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Do Responsible Investors Invest Responsibly?

Finance Working Paper N° 712/2020
June 2021

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Abstract

We explore a novel survey on responsible investing by institutional investors around the world and match it to archival data on their equity portfolio holdings. We document that institutions that publicly commit to responsible investing exhibit better environmental, social, and governance (ESG) portfolio-level scores but this holds only outside of the United States. US-domiciled investors that commit to responsible investing, in contrast, exhibit at best similar, if not significantly worse portfolio ESG scores than their uncommitted peers. This disconnect between words and actions in the U.S. appears to be partly driven by underperforming investors seeking to attract fund flows, consistent with concerns of "greenwashing."

Keywords: ESG, SRI, PRI, socially responsible investing, sustainability, institutional investors, greenwashing

JEL Classifications: G15, G23, G30, M14

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ABSTRACT

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1. Introduction

There is growing interest globally in "responsible investing," whereby institutional investors incorporate environmental, social and governance (ESG) issues into their investment processes. One of the leading investor initiatives, the Principles for Responsible Investment (PRI), whose signatory members publicly commit to incorporating ESG principles, counted over 3,000 signatories representing collective assets under management (AUM) of close to US$ 100 trillion at the end of 2020.[1] The increasing prevalence of initiatives such as the PRI raise the questions as to how responsible investment principles are implemented by different institutional investors and whether these translate into different ESG portfolio outcomes—ultimately asking if responsible investors invest responsibly? Answering these questions is important to quantify the extent to which responsible investing leads to more sustainable portfolio allocations. Ultimately, the goal of responsible investing—to direct capital towards companies that make the world more sustainable—can only be achieved if investors live up to their commitments.[2]

The pressure on institutional investors to "walk the [ESG] talk" varies around the world, often depending on whether ESG incorporation is driven by "values" versus "business" motivations. A survey by Amel-Zadeh and Serafeim (2018) suggests that ethical motives ("values") play a larger role in Europe where sustainable investing might be more intrinsically motivated.[3] Dyck, Lins, Roth, and Wagner (2019) find that investors from countries with high environmental and social (E&S) norms tend to push more for sustainable practices in their portfolio firms. In other geographies, institutional investors might be more commercially driven in order to attract the increasing ESG-related fund flows (i.e., to grow AUM and the associated management fees) and do not "walk the [ESG] talk". Particularly in the U.S., with the largest and perhaps most competitive asset management industry and where the focus on shareholder value is strong, some institutions may respond to the popularity of ESG by signing initiatives

[1] The PRI was founded in 2006 by some of the world's largest institutional investors with support from the United Nations. Other survey estimates put the assets managed according to responsible investment criteria at US$ 12 trillion according to the US SIF Foundation's Report (up 38% from 2016; US SIF, 2018) and US$ 30 trillion across the world according to the GSIA (2018), which collates the US data with other regional reports (GSIA, 2018).
[2] Although technically we prefer the term "responsible investing" in the context of our paper, we use the terms "responsible," "sustainable," and "ESG investing" interchangeably.
[3] Europe-based institutions manage over half of global responsible investing assets in some surveys (GSIA, 2018). Liang and Renneboog (2017) also show that there is a higher awareness for corporate social responsibility in countries that have more stakeholder-oriented legal frameworks.

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such as the PRI but failing to incorporate ESG factors into portfolio management. The clash between values and business could also originate in the regulatory requirements across different jurisdictions. While the European Commission launched an action plan for financing sustainable growth, there is still an open debate in the U.S. over whether fiduciary duties should include the consideration of ESG factors or focus entirely on investment performance.[4]

In this paper, we examine how responsible investment principles map into different ESG outcomes at the equity portfolio level. We face the empirical challenge that there is considerable heterogeneity among responsible investors both in terms of which ESG equity investment strategies are employed and how intensively these get implemented. The extensive as well as the intensive margin of ESG strategies is typically unobservable to the researcher. Past studies have treated institutions as homogeneous groups of responsible investors, for example, by using country of origin or PRI signatory status as an indicator of an investor's commitment to responsible investment (Dyck, Lins, Roth, and Wagner, 2019). It is, however, important to take the intensity of the signatories' ESG strategies into account given that there could be substantial differences in terms of ESG commitments among PRI investors (e.g., dedicated ESG manager vs. all-service institutions).

This paper overcomes this challenge by using a novel survey in which institutional investors report their ESG strategies in detail. The survey comes from the PRI (the world's largest investor network on responsible investing) where every signatory is required to report annually on how they incorporate ESG issues in their investment analysis and selection process. The survey is non-anonymous, which allows us to match it to archival data on institutional investors' worldwide equity holdings from FactSet Ownership in order to examine whether the reported responsible investing strategies result in better portfolio-level ESG outcomes. At the end of our sample period, the total

[4] For example, the U.S. Department of Labor IB 2018-01 restated that fiduciaries "*must not too readily treat ESG factors as economically relevant (…) rather, ERISA fiduciaries must always put first the economic interests of the plan in providing retirement benefits*". This statement from the Trump administration came after a previous Obama administration statement, IB 2015-01, that ESG criteria could be used in fiduciaries' investment frameworks for ERISA (Employee Retirement Income Security Act) plans. In addition, the chair of the U.S. Securities and Exchange Commission (SEC) has also emphasized that investment advisers cannot put any interests, including ESG factors, ahead of the financial interests of their clients (Clayton, 2018).

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institutional stock holdings of PRI signatories represented over US$ 18 trillion (i.e., more than one in every two dollars of institutionally managed equities globally).

To measure whether PRI signatories "walk the (ESG) talk," we calculate average value-weighted ESG scores for each institutional investor's stock portfolio using data from three leading ESG rating providers [Thomson Reuters ASSET4 (now Refinitiv ESG), MSCI IVA, and Sustainalytics (now Morningstar)]. We call these "Portfolio ESG scores." The average view across three different rating providers reflects the market consensus on stocks' ESG performance and partially addresses the challenge of rating disagreement among data providers (Berg, Koelbel, and Rigobon, 2020; Gibson Brandon, Krueger, and Schmidt, 2021). Taking the consensus of multiple ESG scores should mitigate biases (e.g., selective company disclosures, methodological differences across rating agencies) and provide a better measure of what market participants would view as sustainable corporate practices. We complement the portfolio ESG score with other portfolio-level ESG outcome measures such as, an institution's portfolio allocation to "sin" and fossil fuel sectors.

We begin by documenting that PRI signatories have better portfolio ESG scores than the institutional investors that do not sign the PRI. We also show that institutional investors improve their portfolio ESG scores after signing the principles. Motivated by the variation in "business" versus "values" around the world and the large increase in PRI signatories in the U.S., we investigate whether there are cross-country differences between institutions based in the U.S. and other regions. We find that only signatories outside the U.S. have better portfolio-level ESG scores than non-PRI investors. Strikingly, US signatories do not have better portfolio ESG scores than non-PRI investors. We also find no evidence that US investors improve their portfolio-level ESG scores after signing the PRI, despite them being the largest group of new PRI signatories in recent years.

To examine if US signatories are lagging on the use of ESG strategies we examine the reported level of ESG incorporation into their equity investments. We use the PRI survey to classify signatories into three groups: (1) those that fully apply ESG incorporation strategies to 100% of their equity AUM; (2) those that partially do so; and (3) those that do not report any form of ESG incorporation. Compared to prior research, the classification based on the unique survey data from the PRI allows us to study the

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intensity with which investors incorporate ESG considerations. We can therefore test whether US PRI signatories implement less ESG because they themselves (or their clients) have lower ESG preferences.[5]

Our analysis shows that, outside of the U.S., PRI signatories that report to apply ESG incorporation exhibit significantly better portfolio ESG scores than institutions that do not sign the PRI. In the U.S., however, we find no significantly different portfolio ESG scores, not even for signatories that report to fully apply ESG incorporation. More concerning, we find that US-domiciled PRI signatories that do not report any form of ESG incorporation have significantly *worse* ESG scores than non-PRI institutions. We complement these results by looking at alternative ESG portfolio metrics. Although we do find some evidence that US signatories who fully apply ESG incorporation hold less sin and fossil fuel stocks, our analysis fails to provide systematic and convincing evidence that US-domiciled PRI signatories who claim to fully apply ESG incorporation have better ESG portfolio outcomes than US institutions that did not sign the principles.

The disconnect between reported ESG incorporation and sustainable capital allocations observed in the U.S. (but not in other regions) raises the question as to what is driving these regional differences? We explore three sources of variation: commercial interests in a competitive landscape, regulatory requirements and social norms. US signatories might adopt a more commercial approach to ESG that focuses on growing assets under management to boost their revenue generation capacity in a competitive business environment. This alleged—yet uncommitted—adherence to ESG investment principles could also stem from a regulatory environment that has not yet reached consensus on the "fiduciary duties" debate; particularly in the U.S., the question as to whether US institutions are allowed to consider non-material ESG factors in their investment decisions is still unresolved. In other more stakeholder-focused regions, such as Europe for example, investors might be more intrinsically motivated towards ESG investing due to the social norms that prevail in these countries or there is more regulatory endorsement.

[5] The most frequently reported ESG strategy is integration (the inclusion of ESG factors into financial analysis), followed by screening (favoring or excluding stocks based on their ESG performance), while thematic strategies (specific investments related to sustainability) are niche. The approaches are not mutually exclusive: most institutions report implementing multiple ESG strategies simultaneously.

