flow, the funds in our sample record an average monthly return of 0.9% and an average monthly fund inflow of 1.6%. In addition, we present the characteristics of our restricted sample, which is shown in Panel B and C, covering the PRI signatories sample and the funds that changed their name to ESG, respectively. We note that funds that have signed the PRI tend to be bigger in size and older in age at an average total net asset value of \$3322 million and an average 158 months since inception, respectively. While funds that change their name to be inclusive of an ESG indicative word tend to be smaller in size and slightly older at an average total net asset value of \$582 million and 171 months since inception. Moreover, funds that change their name to include an ESG word have higher expense ratio than funds that sign the PRI with an average expense ratio of 1.2% per year vs 0.8% per year, respectively. They also have a higher turnover ratio at an average of 83% vs 62% for PRI funds. In our sample, we recognize a right skewness across observations and different variables, more prominently in fund flows where an average annual fund flow for funds that signed the PRI is 18.4% while the median is -2.5%. For funds that have changed their name to ESG we see a similar pattern

where the average annual fund flow is 14.3% while the median is -7.7%. In terms of performance, which is indicated by the raw monthly return, we note that it is compatible across panels in our sample. To further investigate the characteristics of those funds that changed their name to include an ESG word across the years or have signed the PRI, we run a logistic regression where we use the events dummies as the dependent variable (PRI and ESG). In Table 2 we present the results which indicate that funds are more likely to change their name when inflows drop, where the 12-month fund flow ratio is 17 significantly negatively related to the likelihood that a fund would sign the PRI or change their name to be inclusive of an ESG word. In addition, we also note that those funds tend to be older in age especially for the PRI sample which is aligned with our previous findings in the summary characteristics shown in Table 1, with less frequent trading and moderate raw cumulative return. Those findings are consistent with (Cooper et al., 2005), whose findings refer to funds that change their name based on what is trending in the market or what is the new 'hot style', the study concluded that older funds that experience a drop in fund flows tend to change their name to follow the current glamorized investing approach in the market. Due to an acceleration of capital deployment into sustainable investments we believe that ESG funds could be the new 'hot style' in the industry that is attracting flows whenever there is a signal that broadcasts ESG involvement like changing the name of the fund or by signing the PRI. In the next section, we explore this trend further. .

4 Model

To supplement our previous findings, in this section we briefly describe the models that we will use to examine the implications of recording an event that relates to greening the funds, on fund flows and performance, whether by including an ESG word into the fund name or by becoming a PRI signatory. We start by conducting a panel regression, for each category separately, to test the impact on fund flows. Using the following equation:

$$FLOW_{j,t+1} = \alpha_j + \beta^p PRI_{j,t} + \gamma' x_t + \varepsilon_{j,t} \tag{1}$$

The dependent variable detonated as $FLOW_{j,t+1}$ is the net growth in fund assets beyond

accumulated return for fund j at time $t+1$. $\beta^p PRI_{j,t}$ is the PRI dummy which acts as an exploratory variable to test the impact of becoming a PRI signatory on fund flows. As explained in the variable construction section; our PRI variable takes a value of 1 on the event date of the PRI signatory and onwards, and a value of 0 before the event date or for funds that never signed the PRI. In addition, we include other fund characteristics as control variables like the 1-month lagged return, 1 month lagged expense ratio, 1 month lagged turnover ratio. We include the 1 month lagged flows ratio, since it has been proven in previous literature that fund-flow demonstrates autocorrelation, making the lagged fund flow a significant regressor when explaining the predicted value of future fund flows. (Zeckhauser et al., 1991, Fant and ONeal, 2000) We also include the log of fund size, which is based on the total net asset value of the fund, and finally, we include the fund age in months since its inception. The residuals donated as $\varepsilon_{j,t}$ are assumed to be independent and identically distributed.

Consequently, because we do have two separate events in our study, we run the same equation, for funds that changed their name to include an ESG keyword. Where the main explanatory variable will be donated as $\beta^e ESG_{j,t}$ referring to the ESG dummy that will examine the impact of changing the funds' name to include an ESG word on the movement of fund flows. The ESG variable will take a value of 1 on the event date of the name change and thereafter, and 0 for funds that never changed their name to include an ESG indicative word or a value of 0 before the name change.

The second part of our study is revolved around the performance of those funds that incurred a greening event. In this section we want to examine if incurring a greening event has influenced returns materially. In the literature, we come across various studies that have measured ESG performance against the ESG ratings provided by rating agencies, in our study we focus particularly on events that were committed by the mutual funds in our dataset. Therefore, we present the following equation to examine the impact on performance:

$$Return_{j,t+1} = \alpha_j + \beta^e ESG_{j,t} + \gamma' x_t + \varepsilon_{j,t} \tag{2}$$

Where the fund's monthly return is the dependent variable donated as $Return_{j,t+1}$, for fund j at time $t+1$, and the control variables include the following: total net asset value, size, age, monthly

return, expense ratio and turnover ratio. The control variables will be identical to our fund flows equation, where the main explanatory variables will be PRI dummy donated as $\beta^p PRI_{j,t}$ and the ESG dummy donated as $\beta^e ESG_{j,t}$.