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Consistent with these explanations, we find that institutions based in the US are less likely to become PRI signatories that report to incorporate ESG into their investment decisions. We also show that institutions around the world are more likely to become signatories that report no ESG incorporation if they suffer from poor past portfolio performance. Additionally, we find that institutions based in countries with higher environmental and social norms are more likely to report full ESG incorporation. However, the introduction of "stewardship codes" across different countries instructing institutions to integrate ESG do not play an important role in incentivizing ESG incorporation. Moreover, a cost and benefit analysis of PRI membership involving investor flows and portfolio returns reveals that US signatories benefit from the PRI membership in terms of higher investor flows, even though these signatories do not exhibit better investment performance. Outside of the US, we find no evidence that PRI signatories attract better investor flows than non-PRI investors after controlling for past performance and flows, suggesting that flow considerations are unlikely to drive an institution's commitment to responsible investment outside of the U.S. Overall our findings suggest that in the US, where signatories attract more investor flows without having better ESG scores, the motivation to join the PRI is more business oriented. In contrast, institutions in other regions seem to be primarily driven by prevailing social norms and therefore displaying a genuine commitment in incorporating ESG in their investment strategies.

One may hypothesize that the gap between words and actions observed in the US decreases over time, possibly due to the increased attention that ESG investing has received over the years. However, we find no evidence that this is the case. The US gap persists even in the later years of our sample. This could be due to the explosive growth in the number of signatories joining for business reasons, free-riding on the PRI status, without effectively incorporating ESG considerations into their equity portfolios.

In the final part of the paper we focus on the US investors for which the gap between words and actions is the largest, i.e., US signatories that do not report any form of ESG incorporation and have significantly *worse* portfolio ESG scores than non-PRI institutions. Do these US institutions "greenwash," meaning that they pretend to be more responsible than they really are to profit from the

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increased market interest in ESG investing?[6] Or are these investors unable to implement ESG strategies due to organizational inefficiencies or due to a strict interpretation of US fiduciary duty that treats ESG issues as financially immaterial?

To differentiate between the potential explanations, we explore the characteristics of the "greenwashing" US investors. We find that the institutions in question are more likely to exhibit worse portfolio ESG scores when they have underperformed recently. Moreover, we proxy for principal-agent problems and find that poor ESG performance is more prevalent when clients or beneficiaries (principals) are less able to monitor the investment managers (agents) and also when the latter are less responsible corporate citizens themselves as demonstrated by higher in-house operational ESG risks. Lastly, poor ESG performance of the signatories in question can be related to a lower level of intrinsic motivation reflected in joining the PRI late and being headquartered in more moderate/right-leaning U.S. states. These cross-sectional results–combined with earlier findings that US signatories exhibit better investor flows–confirm "greenwashing" behavior among institutions that sign the PRI but do not implement ESG to attract ESG flows.

Our paper contributes to the emerging literature on responsible investment. By using survey-portfolio matched data, we illustrate that there is a disconnect between what US institutional investor report in terms of ESG incorporation and their actual portfolio ESG scores,. This findings appears to be the result of a more commercially-motivated ESG approach in the U.S. versus a more intrinsically motivated ESG approach outside of the U.S.. Prior studies cannot compare how responsible investing principles map into portfolio outcomes because these either rely on anonymized investor surveys (e.g., Amel-Zadeh and Serafeim, 2018; Krueger, Sautner, and Starks, 2020) or archival data of portfolio holdings (e.g., Starks, Venkat, and Zhu, 2018; Dyck, Lins, Roth and Wagner, 2019; Gibson Brandon, Krueger, and Mitali, 2021).[7] The shortcoming of relying solely on archival data is that these studies treat

[6] There are some press reports that the SEC is scrutinizing how strictly ESG funds adhere to responsible investment practices (*Wall Street Journal*, 2019). Concerns over "greenwashing" (overstating an institution's commitment to sustainable investing) have also led the European Commission to set up a special task force to develop a taxonomy for sustainable investing, such as setting standards for eco-labeling of investment vehicles (Eurosif, 2018).

[7] Dyck, Lins, Roth and Wagner (2019) find that US-domiciled PRI signatories do not engage companies on ESG issues. There could be multiple explanations for this: US signatories use ESG strategies to a lesser extent because of lower client demand or because signatories greenwash. We provide evidence that even when we consider the

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PRI signatories as a homogenous group of investors and do not take into account that institutions' clients have heterogeneous preferences with regard to ESG investing. Exceptions are Dimson, Karakas, and Li (2015) and Dimson, Karakas, and Li (2021), who study institutional engagement, but do not look at ESG incorporation strategies. We complement these papers with a comprehensive analysis of how the reported intensity with which investors incorporate ESG strategies map into their equity portfolio outcomes.[8] Specifically, we find no better portfolio ESG scores for US signatories, not even for those that report full ESG incorporation, and US signatories that do not report any form of ESG incorporation have worse ESG scores than uncommitted institutional investors. The latter result appears to be driven by underperforming institutions seeking to compensate potential business losses by attracting ESG flows.

Our evidence suggests that, at least outside the U.S., investors' equity allocations already factor in ESG considerations, but US investors do not "walk the (ESG) talk". The level of ESG incorporation in equity markets may therefore have different implications for asset pricing across markets. As "green stocks" get priced differently to "brown stocks," the cost of capital for firms and ultimately their corporate behavior will be affected, at least in those regions of the world where the investment decisions of 'responsible' investors match their words. While there have been some theoretical studies (Pedersen, Fitzgibbons, and Pomorski 2020, Pastor, Stambaugh, and Taylor 2020), there is still scarce empirical evidence on this issue and our work indicates that, in the US market, ESG considerations are still playing a smaller role than what would be expected by the market penetration of PRI membership.

More broadly, our paper also contributes to the literature on the principal-agent problems between institutional investors and their clients or beneficiaries. The economic interests of professional

reported level of ESG incorporation, we find no evidence that US signatories that report to fully incorporate ESG strategies actually have better portfolio ESG scores. Moreover, we identify a group of underperforming US signatories that exhibits worse scores than non-PRI institutions, consistent with greenwashing.

[8] In related studies, Kim and Yoon (2020) find that US mutual fund companies that sign the PRI fail to have better ESG scores and Liang, Sun, and Teo (2020) find some "greenwashing" among the subset of hedge fund signatories. Our paper, by contrast, examines the aggregated and global equity portfolios of all types of institutional investors, which allows us to uncover differences between US and non-US investors. Moreover, with our survey-portfolio matched data, we can measure the reported level of ESG incorporation among PRI signatories and compare it to portfolio outcomes. Finally, our ESG portfolio measure is more objective as it captures the market consensus among three leading ESG rating providers.

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money managers, who serve as agents with considerable portfolio discretion can diverge from those of beneficiaries (the principals) and the agents' actions may be unobservable or expensive to monitor (Spatt, 2020). Our paper provides evidence on how ESG considerations are incorporated in portfolio allocation but highlights a gap between "words" and "actions" among US-based institutional investors. Whereas our study focuses on ESG portfolio incorporation strategies, recent literature highlights a gap with investors failing to meet ESG active ownership expectations (e.g., voting). Bebchuk, Cohen, and Hirst (2017) and Bebchuk and Hirst (2019) argue that the incentive structure of the fund management industry may lead to the passivity of institutional investors, who underinvest in stewardship and are too deferential to the managers of portfolio companies in their proxy voting. Others take the opposite view arguing that the concentration of assets in a few individual asset management firms gives them too much power over public companies (Coates, 2018). The incorporation of ESG principles by institutional investors is still poorly understood, yet they control trillions of assets. Shedding light on their ESG investment practices is important, to assess if the resulting capital allocation is aligned with their clients and beneficiaries' ESG preferences.

2. Committing to Responsible Investing: Data from PRI and FactSet Ownership

2.1. The Growth of the Principles for Responsible Investment (PRI)

The Principles for Responsible Investment (or PRI) was launched in 2006 by the United Nations (UN), which invited large institutional investors, including the California Public Employees' Retirement System (CalPERS), Hermes Pensions Management, and the Norwegian Government Pension Fund, to collaborate in establishing the PRI.[9] By 2020, the PRI network had grown to be the largest investor initiative worldwide, with over 3,000 signatories and more than US$ 100 trillion of AUM.[10] Signatories

[9] The PRI is a nonprofit institution supported by UN agencies. Funding is assured via annual membership fees from its signatories. The objective is to harness the financial weight of institutional investors to address sustainable development goals (SDGs). The 17 Global SDGs set out economic, social, and environmental ambitions for UN member states (https://www.undp.org/content/undp/en/home/sustainable-development-goals.html).
[10] Other investor networks are either more focused on climate change (e.g., CDP, CERES) or smaller (e.g., regional social investment forums such as Eurosif).

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include asset owners (e.g., pension funds, sovereign wealth funds, foundations), investment managers (e.g. fund companies and advisers), and service providers.[11] The six PRI principles are as follows:

- #1: We will incorporate ESG issues into investment analysis and decision-making processes.
- #2: We will be active owners and incorporate ESG issues into our ownership policies and practices.
- #3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.
- #4: We will promote acceptance and implementation of the Principles within the investment industry.
- #5: We will work together to enhance our effectiveness in implementing the Principles.
- #6: We will each report on our activities and progress towards implementing the Principles.