To improve our analysis of performance, we extend our regression model to examine the excess return to measure the risk adjusted performance instead of using the raw monthly return. Using the Carhart Four-Factor model (Carhart, 1997):

$$R_{j,t} - R_t^f = \alpha_j + \beta(MKT_t) + \beta(SMB_t) + \beta(HML_t) + \beta(UMD_t) + \varepsilon_{j,t}$$

Where $R_{j,t}$ is the monthly return for fund j at time t and R_t^f is the risk free rate. α (Alpha) is the risk adjusted performance for fund j, $\beta_i MKT$ is the excess return of the market subtracted from the risk free rate, $\beta_i SMB$ is the difference between large cap and small cap returns, β_{HML} is the difference between high and low book to market ratio portfolios, β_{UMD} captures the momentum factor. The alpha is is calculated for each fund using 36 months of daily returns data before and after the date of the each green event.

5 Results

In this section we present our findings from estimating Equations (1) and (2) above. In Table 3, we start by presenting an ordinary least square (OLS) regression shown in the first specification (1), we find a significantly positive relationship between the signing of the PRI and fund flows. Specifically, our estimate of the coefficient on the PRI signatory dummy is 0.009, and it is significant at the 1% level. Thereby we can conclude that mutual funds that sign the PRI experience an increase of 0.9% in their monthly flows, i.e., about 11% in their annual flows, this confirms the hypothesis that funds receive greater capital when they become PRI signatories.

We also notice a consistent pattern with prior literature in terms of other controlling variables such as the significantly positive relationship between the 1-month lagged return with fund flows, where the estimate of the coefficient for monthly returns is 0.058 at the 1% level, as investors tend to be less reluctant to deploy capital into funds that are earning a positive return (Chevalier and

Glenn, 1995, Sirri and Tufano, 1998). The results show that when fund returns increase, fund flows are expected to rise by 5.8% per month. Moreover, investors are more likely to want to pay less to cover the expenses of the fund and that is highlighted in the negative relationship presented in our model. This negative relationship has also been present in prior literature suggesting that investors do pay attention to the cost of mutual funds (Sirri and Tufano, 1998, Gallaher et al., 2006). Meaning the cost of the investments they are making influences their decision in their capital deployment process. Fund age and size seem to have a negative relationship as well with the fund flows, that could be a result of limited opportunities in the investment universe with bigger funds who also tend to be older, therefore those funds might be upholding restrictions on deploying further capital in the fund or rising capital, whether due to limited opportunities or cap restrictions, those elements could explain the negative relationship imposed in the results.

In the next specification (2), we add time and category fixed effects, to omit biases in the model. The category fixed effect is the 'style' of the fund which is offered in the CRSP dataset that specifies the cap size of the fund (large, mid, small) and the style (value, growth, income). We include the style fixed effect to isolate style preferences and ensure that our model is not impacted by such biases. The time fixed effect is based on the year-month to control for time variations in fund flows. Those specification allows us to control for any external impact that was either caused by the time factor or the style factor of the fund. The significant positive relationship have persisted and presented similar coefficient of 0.009 in our second specification as well confirming to the positive impact with becoming a PRI signatory on the fund flow at the 1% level.

In specifications (3) and (4), we run a similar analysis but instead of using the monthly flow ratio as the dependent variable, we use $log(1 + Flows)$, which renders the distribution of fund flows less skewed. The results verify our initial findings by showing a significant positive relationship with the PRI dummy. However while the PRI dummy remains significant with a direct relationship with fund flows, the impact is somewhat smaller with an estimate coefficient of 0.004 at 1% significance level, meaning that fund flows are increased by 0.4% per month, which is approximate to 5% per annum, when funds sign the PRI. Following our similar steps in the previous regression we continue with adding fixed effects as as a robustness measure to control for time and category variations, that is by

including the year-month fixed effect and the style fixed effect, which results in an increase 0.6% in the fund flow per month, and approximately 7% per annum, at 1% significance level. We also note an increase in the explanatory power of the model where the adjusted R-square slightly improves. While the PRI dataset presented significance in relation to the fund flows across all specifications, which verifies the direct relationship between becoming a PRI signatory and an increased fund flow, we find a different outcome on the other hand for the funds that changed their name to include an ESG indicative word. Where those funds, on the contrary, have showed mixed results across the different specifications and no significance. We show the diverged results in Table 4, where we have taken identical steps to run the analysis to be in line with our previous regression, hence by showing an ordinary least square (OLS) in specification (1) and a time and category fixed effect in specification (2) by accounting for the year-month time variation and controlling for style preferences, followed by substituting our dependent variable which was the raw monthly fund flow to instead using the $log(1 + Flows)$, in specification (3) and (4), where we run an OLS regression and fixed effect regression, respectively. We note no significance in relation to fund flows and the event of changing the fund name to include an ESG word across the different specifications.

Therefore, we can conclude a greater impact out of the two greening events, to be that of becoming a PRI signatory. Nevertheless, we recognize that the different sample size from the two events (33 funds that changed their name to include an ESG word vs $1,214$ funds that signed the PRI) can be a cause for the limiting results concerning the ESG sample and model. To further measure the persistence of this impact on fund flows by becoming a PRI signatory, we run an additional panel regression using the same model but with a different time-frame window. We restrict the sample to 36 months before and 36 months after the event date. In Table 5 we present our results where we once again we find significantly positive relationship between signing the PRI and monthly fund flows, where our estimate of the coefficient for our variable of interest, the PRI dummy is 0.004 at 10% significance level. Which is consistent with our previous findings in Table 4. We note similar results where fund flows are increased by 0.4% per month if they are listed on the PRI signatory list, which is approximate to 5% per annum. Notably, we also recognize a significant positive relationship between changing the name to include an ESG indicative word and the fund flows, in the reduced period of 36 months before and 36 months after the

name change. Where our estimate of the coefficient on the ESG name change dummy is 0.015, at the 10% significance level which indicates an increase of 1.5% per month. This suggest an annual increase in capital flows of 15% per annum, which is even greater than the impact of becoming a PRI signatory in the shorter term. Those findings create more room for further research, where we raise the question of whether we can attribute this positive significant relationship to investors rushing towards ESG funds shortly after they change their name to be inclusive of an ESG indicative word because they assume the holdings of the portfolio would change according to a more sustainable investment framework, and however after sometime investors realize that those changes are just cosmetic, which causes this temporary positive impact, and that it is unlikely for the impact on capital flows to persist in this category of greening events in our sample. This phenomena of investors being rational in deploying their capital depending on the claimed strategy by managers has also been noted in previous literature (e.g Cooper et al., 2005) where the increase in inflows might not be an irrational response from investors, on the contrary it is a rational reaction to noncosmetic changes in portfolios that shift their strategies.

The persevered direct relationship between becoming a PRI signatory and fund inflows can be attributable to the fact that there are funds that become delisted from the PRI due to being disengaged and unaligned with the PRI mandate (Humphrey and Li, 2021), which means if funds remain on the list of the PRI, this signals a long-term commitment to responsible and sustainable investments, which might attract greater consistent flows from investors. Unlike merely changing the name of a fund, which cannot be transparently and accurately measured in terms of incorporating the actual values expected from including an 'ESG' indicative word to the fund. This particular aspect of assuring whether the change in funds' name shifts the actual strategies and investment mandate of mutual funds to be more compliant with the ESG factors, has to be further tested. However, in our scope of analysis we can reach the conclusion that becoming a PRI signatory attracts greater investor flows after controlling for past fund returns and a variety of fund characteristics, while changing the fund name has a temporary impact on flows.

To further investigate the magnitude of the long term impact in comparison with the short term impact for funds that have incurred a greening event, we run an additional regression, where we keep all observations in our dataset, and we include time dummies which are $PRI\_3Years_{j,t}$ and

$ESG\_3Years_{j,t}$, where these dummies take a value of 1 for the time period covering one to three years after the fund conducts one of the greening events and 0 otherwise. We present the findings of the regression in Table 6, where the results show greater magnitude in the long-term for funds that have become PRI signatories, and as expected no significance for funds that have changed their name to include an ESG word.

After conducting our key analysis of how capital flows are influenced after mutual funds incur a greening event, whether by becoming a PRI signatory or changing the funds' name to include an ESG indicative word, we wish to further examine the implications of those events, particularly on the performance of funds. In our second model, we begin with regressing our variables of interest which is the PRI dummy donated as $PRI_{j,t}$ in our model, along with our existing fund characteristics that might affect fund flows such as expense ratio, turnover ratio, age and fund size, against the monthly return, which is our dependent variable, donated as $Return_{j,t+1}$ in our model.

In Table 7 we present our results for the two greening events. We first run an ordinary least square (OLS regression) in specification (1) where we note a positive relationship between becoming a PRI signatory and return generation. Specifically, our estimate of the coefficient on the PRI signatory dummy is 0.001 at the 1% significance level. The results indicate that becoming a PRI signatory causes an increase in the monthly return by 10 basis points and increases the annualized return of the fund by 120 basis points. Following our initial examination in Table 3, we follow similar steps to control for category variations using the style fixed effect and we present that in specification (2) where the results remain approximate with an estimate coefficient of 0.001 at the 1% significance level. Therefore, we can conclude that becoming a PRI signatory has a positive impact on both the performance of the fund and the capital flow. We then move on to our second category of the 'greening' events, which is funds that have changed their name to include an ESG indicative word. Where we continue by regressing our variable of interest, which is donated as $ESG_{j,t}$ t in our model against the monthly return, which is our dependent variable, donated as $Return_{j,t+1}$ 1 in our model. We present the results in the third column in Table 6, where we present an ordinary least square regression shown in specification (3) and then we follow by adding category fixed effects to account for any style biases, and we present the results in specification (4). The results generate a positive estimate for our variable