By signing the principles, the investors publicly commit to their adoption, as long as these are consistent with the investors' fiduciary duties. While the principles are voluntary, the signatory status comes with two mandatory requirements. First, all signatories need to pay an annual membership fee. Second, PRI signatory investors commit to publicly report on their responsible investment considerations and decision-making on a yearly basis (principle #6 above). PRI has started delisting signatories in 2020 for not meeting the minimum requirements but there are other forms of enforcement.[12] In particular, PRI reports are increasingly provided voluntarily by investment managers as signals of ESG commitment when they compete for requests for proposals on investment mandates by a growing number of institutional asset owners (as well as in subsequent reporting).

We match the PRI signatory data to global institutional equity holdings obtained from FactSet Ownership – see Ferreira and Matos (2008) for details on this data. The sample period starts in 2003 (three years before the PRI was formed) and ends in 2017, covering the set of institutions domiciled in countries that are part of the MSCI All Country World Index. We use portfolio data at the end of each calendar year. Our final sample consists of 684 PRI signatories that completed the PRI survey modules related to listed equities and whose disclosed equity holdings are available on FactSet Ownership. Table IA1 of the Internet Appendix describes in detail how we match PRI signatory data to the institutional equity holdings data.

[11] Since service providers do not manage assets, these are excluded from the analysis in this paper.
[12] https://www.unpri.org/reporting-and-assessment-resources/signatories-delisted-for-not-meeting-the-minimum-requirements/6480.article

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Figure 1 shows the growth of PRI representation both in terms of the number of PRI signatory institutions (Panel A) and the increasing importance of PRI signatories in stock markets worldwide (Panel B). While global equity holdings of PRI institutions represented about US$ 0.7 trillion in 2006, the value of total holdings by PRI signatories grew to US$ 18 trillion by 2017. This means that, at the end of the sample, PRI institutions represented more than half of the total institutional investor equity holdings of US$ 32 trillion and illustrates the importance of institutional capital that purports to follow ESG principles.[13] Interestingly, Panels C and D of Figure 1 shows that the propagation of PRI occurred early outside of the U.S. and, at the end of 2017, the PRI AUM coverage was still substantially larger outside of the U.S.

Table 1 shows additional statistics on PRI signatories. While early signatories tend to be European, the percentage of North American signatories gradually rose and the share of PRI signatories from Asia-Pacific and the rest of the world[14] remained stable at around 20%. Also of note is that the percentage of investment managers increased over time, while asset owners accounted for a larger proportion of the early signatories.[15] Finally, the number of small signatories increased over time, which might reflect the fact that being part of PRI became a requirement to obtain investment mandates from clients. Table IA3 in the Internet Appendix also contains a list of the largest institutional investors by portfolio AUM for each region and their PRI signing date. By the end of 2017, all top-10 institutions in North America, Europe, and the rest of the world had joined the PRI (including Vanguard, BlackRock, NBIM, UBS, and Nomura).

2.2. PRI Survey Data

[13] These figures are calculated based on equity holdings for which ESG scores are available. The $32 trillion in institutional holdings represents over 40% of the world market capitalization and it is similar to the level of institutional ownership estimated in an OECD (2019) study on the ownership structure of the world's listed companies.

[14] Rest of the world is defined as countries that form part of the MSCI All Country World Index, but that are not part of the North America, Europe, and Asia-Pacific regions.

[15] Note that for an asset owner to be included in the sample, the institution needs to have considerable direct equity holdings, because otherwise it would not show up in FactSet Ownership. Asset owners that outsource the management of their equity investments do not show up in our sample as a separate institution as their assets will be part of their respective investment managers' portfolio filings.

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Our research makes use of the information from the PRI reporting framework. Compared to past research that uses only the PRI signatory status, these survey data allow to get a more nuanced view of how committed an equity investor is to responsible investing. More specifically, we can distinguish PRI signatories that incorporate ESG more extensively into their equity investment processes (intensive margin in terms of AUM). While the PRI was founded in 2006, signatory reporting data only starts in 2014 and extends to 2018. The survey is non-anonymous allowing us to observe investor names and detailed responses to an extensive questionnaire for each signatory and reporting year.[16] Overall, the five years of PRI reports available to us contain 5,326 signatory-year observations by 1,549 unique PRI signatory identifiers.

Annual reporting takes place between January and March and we interpret responses to account for the previous calendar year, so our sample period extends from 2013 to 2017 (for example, the final 2018 report in our sample covers activities in 2017). In our analysis, we adjust and standardize reports to align across years, as reporting frameworks were subject to modifications. The PRI reporting framework includes twelve modules. Since we focus on direct equity investments by the signatories, we use the "organizational overview", "strategy and governance", "listed equity incorporation", and "listed equity active ownership" modules to draw the necessary information for our analysis. These modules include information on ESG strategies. We use only answers to questions that are *mandatory to report and to disclose*.[17] The Internet Appendix provides examples of the PRI survey questions used in our analysis (see Figures IA2 to IA8).

Figure 2 shows the reported ESG incorporation strategies of PRI signatories.[18] It provides the average percentage of signatories' AUM that is covered by a screening, thematic, or integration strategy

[16] PRI has put processes in place to ensure the verifiability of the reports. A central element of this is to make a vast majority of the responses accessible to the public. For example, the publicly available reports allow asset owners to search and screen for potential investment managers, providing a strong incentive to report truthfully. In addition, the PRI compares the reports within its peer groups and analyzes responses of recurring themes over time. Lastly, the PRI runs validation checks to detect inconsistencies. Third-party audit and/or assurance of the PRI reports are not mandatory but encouraged.

[17] The reason is that mandatory indicators are completed by all eligible investors, while the response rates to voluntary indicators can vary widely. In addition, we only work with binary, categorical, or multiple-choice responses in order to avoid the challenges of interpreting descriptive responses.

[18] This is obtained from LEI 01.1 question of the PRI survey. See Figure IA2 in the Internet Appendix for more details on the survey question.

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which follows a taxonomy of ESG strategies commonly used in the academic and professional literature (e.g., Amel-Zadeh and Serafeim, 2018; CFA Institute, 2015; and GSIA, 2016). Due to the design of the PRI reporting framework, signatories only report on the extent, but not the intensity, of their engagement activities. We therefore do not report statistics on engagement in Figure 2. In Panel A, we find that PRI signatories apply ESG integration strategies to 66% of their equity AUM. Integration strategies describe the systematic and explicit inclusion of ESG factors into financial analysis by institutional investors. Signatories further apply screening strategies to 50% of their equity AUM. Screening includes strategies that either include or exclude stocks based on their ESG performance relative to industry peers or other criteria such as international norms and standards. Finally, only 11% of PRI's equity assets are managed according to thematic strategies which describe investments in themes or assets specifically related to sustainability (e.g., clean energy). These strategies are not mutually exclusive: most PRI signatories' equity AUM are covered by multiple strategies (e.g., integration plus screening). Panel B illustrates that the reported usage of the three ESG incorporation strategies increases over the sample years.

Besides the upward time trend in the intensity with which any given ESG strategy is applied, Table 2 also documents cross-sectional heterogeneity. First, screening strategies are reported more frequently among European signatory institutions, while integration is most popular among signatories from Asia-Pacific and the rest of the world. Second, larger signatories tend to use more integration relative to signatories with less equity AUM.

Given that the defining principle #1 of PRI is the commitment by signatories to incorporate ESG issues into their investment decisions (see Section 2.1 above), we study the heterogeneity among PRI signatories in achieving this stated goal. We focus our analysis on the share of equity assets to which institutions apply any form of ESG incorporation strategy as a proxy for their level of commitment to responsible investing. For this purpose, we classify signatories into three different groups: (1) *PRI: Full ESG incorporation* representing signatories that report applying any form of ESG incorporation strategy to 100% of their equity AUM; (2) *PRI: Partial ESG incorporation* representing signatories that report applying ESG strategies to less than 100% of their equity holdings; and (3) *PRI: No reported ESG incorporation* representing signatories that do not apply ESG strategies to their equities or do not report

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these figures.[19] Since we cannot observe the full resources an institutional investor dedicates to ESG, the idea is to use the reported "intensive margin" (i.e., the share of the equity portfolio to which an institution applies ESG considerations) as a proxy for their ESG investment efforts.

The lower section of Panel A, Table 2 shows that the relative proportion of institutions that fully incorporate ESG into their portfolios is higher among non-US signatories (1,596 out of 2,144 investor-years) compared to US signatories (372 out of 651 investor-years). Conversely, the share of signatories not reporting ESG incorporation is higher among US PRI signatories. This is a first indication that US signatories report lower levels of ESG incorporation than signatories based in other regions. Among the *PRI: Full ESG incorporation* group, investors report using integration most frequently (89% and 83% of equity AUM among US and non-US signatories, respectively) followed by screening (54% and 66% of AUM) and with thematic strategies lagging far behind (18% and 14% of AUM). As expected, *PRI: Partial ESG incorporation* apply ESG strategies to a substantially lower share of their AUM, while signatories in the *PRI: No reported ESG incorporation* group report no usage of ESG incorporation strategies at all.