of interest, which is the ESG dummy for both specification with a coefficient of of 0.002 and0.003, respectively. However the impact does not hold since the results are not significant. Thereby we can conclude that the second greening event in our sample doesn't seem to have a significant influence on performance in either specification. In terms of the other controlling variables we see consistency in results where the 1-month lagged return is significantly positive with an estimated coefficient of 0.056 indicating a positive impact on predicted returns with an increase of 56 basis points per month. Moreover, the results show significance across the other controlling variables, particularly we note a significant negative impact on performance by the expanse ratio, turnover ratio and size. In Table 8 we present the daily Carhart four-factor alpha which is calculated for each fund using using 36 months of daily returns data before and after the date of the each green event. In specification (1) and (2)

6 Conclusion

In this paper, we have highlighted the growing interest for sustainable investments in the industry by showing the surging number of assets manged under the green mandate and we remained particularly focused on U.S mutual funds to examine the extend of this growing interest towards sustainability and the ESG factors, by creating a sample from two different greening events, which are by becoming a PRI signatory or by changing the fund name to include an ESG indicative word. We've seen a growing number of funds that committed to those events especially in recent years. Moreover, We investigated the characteristics of funds that incurred such events, and found that they tend to have a negative flow prior to the 'greening event', which rises questions against the motives of those funds, were they driven to ESG because of the substantial growth and attention responsible investments have received, and because they sensed investors' sentiment towards demanding greener portfolios, or was it a moral motive to commit to a long lasting change in their investment strategy. We conducted analysis to examine the implications on those events in relations to fund flows, and found a significant positive impact on capital flows, when funds become PRI signatories. This significant relationship persisted even when we changed the sample period, and when we controlled for variations in time and category, indicating that becoming a PRI signatory has a material impact on flows. However, changing the name to include

an ESG indicative word, had less of a persistent impact and more of a temporal influence on flows. It is interesting to have found a contrasting results between the two events, however, we attributed this phenomena to investors not wanting to position their capital based on the aesthetics of the fund, per se changing the fund's name without committing to changing the fund's holdings or mandate, since the impact on flows only lasted for the three year period after changing the fund's name, on the contrary the PRI signatories are expected to be well engaged in the responsible principles they advocate for, or else the fund would be delisted, of course this theory has to be further examined. We also measured the impact of those greening events on the performance of the fund and their subsequent returns, we found that becoming a PRI signatory positively impacts the fund's return, however, the second event where funds change their name to include an ESG word, had no material significance when it came to performance. We recognize in our study that investors have become driven to deploying capital into funds that signal a commitment to the ESG factors like signing the PRI, and that they are less materially impacted by other events that might be cosmetic like changing the name to include an ESG word. This suggests that we can expect a further shift, and a larger transfer of capital towards mutual funds that promote sustainable investing through a long term commitment. Therefore, the evidence in our study contributes largely to the growing body of literature concerning green finance, as well as benefits parties involved in the industry, as the study concludes the response of investors to two different greening events, one of which might hold a longer term commitment than the other. Moreover, we conducting the analysis around the signaling of ESG connection rather than ESG ratings that have had skeptical arguments in prior research. We continue to rise the question towards investors, to what extant are they influenced by social impact, as well as how much earnings are they willing to give up for the greater good or do they believe in the long term risk and cost reduction of sustainable finance.

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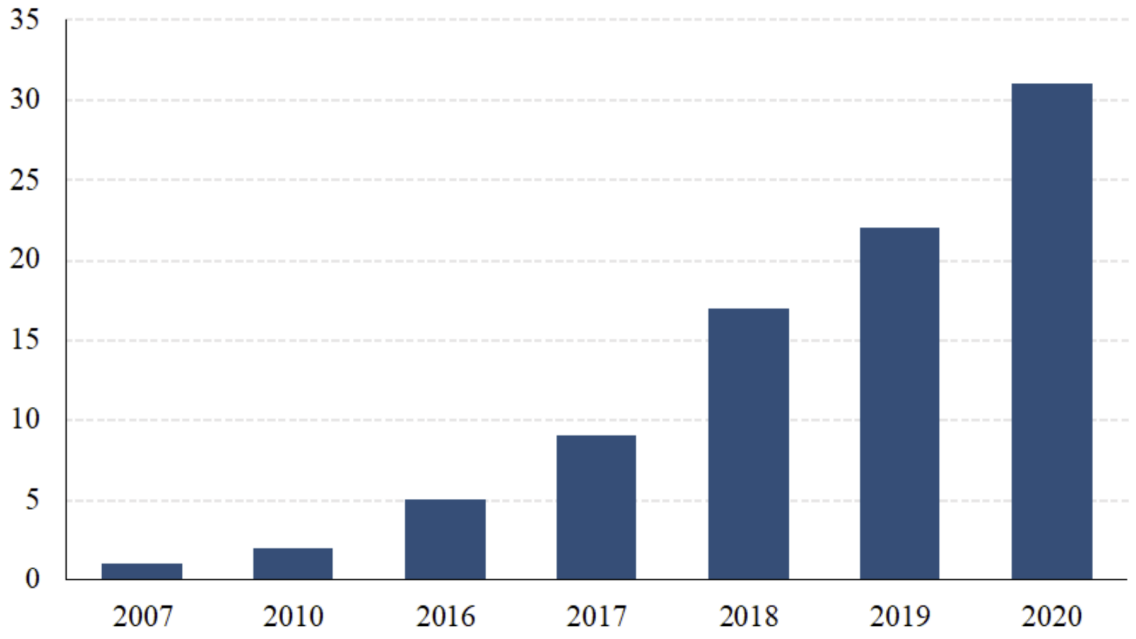

Figure 1: The number of funds that changed their name to include an ESG word. Representation of the accumulated number of funds that changed their name over the years to include an ESG word. The ESG word refers to any of the keywords used in our screening process (Ethical, Social, ESG, Sustainable, Green, Environment, Sustainability, SRI, Impact, Responsible, Governance).

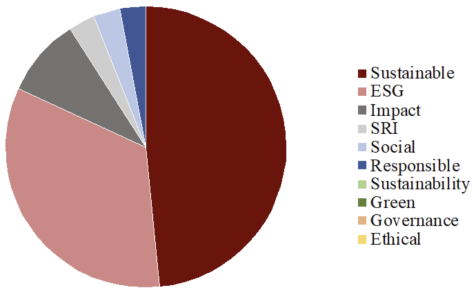

Figure 2: Frequency of key ESG words. The chart highlights the most frequent key ESG words that was used by funds that changed their name. Some funds used multiple ESG words in their names. The most frequent name used was 'Sustainable' followed by 'ESG'.

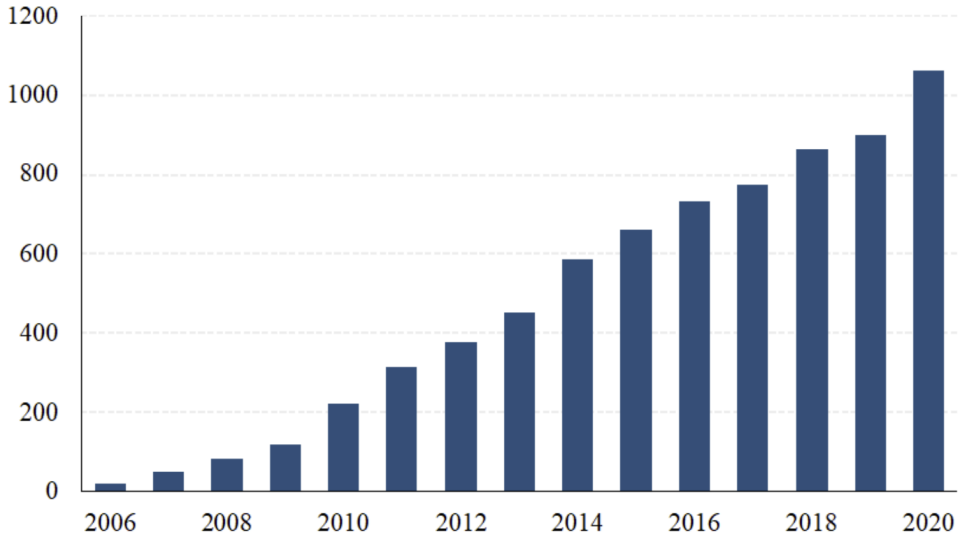

Figure 3: Growth of PRI signatories over the years. This figure shows the accumulated growth of funds that have signed the PRI from 2006 to 2020.

Table 1: Fund Summary Statistics

Summary statistics of fund characteristics for the two samples of US equity funds used in the empirical analysis in sections Data through Conclusion of the paper. In Panel A, we present summary statistics for the full sample of 5166 funds, and in Panel B for the restricted sample of 1063 funds that signed the PRI. In Panel C we show the restricted sample of funds that changed their name to include an ESG indicative word of 33 funds. Our samples span from the period of 2002 through 2020. Fund age is the number of months since the fund's establishment. Total net asset value (TNAV) is measured in millions of dollars. Expense ratio is defined as total annual management, administrative, and 12b-1 fees and expenses divided by year-end TNAV, and is expressed as a percentage. Turnover ratio is defined as the minimum of aggregate purchases and sales of securities divided by the average TNAV over the calendar year, and is expressed as a percentage. Fund flows are defined as the net fund flows into the mutual fund over the calendar year, divided by the TNAV at the end of the previous calendar year, and they are expressed as a percentage; negative values indicate net outflows. The summary statistics reported are calculated across all fund-months in each sample.