In order to validate whether the PRI signatory classification above is a plausible proxy for an institution's overall ESG investment effort, we examine other survey indicators in the PRI reporting framework. Panel B of Table 2 reports the frequency with which PRI signatories use specific ESG strategies.[20] Perhaps not surprisingly, we first document that signatories with a higher intensive margin of ESG incorporation (in terms of equity AUM covered) also report a higher extensive margin (i.e., the frequency in usage of specific strategies). Second, a higher intensity of ESG incorporation strategies in terms of portfolio allocation (screening, integration, and thematic) also correlates with higher reported engagement with their portfolio companies. However, PRI signatories that do not incorporate ESG considerations in portfolio construction (i.e., those in the *PRI: No reported ESG incorporation* group)

[19] Among the top institutions listed in Table IA3 of the Internet Appendix, Norges Bank Investment Management and Standard Life Aberdeen Plc are examples of *PRI: Full ESG incorporation* signatories. Fidelity and Korea National Pension Service are classified as *PRI: Partial ESG incorporation* signatories, while Deutsche Bank AG and Janus Henderson Group Plc are *PRI: No reported ESG incorporation*.

[20] Table IA2. of the Internet Appendix provides variable definitions of the PRI survey These are sourced from questions LEI 04.1, LEA 02.1, LEA 16.1 of the PRI survey. For more details, see Figures IA3 to IA5. We provide overall statistics on the percentage of PRI signatories that use ESG strategies in Panel A of Table IA4.

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also engage less with portfolio companies on ESG issues. In fact, more than 50% of these signatories do not report any form of individual or collaborative ESG engagement.

Panel C of Table 2 looks at the PRI survey module that quantifies the organizational resources that PRI signatories dedicate to ESG issues.[21] We observe that *PRI: Full ESG incorporation* and *PRI: Partial ESG incorporation* have a similar organizational structure when it comes to ESG. Almost all of these signatories have a dedicated ESG policy, involve their C-Suite executives and portfolio managers in the ESG process, employ 5-8% dedicated ESG employees (measured as a share of total employees), and are part of about five other responsible initiatives besides the PRI. In contrast, the signatories in the *PRI: No reported ESG incorporation* group are less organizationally focused on ESG. About 20-30% of them report no involvement of the C-suite executives or portfolio managers in ESG issues, ESG staff involvement is also 20-30% lower, and these signatories participate in fewer other sustainability initiatives.

Overall, we conclude that our classification of PRI signatories is a good proxy for how institutions incorporate ESG issues. *PRI: Full ESG incorporation* not only apply ESG to the entirety of their equity allocations, but these signatories also subsequently engage companies on ESG issues and have more organizational resources dedicated to ESG. *PRI: Partial ESG incorporation* commit to ESG for only a fraction of their AUM but still engage companies on ESG issues. The last group – *PRI: No reported ESG incorporation* – reports no ESG investment activity except for some engagement.

3. How Do ESG Commitments Map to Portfolio Outcomes?

The PRI survey reveals substantial heterogeneity in the level of ESG incorporation by PRI signatories. This section studies how the reported ESG activities map into portfolios outcomes. Comparing “words” (i.e., what investors report) to “actions” (i.e., ESG portfolio outcomes) is important to understand the

[21] This is sourced from questions SG 01, SG 07, SG09 of the PRI survey. See Figures IA6 to IA8 of the Internet Appendix for more details. Panel B of Table IA4 of the Internet Appendix provides more overall statistics.

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implications of responsible investing. Ultimately, the goal of responsible investing – to promote a sustainable global financial system that rewards long-term sustainable investment, and benefits the environment and society (according to PRI's mission statement) – can only be achieved if investors live up to their responsible investment commitments.

3.1. Portfolio ESG Scores

One challenge in examining how reported ESG strategies map into portfolio outcomes is the lack of a universally accepted definition of "sustainability." Prior literature has shown that ESG ratings of companies can diverge considerably from one another (Berg, Koelbel, and Rigobon, 2020; Gibson Brandon, Krueger, and Schmidt, 2021).

We overcome the challenge of divergent ESG ratings by calculating a portfolio-level sustainability score for each institutional investor based on the market consensus of three leading ESG rating providers: Thomson Reuters' ASSET4 (now Refinitiv ESG); MSCI IVA; and Sustainalytics (now Morningstar). We expect average ESG ratings to provide a better measure of corporate sustainability, similar to the notion that the consensus of analyst forecasts is a better predictor of future firm earnings than the forecast by an individual analyst. Though we use ESG consensus ratings in the main part of our tests, we corroborate our results using individual ESG ratings.

We calculate the portfolio-level sustainability score for each investor by merging institutional holdings data from Factset Ownership (which we described in Section 2) to stock-level sustainability scores. We refer to these as "portfolio ESG scores" and compute them in two steps. First, we calculate an equal-weighted average of the standardized scores from the three ESG data providers for each company. We obtain these scores on a yearly basis between 2003 and 2017 by keeping the last available ESG scores in each firm-calendar year combination, assuming that it reflects the most up-to-date information on the company for that year.[22] Given the different rating scales of each data provider, we

[22] Due to the growing data coverage over our sample period, we take the average of the ESG scores that are available if there is no full coverage by all rating providers for a given stock.

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Z-score normalize the ESG scores in each year to have a mean of zero and a standard deviation of one; we denote these as $z_t(Score)$.

$$ESG\ Score_{it} = \frac{1_{A4,it} \times z_t(ASSET4_{it}) + 1_{MSCI,it} \times z_t(MSCI_{it}) + 1_{SUST,it} \times z_t(SUST_{it})}{1_{ASSET4,it} + 1_{MSCI,it} + 1_{SUST,it}}$$

Second, we follow Gibson Brandon, Krueger, Mitali (2021) and compute the portfolio-level sustainability score using the weight of the individual stock holdings in the investors' portfolios:

$$Portfolio\ ESG\ score_{j,t} = \sum_{i=1}^{N_{j,t}} w_{i,j,t} \times ESG\ Score_{i,t}$$

where *Portfolio ESG score* denotes one of the following sustainability scores: *Total ESG score*, *Environmental score*, *Social score*, or *Governance score*. The variable $w_{i,j,t}$ denotes the value-weight of stock *i* in investor *j*'s portfolio at the end of year *t*. $ESG\ Score_{i,t}$ is the normalized sustainability score of stock *i* at the end of year *t*. $N_{j,t}$ is the total number of stocks investor *j* holds at the end of year *t* for which stock-level ESG scores are available. The *Portfolio ESG score* variable quantifies the portfolio-level sustainability score of institutional investor *j* at the end of year *t*. Note that the measure is scaled in a way that higher values correspond to better portfolio-level sustainability.

This aggregate measure of portfolio sustainability is our main variable to capture the "actions" taken by institutional investors to incorporate ESG considerations. It is reasonable to assume that more committed institutions will, on average, have better portfolio ESG scores. We also conduct robustness checks using alternative ESG portfolio outcomes, such as the percentage of equities allocated to stocks with the highest or lowest ESG ratings, or stocks operating in the "sin" or fossil fuel industries that are considered more controversial from an ESG perspective. After merging all three data sources (PRI survey, FactSet Ownership holdings, and ESG scores) the final sample consists of 83,768 institution-year observations at the investor portfolio-level from 2003 to 2017.

3.2. Do PRI Signatories Exhibit Better Portfolio ESG Scores?

This subsection analyzes whether PRI membership translates into better portfolio ESG scores. Table 3 estimates a pooled OLS regression, in which we compare the portfolio-level ESG score of PRI

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signatories to non-PRI signatories that are comparable in terms of their portfolio characteristics. We also control for region, institution type, and time fixed effects. The main variable of interest is the *PRI dummy*, which takes the value of 1 if an investor is a PRI signatory in a given year. Standard errors are double clustered at the institution- and year-level.

In Panel A of Table 3, we find that PRI signatories have significantly better portfolio-level *Total ESG scores*, *Social scores*, and *Governance scores* but not better *Environmental scores*.[23] A *PRI dummy* coefficient of 0.06 corresponds to six hundredths of a standard deviation improvement in portfolio ESG scores. These results control for several portfolio characteristics. For example, we find that portfolio turnover is negatively associated with ESG scores, which is consistent with previous results for US institutions in Starks, Venkat, and Zhu (2018).

We further examine whether institutions improve their portfolio-level ESG scores after becoming PRI signatories. Panel A of Table 4 runs difference-in-difference regressions, in which we match each PRI signatory to one non-PRI institution based on the logarithm of AUM, region, and institution type (using a nearest-neighbor algorithm without replacement). We estimate the PRI signing effect on portfolio-level ESG scores measured in the years [−3; +3] around the signature dates. These regressions include year, region, and type fixed effects as well as controls for portfolio characteristics. Panel A of Table 4 shows that PRI signatories significantly improve, on average, their *Total ESG*, *Social*, and *Governance scores* in the years after joining the PRI (compared to the non-PRI control institutions).

We next investigate whether there are cross-country differences in the extent of portfolio ESG outcomes between the U.S. and other regions given the divergent societal values and regulatory environments as well as the different interpretations of the normative strength associated with the PRI adherence in these countries. For example, as discussed in the introduction, there is an ongoing regulatory debate in the U.S. on whether ESG concerns fall within the fiduciary duty of institutional

[23] In Figure IA1 of the Internet Appendix, we plot the distribution of portfolio-level ESG scores between PRI and non-PRI institutions. The univariate graphs show two interesting patterns. First, from the density graph it seems as if PRI institutions have slightly higher mean and median portfolio-level ESG scores. Second, the distribution of portfolio-level scores of non-PRI institutions has a fatter left tail, suggesting that in the non-PRI population, there are more institutions that have bad portfolio-level ESG scores.