Panel A: Full sample

				Percentiles						
	N	**Mean**	**Std.Dev.**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Monthly Return	657,834	0.9%	14.6%	-7.5%	-1.4%	-1.4%	1.2%	3.5%	6.0%	7.8%
Total net assets value	662,700	1,785	10894.0	7.9	17.7	63.4	255.4	980.2	3052.3	6277.8
Monthly Fund Flow	655,286	1.6%	30.3%	-4.8%	-2.8%	-1.3%	-0.3%	1.0%	4.1%	8.3%
Annual Fund Flow	588,043	17.3%	102.7%	-35.1%	-24.6%	-13.2%	-4.0%	12.9%	54.2%	112.1%
Expense ratio	494,310	1.0%	0.8%	0.1%	0.3%	0.7%	1.0%	1.3%	1.6%	1.8%
Turnover ratio	494,454	73%	150%	6%	11%	23%	47%	86%	141%	191%
Fund age in months	673,503	156	134	19	33	68	128	206	291	291

Panel B: Restricted sample - Funds that signed the PRI only

				Percentiles						
	N	**Mean**	**Std.Dev.**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Monthly Return	218,524	0.9%	5.2%	-7.4%	-4.8%	-1.3%	1.3%	3.5%	6.0%	7.7%
Total net assets value	220,011	3,322	17,456	11	26	104	469	1,883	6,382	12,128
Monthly Fund Flow	217,860	1.5%	27.4%	-4.3%	-2.5%	-1.2%	-0.2%	1.2%	4.3%	8.2%
Annual Fund Flow	197,401	18.4%	99.5%	-32.2%	-22.7%	-12.2%	-2.5%	15.7%	55.7%	110.5%
Expense ratio	173,988	0.8%	0.5%	0.1%	0.2%	0.4%	0.9%	1.1%	1.4%	1.5%
Turnover ratio	175,070	62%	61%	6%	11%	22%	47%	81%	129%	167%
Fund age in months	222,240	158	129	19	34	72	133	210	292	364

Panel C: Restricted sample - Funds that changed their name to ESG only

				Percentiles						
	N	**Mean**	**Std.Dev.**	**5th**	**10th**	**25th**	**50th**	**75th**	**90th**	**95th**
Monthly Return	5,047	0.9%	4.6%	-7.5%	-4.7%	-1.4%	1.3%	3.6%	6.0%	7.5%
Total net assets value	5,079	582	1,135	9	15	34	152	574	1,480	3,353
Monthly Fund Flow	5,037	0.9%	22.5%	-4.9%	-2.9%	-1.4%	-0.6%	0.3%	3.2%	7.1%
Annual Fund Flow	4,583	14.3%	100.6%	-37.2%	-28.1%	-16.7%	-7.7%	4.3%	49.7%	121.5%
Expense ratio	4,331	1.2%	0.4%	0.7%	0.8%	1.0%	1.1%	1.4%	1.7%	2.0%
Turnover ratio	4,328	83%	97%	16%	20%	34%	59%	97%	146%	195%
Fund age in months	5,116	171	136	20	38	82	146	227	300	370

Table 2: Determinants of funds that incurred a greening event

This table reports results for logistic regression to gain a better understanding of the characteristics of funds that committed to an ESG event. In specification (1) we use the PRI dummy as the dependent variable where we assign a value of 1 for funds that signed the PRI and 0 for funds that did not. In specification (2) we used the ESG dummy which also takes a value of 1 for funds that changed their name and a value of 0 for other funds. We then regress both specification on control variables that proxy for the funds flows, performance, trading and expenses. Explanatory variables are as defined in Table 1. *t*-statistics are from standard errors clustered two-ways at the fund and year-by-month levels are reported. */**/*** indicate significance at the 10%/5%/1% levels.

	PRI	**ESG**
	(1)	(2)
Fund 12-month flow ratio	-0.044***	-0.152*
	(-9.27)	(-2.22)
Fund 1-month lagged turnover ratio	-0.005	-0.224**
	(-0.88)	(-3.24)
Fund 1-month lagged expense ratio	-156.566***	8.169***
	(-142.28)	(4.26)
Fund 12-month cumulative return	0.174***	0.064
	(8.40)	(0.51)
Fund 1-month lagged age	0.001***	0.002***
	(42.93)	(13.83)
# of observations	443645	443645

Table 3: Panel regression of capital flows for funds that signed the PRI

This table reports how fund flows respond to funds becoming PRI signatories. Fund controls are PRI, age, size, expense ratio and monthly return. Additionally, specification (2) includes investment category-by-year-month fixed effects and category-by-style fixed effect. Explanatory variables are as defined in Table 1. t-statistics are from standard errors clustered two-ways at the fund and year-by-month levels are reported. */**/*** indicate significance at the 10%/5%/1% levels.

	Fund Flows		log(Fund Flows)	
	(1)	(2)	(3)	(4)
PRI	0.009***	0.009***	0.004***	0.006***
	(7.32)	(7.09)	(7.94)	(9.55)
Fund 1-month lagged return	0.058***	0.055***	0.042***	0.051***
	(5.67)	(8.22)	(13.62)	(10.87)
Fund 1-month lagged expense ratio	-0.940***	-1.022***	-0.507***	-0.497***
	(-14.54)	(-16.76)	(-17.89)	(-16.56)
Fund 1-month lagged turnover ratio	0.001***	0.001***	-0.001***	-0.001***
	(5.30)	(4.85)	(-10.38)	(-9.90)
log(Fund Size)	-0.008***	-0.008***	-0.003***	-0.003***
	(-36.82)	(-37.75)	(-24.91)	(-25.09)
Fund 1-month lagged flows ratio	0.008***	0.009***	0.008***	0.008***
	(6.10)	(6.34)	(12.41)	(12.27)
log(Fund Age)	-0.023***	-0.023***	-0.017***	-0.017***
	(-47.68)	(-50.28)	(-80.81)	(-75.05)
Intercept	0.174***	0.177***	0.105***	0.103***
	(85.38)	(88.67)	(113.68)	(108.37)
Time Fixed Effect	No	Yes	No	Yes
Category Fixed Effect	No	Yes	No	Yes
# of observations	487,162	487,162	487139	487139
Adjusted R^2	0.0166	0.0180	0.0266	0.0288

Table 4: Panel Regression of capital flows for funds that changed their name to ESG

This table reports how fund flows respond to funds changing their name to be inclusive of an ESG keyword. Fund controls are ESG dummy, age, size, expense ratio and monthly return. Additionally, specification (2) includes investment category-by-year-month fixed effects and category-by-style fixed effect. t-statistics are from standard errors clustered two-ways at the fund and year-by-month levels are reported. */**/*** indicate significance at the 10%/5%/1% levels.

	Fund Flows		log(Fund Flows)	
	(1)	(2)	(3)	(4)
ESG	-0.002	-0.000	0.002	0.003
	(-0.23)	(-0.00)	(0.38)	(0.62)
Fund 1-month lagged return	0.055***	0.058***	0.043***	0.051***
	(8.26)	(5.69)	(13.65)	(10.89)
Fund 1-month lagged expense ratio	-1.083***	-0.975***	-0.539***	-0.519***
	(-17.95)	(-15.13)	(-19.21)	(-17.32)
Fund 1-month lagged turnover ratio	0.001***	0.001***	-0.001***	-0.001***
	(4.79)	(5.26)	(-10.44)	(-9.96)
log(Fund Size)	-0.008***	-0.008***	-0.002***	-0.002***
	(-37.38)	(-36.31)	(-24.45)	(-24.34)
Fund 1-month lagged flows ratio	0.009***	0.008***	0.008***	0.008***
	(6.39)	(6.13)	(12.46)	(12.30)
log(Fund Age)	-0.023***	-0.023***	-0.017***	-0.017***
	(-49.93)	(-47.79)	(-80.45)	(-75.20)
Intercept	0.177***	0.175***	0.106***	0.103***
	(88.83)	(86.01)	(113.86)	(109.18)
Time Fixed Effect	No	Yes	No	Yes
Category Fixed Effect	No	Yes	No	Yes
# of observations	487162	487162	487139	487139
Adjusted R^2	0.0166	0.0183	0.0265	0.0286

Table 5: Panel Regression to examine the persistence of fund flows impact

This table reports the persistence of fund flows that have incurred a greening event, that is by shortening the time frame of the sample period to 36 months before and 36 months after the event occurred. Specification (1) uses the control variable for funds that changed their name to ESG. Specification (2) uses the control variable for funds that became a PRI signatory. We also include other regressors such as age, size, expense ratio and monthly return. t-statistics are from standard errors clustered two-ways at the fund and year-by-month levels are reported. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)
ESG	0.015*	-
	(2.02)	-
PRI	-	0.004*
	-	(2.15)
Fund 1-month lagged return	-0.041	0.052*
	(-0.52)	(2.30)
Fund 1-month lagged expense ratio	0.543	-1.809***
	(0.59)	(-6.70)
Fund 1-month lagged turnover ratio	-0.007	-0.003
	(-1.81)	(-1.67)
log(Fund Size)	0.001	-0.006***
	(0.21)	(-10.09)
Fund 1-month lagged flows ratio	0.006	0.017***
	(0.22)	(4.18)
log(Fund Age)	-0.011	-0.022***
	(-1.60)	(-14.19)
Intercept	0.041	0.170***
	(1.45)	(28.34)
# of observations	1451	53451
Adjusted R^2	0.0028	0.0168