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investors, while that question is more settled in other countries. Moreover, we saw that US signatories tend to be late joiners who—one may conjecture—perceived signing the PRI as an emerging trend they needed to follow to maintain or even grow their business but not purely out of strong ESG convictions.

We test these cross-country differences by comparing the ESG scores of PRI signatories to non-PRI institutions for the subsample of US and non-US institutional investors separately.[24] The sub-sample analysis for the U.S. is motivated by different commercial dynamics (the U.S. being the largest and perhaps most competitive institutional asset management market), regulatory pressure (given the still open debate over "fiduciary rules") and also social norms being stronger outside the U.S. as we alluded to in the Introduction. To ensure that regional differences do not drive our results, we only compare signatories of the same region (e.g., US PRI signatories to US non-PRI institutions). In Panel C of Table 3, we find that PRI signatories have significantly better portfolio-level ESG scores than non-PRI institutions outside the U.S. In contrast, in Panel B of Table 3 US-based PRI signatories tend to exhibit similar or even worse ESG scores than non-signatories. In line with this, in Panel C of Table 4, we also find no evidence that US-based institutions improve their portfolio ESG scores after signing the PRI relative to non-PRI institutions.

We conduct several robustness checks in terms of ESG scores, the universe of stocks, and the set of institutional investors under consideration.[25] First, to address concerns about ESG rating methodological differences, we test and find similar results using each of the ESG scores from the three ESG rating providers separately instead of the average ESG scores. Second, we find consistent results when we calculate the portfolio-level ESG scores of US investors based on US stock holdings only alleviating concerns that US results might be due to "home bias" in US investor holdings and lower ESG performance of US stocks. Third, the results are also robust to excluding the "Big 3" (Blackrock, Vanguard, and State Street), which could be different given their larger size and indexed investment style.

[24] We find qualitatively similar results when we interact the *PRI dummy* with a US dummy.
[25] In the interest of brevity, we are not reporting these robustness checks, but the results are available from the authors upon request.

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We conclude that there is some evidence that PRI signatory institutions have better portfolio-level ESG scores but only when they are domiciled *outside* the U.S. This evidence is consistent with these PRI signatory institutions "walking [some of] the ESG talk." In the U.S., however, our results suggest that institutions may be "walking the [ESG] trend." We examine these findings in more detail in subsequent sections of the paper.

3.3. Do Portfolio ESG Scores Depend on an Institution's Level of Reported ESG Incorporation?

We have documented important regional differences. Non-US PRI signatories tend to have better ESG scores than institutions that do not sign the PRI, but this does not hold for US-domiciled PRI signatories. Given that US signatories joined the PRI in later years (see Figure 1), these institutions could be lagging and still incorporate ESG strategies to a lower extent. For example, if US investors were to incorporate ESG strategies only in a small share of their equity AUM, then one would not expect these signatories to have significantly better scores than non-PRI signatories. It is therefore important to control for the signatories' intensive margin in terms of ESG incorporation.

In this subsection, we use the novel data from the PRI survey to group signatories by their reported level of ESG incorporation. As described in Section 2.2. above, we classify PRI investors into three sub-groups: *PRI: Full ESG incorporation*, *PRI: Partial ESG incorporation*, and *PRI: No reported ESG incorporation*. Do these differences in the reported level of ESG incorporation effectively translate into detectable differences in portfolio ESG scores?

In Table 5, we regress portfolio ESG scores on dummy variables indicating the three sub-groups of PRI signatories by level of ESG incorporation. The results for the full sample, reported in Panel A, show that PRI signatories that report full incorporation have significantly better portfolio-level ESG scores than non-PRI institutions. In contrast, PRI signatories that do so partially or do not incorporate ESG exhibit no significant difference in scores relative to non-signatories.

In Panels B and C of Table 5, we again split the sample into US and Non-US based investors. We find that *PRI: Full ESG incorporation* signatories (and to some extent also those in the *PRI: Partial ESG incorporation* group) have better portfolio scores only for signatories based outside the U.S.

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Strikingly, this is not the case for investors in the U.S. In fact, US-domiciled institutions in the *PRI: No reported ESG incorporation* group have significantly *worse* scores than institutions that do not sign the PRI; a result that is primarily driven by worse *Environmental scores*. The large negative estimate on *PRI: No reported ESG incorporation* in the US sample suggests that these signatories do not "walk the talk." We later investigate the reasons for why some US institutions still sign the PRI and then subsequently not report any ESG incorporation in their equity investments.[26]

One concern with our baseline tests is that portfolio ESG scores might not capture more specialized ESG strategies employed by PRI signatories. For example, some longstanding strategies used by US socially responsible funds involve excluding stocks with worse ESG characteristics or filtering out certain industries for ethical reasons. To address this issue, in Table 6, we examine alternative ESG portfolio-level outcomes. We introduce *Top-bottom ESG stocks*, *Top ESG stocks*, and *Bottom ESG stocks*. We define these variables as the percentage of AUM invested in stocks with a normalized ESG score in the top or bottom decile. Another measure we use is *Sin and fossil fuel stocks* which consists of the percentage of assets invested in "sin" (alcohol, tobacco, and gambling) and "fossil fuel" (oil and gas) industries.[27] The results in Panels A and B of Table 6 are consistent with the tests based on the average portfolio ESG score. The *PRI: Full ESG incorporation* signatories overweight top-performing ESG stocks and underweight bottom ESG stocks and hold less sin or fossil fuel stocks, but these findings hold only among PRI signatories that are based outside the U.S. Among US signatories, the *PRI: No reported ESG incorporation* group have only a significantly lower investment in sin and fossil fuel stocks, but otherwise exhibit similar ESG portfolio outcomes than non-PRI institutions. When we look at US-domiciled *PRI: No reported ESG incorporation*, we only find worse average ESG scores but no significant differences in the other ESG portfolio outcomes.

[26] In Table IA5 of the Internet Appendix we further break-down *PRI: Full ESG incorporation* signatories based on their reported usage of screening and integration strategies. For the US sample, we observe that no PRI signatories, not even those that report to apply 100% screening and 100% integration, have significantly better portfolio scores than non-PRI institutions. Outside of the U.S., we find better scores only for signatories that report applying 100% screening but not for signatories that focus on integration or that apply a mix of the two strategies.
[27] For screening on "sin" stocks see Hong and Kacperczyk (2009) and "fossil fuels" see Bolton and Kacperczyk (2020).

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We conclude that there is a disconnect between "words" and "actions" among US institutional investors. US-domiciled PRI signatories that report full or partial ESG incorporation do not have significantly better ESG portfolio outcomes compared to uncommitted non-signatory institutions (except for some US signatories investing less in sin and fossil fuel stocks). Even more concerning, we identified that a group of US PRI signatories who do not report any ESG incorporation actually exhibit significantly worse ESG scores than non-PRI investors. These results suggest "greenwashing" by some US PRI signatories given that their equity investments are not aligned with the responsible investment goals set by the PRI. We examine these in more detail in the next sections of the paper.

4. What is Driving the Gap between ESG Commitments and Implementation around the World?

While we document a gap between reported ESG commitment and portfolio outcomes among US-based PRI signatories, we do not find a similar disconnect between words and actions for institutions based in other parts of the world. This raises the important question as to what is driving these regional differences?

We conjecture that this ESG implementation gap could arise because ESG investing is driven by different motivations around the world. For instance, investors in some parts of the world might adopt ESG strategies primarily for *commercial reasons* while ESG commitments might be driven by *"values"* or social norms considerations in other parts. In the US, for example, signatories might prioritize commercial reasons when joining the PRI as the US investment management market is more competitive. Given that funds in the US face higher flow-performance sensitivity compared to other markets (Ferreira, Keswani, Miguel, and Ramos, 2012), financially-underperforming investment companies could look to ESG to differentiate their fund offerings and jump on the ESG bandwagon. Outside of the US, "values" considerations may dominate and thus responsible investment could be primarily shaped by social norms. Thus, in these latter countries signatories might be more intrinsically motivated towards ESG and walk their ESG talk. The ESG implementation gap could potentially also be driven by different regulatory environments, which are more geared towards ESG outside of the U.S.

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Indeed, many European and Asian countries have implemented "stewardship codes" instructing institutional investors about their responsibilities to integrate ESG in their investments whereas in the US, we still observe a debate on whether fiduciary duty allows for ESG considerations in investment decisions.

4.1. Differences in Motivations to Commit to Responsible Investing

We begin by exploring what country- and investor-level factors influence the probability of committing to different levels of ESG incorporation. For this purpose, we estimate a multinomial logit regression, in which the dependent variable consists of four groups: *PRI: Full ESG incorporation*, *PRI: Partial ESG incorporation*, *PRI: No reported ESG incorporation*, and also non-PRI institutions (the baseline group). We regress the level of investor commitment on variables capturing commercial, societal, and regulatory determinants of responsible investment.

We proxy for commercial reasons of joining the PRI using past investment performance (*Past alpha*), investor flows (*Past flows*), and also the competitive pressure effects coming from the market share of committed institutions within a given region (*PRI regional share*). As for social norms, we follow Dyck, Lins, Roth, and Wagner (2019) who use the stated values regarding E&S issues captured by the World Values Survey to generate a country-level aggregate E&S social norms measure (*World values*). Finally, we capture regulatory differences based on implemented codes instructing institutional investors on their responsibilities to integrate ESG (*Stewardship Codes*).[28]

We report the results in Table 7. Column (1) shows that whenever institutions are domiciled in countries with higher environmental and social norms, they are more likely to sign the PRI and fully incorporate ESG (*PRI: Full ESG incorporation*). By contrast, in Column (3) we observe that investors with lower past performance are more likely to join the PRI as signatories that report no ESG

[28] We obtain the years of introduction of the stewardship code in each country from Katelouzou and Siems (2020, Table 1). The first stewardship code was introduced in the United Kingdom in 2010 and, among other principles, it required institutional investors to monitor their investee companies, to have a clear voting policy, and to publicly disclose their stewardship and voting activities. Some codes are initiated by regulators and are binding (e.g., the United Kingdom's Financial Reporting Council), while others are introduced by industry bodies and are often voluntary (e.g., the Canadian Coalition for Good Governance). For the US, we take the Obama-era Department of Labor (DOL) position (IB-2015-01) that stipulated it would be appropriate for managers of pension plan assets to weigh in on ESG issues.

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commitment (*PRI: No reported ESG incorporation*). The variable *Stewardship codes* is generally insignificant in predicting the level of ESG incorporation. Hence, our results suggest that social norms and commercial reasons are important motivations for institutions to become PRI signatories, while the regulatory environment appears to be less important.

Importantly, we also observe in Table 7 that, even after controlling for commercial, norms-based, and regulatory country-level differences, we still find significant negative coefficients on the *US dummy* (see columns [1] and [2]). This implies that US signatories are generally less likely to report on their actual ESG portfolio incorporation which confirms a gap between US PRI signatories and those based in other countries.

4.2. Benefits and Costs of Committing to Responsible Investing

To get a better understanding of the gap between US and non-US signatories' motivations, we consider next the potential costs and benefits of PRI membership separately for each of the two samples. In particular, we examine whether PRI signatories experience different investor flows and portfolio performance compared to non-PRI institutions. Both aspects are important determinants of an institution's AUM and therefore ultimately determine the asset managers' revenues and could differ across US and Non-US markets.

Investment managers could be signing the PRI to benefit from an "ESG trend." In the US asset management industry, where active management faces competitive pressure from index investing, ESG strategies have been a bright spot for active management as ESG strategies attract higher flows (Morningstar 2019). Institutional investors might be driven to increase their AUM by signaling a move into ESG by signing the PRI to attract responsible flows. Previous studies provide evidence that sustainable mutual funds did attract higher flows particularly after the introduction of external fund sustainability ratings or labels by Morningstar (see Hartzmark and Sussman, 2019; Ceccarelli, Ramelli and Wagner, 2019), with ESG fund flows being less volatile and less sensitive to past negative returns (Renneboog, Ter Horst and Zhang, 2011) and investors may expect to earn lower returns on ESG funds (Riedl and Smeets, 2017). Survey evidence suggests that in other markets such as Europe where ESG

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investing has had a longer presence, it already commands a sizable share of institutionally managed assets and ESG funds are not experiencing market share growth in recent years (GSIA, 2018).

In Table 8, we examine investors' flows by looking at holdings-based annual asset flows, which we calculate based on the investors' disclosed equity holdings. We first calculate quarterly flows as the change in total equity assets scaled by total equity assets of the previous quarter-end and then adjusting it for stock price changes during the quarter. We then compute the total annual flows as the cumulative quarterly flows that an institution experienced over the year.

Panel A reports the results for US-domiciled institutions. Column (1) shows that US PRI signatories attract significantly higher investor flows than non-PRI institutions located in the U.S., even after controlling for past returns and flows. Column (2) breaks-down the PRI dummy into the sub-groups of PRI signatories based on the reported level of ESG incorporation. We find that US fund investors are unable to differentiate between PRI signatories with different levels of ESG incorporation: both signatories that fully incorporate ESG and those that do not report on ESG at all receive significantly higher flows.[29] These patterns do not seem to hold for non-US signatories. In Panel B, we observe in Column (1) that non-US signatories do not attract significantly higher investor flows and when we break their level of reported ESG incorporation down in Column (2), we even observe that signatories that are fully or partially committed to ESG seem to experience lower asset growth. We conclude that PRI membership offers a signaling benefit in the US but not elsewhere.

We next examine if responsible investing is motivated by performance considerations. On the one hand, there could be costs associated with committing to ESG. Responsible investing may constrain portfolio construction and reduce diversification benefits. In addition, responsible companies could also be overvalued due to non-pecuniary demand for those stocks (Pastor, Stambaugh, and Taylor 2020) and this could hurt portfolio performance of responsible investors. On the other hand, Pedersen, Fitzgibbons, and Pomorski (2020) argue that "ESG-aware" investors can earn higher Sharpe ratios when ESG

[29] Humphrey and Li (2021) also show that investor flows react positively to mutual fund companies that sign the PRI. In unreported robustness tests, we find qualitatively similar results on flows when we examine product-level data from eVestment which covers both US equity mutual funds and separately managed accounts.

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information provides material corporate information that is not yet priced by the market. If responsible investors integrate ESG only when it is financially relevant and if ESG is not yet fully priced, then we would expect those investors to have better investment performance.

Potential costs to ESG investing could prevent US institutions that are affected by US fiduciary duty laws from implementing ESG strategies in their portfolios even when they committed to the PRI. Under the Trump administration's interpretation of US fiduciary duty, investment managers were only allowed to consider ESG information when it was relevant to investment performance and risk.[30] If US signatories are more focused more on providing alpha to their clients instead of delivering good ESG outcomes, then we expect these signatories to have better or at least similar portfolio performance than non-PRI institutions.

In order to analyze the investment performance of responsible investors, we first compute buy-and-hold returns based on institutions' disclosed equity holdings (for which ESG scores are available) following Kacperczyk, Sialm and Zheng (2008). The buy-and-hold returns quantify the hypothetical gross return of the long equity portion of the institutional investor's portfolio.[31] Various performance metrics are then computed and analyzed for the different types of ESG incorporation levels. The results in Table IA7 of the Internet Appendix indicate that PRI institutions do not display significant portfolio performance differences relative to non-PRI institutions. US signatories tend to have significantly higher idiosyncratic risks but no different 1-factor alphas, regardless of how much ESG incorporation they report. For investors domiciled outside of the US, we do not find any significant differences between PRI signatories and their non-PRI counterparts. These results suggest that the impact of accounting for ESG on portfolio performance is unlikely to be the main driver behind the ESG performance gap between US and non-US regions, even after controlling for different incorporation levels.

4.3. Have US PRI Signatories Improved on ESG Incorporation Over Time?

[30] U.S. Department of Labor IB 2018-01.

[31] We calculate the holdings-based returns by assuming that investors trade their positions quarterly with no interim trading between reported quarter-ends. We then compute the standard mean-variance investment performance measures (*mean(return), std(return)*, and *Sharpe*), as well as the decomposition of risk (systematic, idiosyncratic). Detailed variable definitions are provided in Appendix A1 and Table IA6 of the Internet Appendix provides descriptive statistics.

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We now explore whether the gap in "walking the [ESG] talk" between investors from the U.S. versus other regions is persistent or narrowing over the sample period. While ESG implementation efforts appear worse in the U.S., it could be that US institutional investors improve their ESG practices over time and catch-up with their international peers. For this purpose, Table IA8 estimates annual cross-sectional regressions of the total ESG score on the *PRI dummy* and the three PRI groups of different reported levels of ESG incorporation. In Panel A, we find that PRI signatories domiciled outside the U.S. exhibit significantly better scores in all sample years since 2009 (except for 2013). US-domiciled signatories, by contrast, are not statistically distinguishable from non-PRI institutions in most of the earlier years since the creation of PRI and then show significantly worse scores in later sample years (2015 and 2016). Panel B illustrates that in those two years, even US-domiciled signatories that report to fully incorporate ESG strategies into their assets, had worse scores than uncommitted investors. These results highlight that the disconnect between words and actions in the U.S. has not improved and still prevails even in the last few years.

4.4. Interpreting the Gap in ESG Incorporation Between the US and Non-US Institutions

The findings in this section reveal a substantial and persistent ESG gap between the US and other parts of the world. The gap is robust even when controlling for peer pressure, stewardship codes, and differences in world values. We also observe that PRI membership leads to better (worse) investor flows for US (non-US) signatories. These results suggest that being a PRI signatory in the U.S. is a cheap signal of responsible investing, as US signatories do not act sufficiently on the PRI commitment as their ESG implementation does not lead to better scores than non-PRI institutions.

We find no financial performance differences between the portfolios of PRI and non-PRI institutions and the results are similar in the US as well as outside. Given these results, it seems unlikely that US fiduciary duty, which implies that investors should implement ESG only when it is financially material, prevents US institutions from implementing ESG considerations into their portfolios.

Overall, we conclude that US-domiciled signatories join the PRI primarily for commercial reasons to grow their AUM by attracting responsible flows. In contrast, signatories domiciled outside of

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the US appear to be more intrinsically motivated towards ESG investing as they actually implement ESG into their portfolios although they do not benefit in terms of higher investor flows nor superior financial performance.