Table 6: Examining the impact on performance for PRI and ESG funds

This table reports the impact of a greening event on performance. Fund controls are monthly return, expense ratio, turnover ratio, age and size. Specifications (1) and (2) are refer to the the PRI event where specification (2) includes the category-by-style fixed effects. Specification (3) and (4) refer to the ESG, where specification (4) includes the category-by-style fixed effects. t-statistics are from standard errors clustered two-ways at the fund and year-by-month levels are reported. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)	(3)	(4)
PRI	0.001***	0.001***	-	-
	(3.46)	(3.55)	-	-
ESG	-	-	0.002	0.003
	-	-	(1.01)	(1.12)
Fund 1-month lagged return	0.056***	0.056***	0.056***	0.056***
	(39.36)	(39.22)	(39.38)	(39.24)
Fund 1-month lagged expense ratio	-0.063***	-0.088***	-0.069***	-0.094***
	(-4.88)	(-6.58)	(-5.41)	(-7.14)
Fund 1-month lagged turnover ratio	-0.000***	-0.000***	-0.000***	-0.000***
	(-6.80)	(-7.12)	(-6.82)	(-7.14)
log(Fund Size)	-0.000***	-0.000***	-0.000***	-0.000***
	(-9.54)	(-9.85)	(-9.31)	(-9.60)
Fund 1-month lagged flows ratio	0.000	0.000	0.000	0.000
	(1.04)	(1.16)	(1.06)	(1.18)
log(Fund Age)	0.001***	0.001***	0.001***	0.001***
	(8.15)	(8.10)	(8.30)	(8.26)
Intercept	0.008***	0.008***	0.008***	0.008***
	(17.85)	(18.63)	(17.94)	(18.71)
Category Fixed Effect	No	Yes	No	Yes
# of observations	487955	487955	487955	487955
Adjusted R^2	0.0035	0.0037	0.0037	0.5637

Appendix 1

This table presents the names of mutual funds that changed their name to include an ESG word. the table shows what were the original names of the fund and what the funds have changed into. We also show the CRSP identification number (known as CRSP_CL_GRP in the CRSP dataset) for further reference.

Mutual Funds that changed their name to include an ESG word

Identification #	Original Name	New Name
2001062	American century mutual funds: Fundamental equity fund	American century mutual funds: Sustainable equity fund
2001066	American century mutual funds: Select fund	American century mutual funds: Sustainable equity fund
2002365	DWS dreman mid cap value fund	DWS ESG core equity fund
2004039	Highland funds II: Highland global allocation fund	Highland funds II: highland socially responsible equity fund
2004183	Aberdeen focused US equity fund	Aberdeen US sustainable leaders smaller companies fund
2004186	Aberdeen US equity fund	Aberdeen US sustainable leaders fund
2004992	Integrity growth & income fund	Integrity ESG growth & income fund
2005391	JP Morgan intrepid multi cap fund	JP morgan intrepid sustainable leaders fund
2007413	Pax world growth fund	Pax ESG beta quality fund
2008086	Putnam mid cap value fund	Putnam sustainable future fund
2008126	Putnam new opportunities fund	Putnam sustainable leaders fund
2008135	Quaker small-cap value fund	Quaker small/mid-cap impact value fund
2008136	Quaker strategic growth fund	Quaker impact growth fund
2008461	Russell us quantitative equity fund; class e shares	Russell investment company: sustainable equity fund
2009652	UBS US large cap equity fund	UBS US sustainable equity fund
2010485	Wisdomtree total earnings fund	Wisdomtree US ESG fund
2010763	Fundvantage trust: Lateef fund	Fundvantage trust: Lateef focused sustainable growth fund
2010981	Touchstone premium yield equity fund	Touchstone international ESG equity fund
2011458	Dana Epiphany ffv fund	Dana Epiphany ESG equity fund
2011548	Summit pinnacle zenith portfolio	Calvert vp SRI large cap value portfolio
2011915	Putnam variable trust: putnam vt new opportunities fund	Putnam vt sustainable leaders fund
2012049	Transamerica series trust: Blackrock large cap value vp	Transamerica aegon sustainable equity income vp
2012902	Putnam vt mid cap value fund	Putnam vt sustainable future fund
2014701	Nuveen winslow large-cap growth fund	Nuveen winslow large-cap growth ESG fund
2015008	Goldman Sachs dynamic US equity fund	Goldman Sachs US equity ESG fund
2017039	Boston common US equity fund	Boston common ESG impact US equity fund
2017423	Dreyfus third century fund	Dreyfus sustainable US equity fund
2019779	Transamerica dividend focused	Transamerica sustainable equity income fund
2034091	Trillium small/mid cap fund	Trillium ESG small/mid cap fund
2037175	Dana small cap equity fund	Dana epiphany ESG small cap equity fund
2090439	Citizens value fund	Sentinel sustainable core opportunities fund