5. What Motivates the US "Greenwashing" Signatories?

In this last section, we examine the characteristics of US-domiciled institutions that sign the PRI but exhibit significantly worse portfolio ESG scores than their non-PRI peers. Studying these institutions is important because this group of US signatories shows the strongest disconnect between words and actions.

We test if these signatories "greenwash," meaning that they pretend to be more responsible than they really are to potentially profit from the increased market interest in ESG investing. Our earlier analysis has shown that US fund investors do not differentiate between signatories' levels of ESG incorporation and as a result even signatories that report no ESG incorporation benefit from joining the PRI in terms of higher investor flows. Alternatively, the signatories in question could exhibit worse portfolio ESG scores simply because they are unable to implement ESG strategies due to organizational inefficiencies or because of a stronger focus on shareholder value that considers ESG issues only when financially material.

To shed light on the characteristics of US PRI signatories whose actions do not match their words and understand what might drive greenwashing, we conduct several cross-sectional tests. We first test if investors that have underperformed their peers might be more tempted to "greenwash" to compensate for their subpar investment performance and resultant loss of business. Column (1) of Table 9 breaks-down the group of *PRI: No reported ESG incorporation* signatories above and below the median portfolio buy-and-hold return performance of all US institutional investors in the prior year. We measure an investor's performance by its one factor holdings-based alpha, further described in Appendix Table A.1. We observe that PRI signatories that report no ESG incorporation exhibit significantly worse portfolio ESG scores only when they had below-median performance. The relation

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between past underperformance and greenwashing suggests that ESG is misappropriated by some PRI signatories to divert attention from poor past performance.

Another potential driver of "greenwashing" might be agency issues between the investment managers and its beneficiaries such as the asset owners, institutional, and retail clients or conflicts with other stakeholders such as employees and communities. We explore this explanation with two cross-sectional tests. First, we conjecture that greenwashing is more pronounced when institutions face less scrutiny by their beneficiaries, namely when they serve retail as opposed to institutional clients that are more sophisticated and can monitor investment managers more effectively. We classify institutions into retail- and institutional-serving investors based on their inclusion in eVestment, which is used extensively by institutional advisors in their work to assist institutional clients.[32] Second, to explore conflicts between the investment managers and other stakeholders, we expect more greenwashing when the investment management company itself is involved in more conflicts with its own stakeholders (e.g., employees or communities). We measure these conflicts by the investment company' own history of negative ESG incidents.[33] We obtain ESG incident data from RepRisk, which covers both private and publicly listed companies around the world since 2007.[34] Consistent with our two predictions on agency issues, Columns (2) and (3) of Table 9 show that *PRI: No reported ESG incorporation* signatories have worse portfolio ESG scores only when they predominately serve retail clients and when they experience more negative ESG incidents (higher operational risks) in-house. Both findings indicate that when US signatories with no reported ESG incorporation face less scrutiny from their clients or do not treat their own stakeholders responsibly, they also fail to implement ESG in their client portfolios, which is consistent with "greenwashing" behavior.

[32] The eVestment data has been used by Jenkinson, Jones, Martinez (2016), who report that eVestment is a leading provider of data and analytics services to institutional fund managers and investment consultants.

[33] Note that this measure is different from the ESG scores because it is not based on portfolio holdings of the institution, but rather reflects how ESG compliant the operations of the investment company are.

[34] RepRisk measures a company's ESG incident rate by searching thousands of information sources (e.g., newspapers, blogs, NGOs, government agencies). Examples of ESG incidents include poor employment conditions, anti-competitive practices, or violations of national or international legislation. The RepRisk data has been used in Glossner (2021), He, Kahraman, and Lowry (2019), and Gantchev, Giannetti, and Li (2020) among other papers.

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Our last two cross-sectional tests explore the role of an institutional investor's general commitment to the PRI initiative. First, we conjecture that investors who fall in the *PRI: No reported ESG incorporation* category are more likely to greenwash if they are late joiners of the PRI. We define a late joiner as an investor who joined in the second half of the sample period (2013 or later). Second, we examine the political orientation of investors, as proxied by the political environment of the U.S. state in which the investment company is headquartered.[35] The swings on the Department of Labor (DOL) rulings on ESG-related fiduciary duties between the Obama and Trump administrations shows the partisan nature of ESG standards and their interpretation at the federal level. Similar partisan divides likely exist between progressive US states (e.g., California or New York) and more conservative ones (e.g., Texas or Utah). We use the Cook Partisan Voting Index (PVI)[36] and US states in the first tercile are considered left-leaning states, while states with a PVI in the second or third tercile are considered moderate/right-leaning states. In columns (4) and (5) of Table 9, we find that the group of *PRI: No reported ESG incorporation* tend to exhibit worse portfolio ESG scores when the signatory joined the PRI late or is headquartered in a more moderate- or right-leaning state.

Taken together, the cross-sectional tests in Table 9 reveal that US-domiciled signatories exhibit worse portfolio ESG scores when they have more incentives to greenwash (underperformance in the previous year), face higher conflicts between the investment manager and its beneficiaries and stakeholders (more retail than institutional clients as well as a higher incidence of negative ESG events), and are less committed to responsible investing (late PRI joiners and based in more moderate/right-leaning states). Given that these findings are difficult to reconcile with explanations that US signatories with worse scores are inefficient organizations that are unable to implement ESG, we conclude that these signatories join the PRI to "greenwash" and profit from the increasing interest in ESG investing. While the dimensions studied in Table 9 seem to all play a role in contributing to greenwashing behavior, we caution here that these characteristics may interact and are not mutually exclusive.

[35] For example, Hong and Kostovetsky (2012) report that Republican (right-leaning) fund managers select stocks with lower ESG scores in comparison to Democratic (left-leaning) ones.

[36] We obtain the PVI from https://cookpolitical.com/introducing-2017-cook-political-report-partisan-voter-index.

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6. Conclusions

We analyze how responsible investment principles map into different ESG portfolio outcomes by studying the PRI, the largest (and UN-supported) global network focused on responsible investment. We compare what institutional investors report doing in terms of ESG incorporation in the PRI reporting framework survey ("words") to their portfolio-level ESG scores based on ESG ratings from three leading providers ("actions") aiming to answer the question of whether or not responsible investors actually invest responsibly.

We document that PRI signatories that report to fully or partially incorporate ESG considerations into their active equity holdings have better portfolio ESG scores than non-PRI signatories – but this occurs only for institutions domiciled outside of the US. In the US, we observe a substantial disconnect between words and actions. We do not find better scores for US-domiciled signatories, not even for those that report full ESG incorporation. US-domiciled signatories that report no ESG incorporation actually have, on average, *worse* scores than non-PRI investors. These latter findings are consistent with "greenwashing" signatories seeking to attract responsible flows. In general, the ESG disconnect between the U.S. and the rest of the world appears to be driven by a more business-oriented approach to ESG, as opposed to ESG investing that is intrinsically motivated by social norms more prevalent in other parts of the world. Importantly, our results highlight that investors need to look beyond a signal such as the PRI membership of investment managers when evaluating their sustainable credentials and the alignment between their words and their responsible investing actions.

This paper leaves open many questions for future research. Given that we show that (some) PRI signatories do not allocate capital responsibly one may wonder about the ability of responsible investing to drive change in corporate ESG practices and affect real capital allocation in the investee companies. It remains to be seen to what extent responsible investing really contributes to attaining the UN Sustainable Development Goals. Our sample period is relatively short given the recent history of the PRI initiative and the cross-section of our analysis is limited to publicly listed equities. Other asset

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classes, such as private equity, fixed income, or real estate investments are worthy of investigation, but the empirical challenge is that there is less portfolio-level information. Given that responsible investing is a growing trend, future research should address these topics.

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Fig. 1. The growth of the Principles for Responsible Investment

These figures examine the growth of PRI signatories among the population of institutional equity investors around the world. *PRI* denotes those institutional investors in the FactSet Ownership data that signed the UN Principles for Responsible Investment (PRI). *Non-PRI* denotes institutional investors that did not sign the PRI. Panel A plots the number of PRI signatories and non-PRI signatories over time. Panel B shows the coverage in terms of equity assets under management (AUM in USD trillion is computed as the sum of the market value of equity holdings for which we have ESG scores). Panels C and D shows the AUM coverage for the sample of US and Non-US investors. The full sample period is from 2003 to 2017.

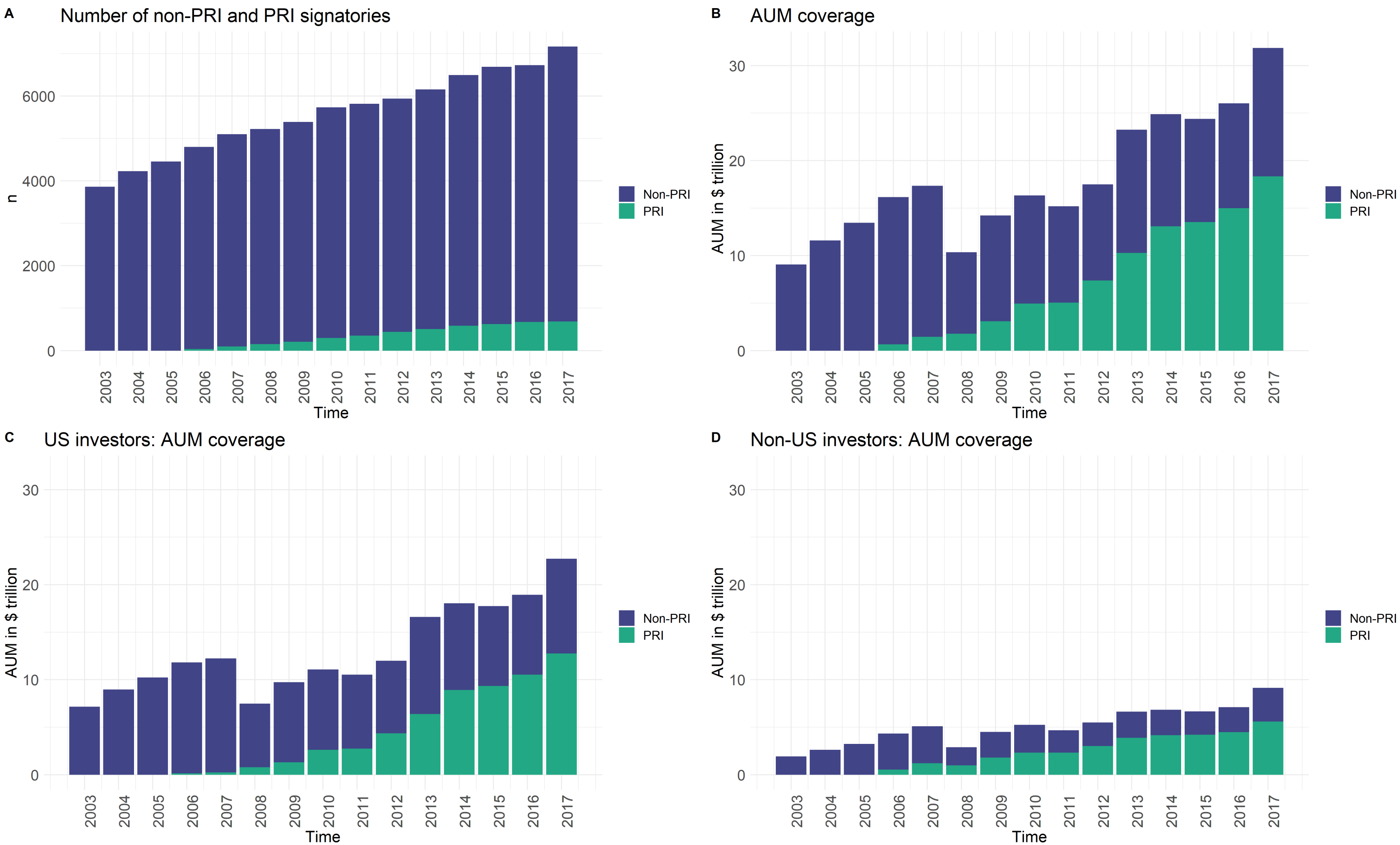

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Fig. 2. Reported ESG incorporation strategies by PRI signatory institutional investors

These figures compare the percentage of equity AUM affected by different ESG incorporation strategies among PRI signatory institutional investors. Panel A reports the overall average percentage of AUM for the different strategies. The strategies are screening (*%-Screening*), thematic investment (*%-Thematic*), and integration of ESG factors (*%-Integration*). Panel B shows the average percentage of AUM affected by the strategies across each survey year. Panels C and D show the average percentage of AUM affected by the strategies by level of ESG incorporation, separately for the sample of US and Non-US institutional investors. We define the level of ESG incorporation based on whether PRI signatories report in the PRI survey that they apply ESG incorporation strategies (i.e., screening, thematic, or integration) to all of their equity AUM (*PRI: Full ESG incorporation*), part of their equity AUM (*PRI: Partial ESG incorporation*), or none of their equity AUM or do not report (*PRI: No reported ESG incorporation*). The sample period of the survey is from 2013 to 2017.

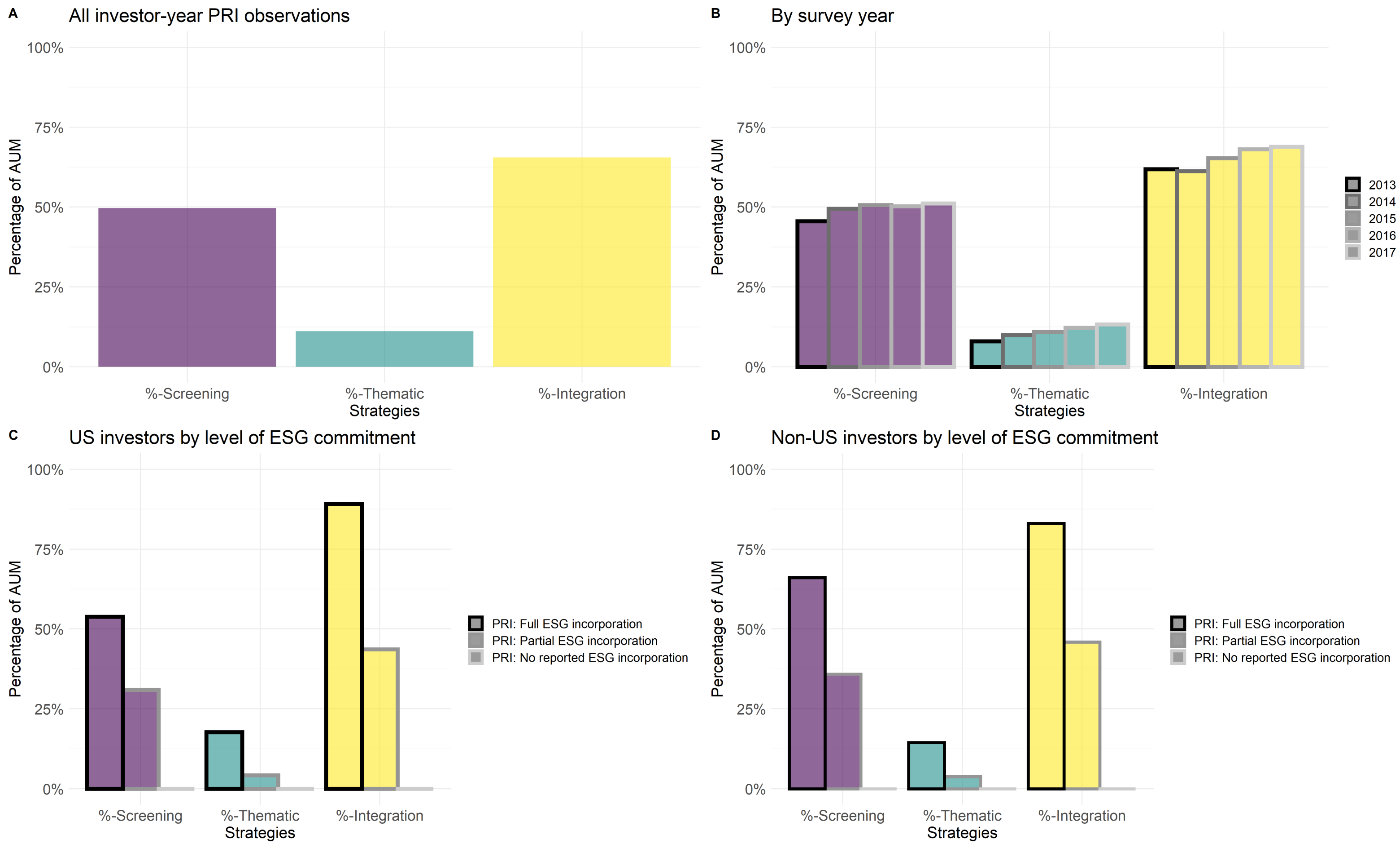

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Table 1. Descriptive statistics on PRI signatory institutional investors

This table compares the characteristics of PRI signatory institutional investors to non-PRI investors in the FactSet Ownership data in different sample years (2006, 2012, and 2017). PRI signatories are institutional investors that report in the PRI survey (listed equity module of the PRI reporting framework) and could be matched to FactSet Ownership data on equity portfolio holdings, Datastream stock returns, and to ESG company ratings. *Number of investors* counts the number of institutional investors in each group. *AUM coverage* corresponds to the sum of the market value of equity holdings for which ESG scores are available. The sample period is from 2003 to 2017. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels. Definitions of the variables are provided in Appendix Table A1.

	PRI			**Non-PRI**			**All**
	2006	2012	2017	2006	2012	2017	All
Number of investors	36	439	684	4762	5498	6481	10689
AUM coverage (USD, trillion)	0.65	7.37	18.35	15.52	10.13	13.52	271.61
by Region							
Europe	61.1%	51.3%	47.8%	29.4%	25.2%	19.9%	27.2%
North America	19.4%	23.0%	31.4%	63.1%	61.1%	68.3%	61.2%
Asia-Pacific + others	19.4%	25.7%	20.8%	7.5%	13.7%	11.8%	11.6%
by Type							
Asset owner	30.6%	8.7%	5.4%	5.3%	3.1%	2.0%	4.0%
Investment manager	69.4%	91.3%	94.6%	94.7%	96.9%	98.0%	96.0%
by AUM (USD)							
<1bn	27.8%	41.9%	42.1%	77.8%	82.0%	80.5%	78.5%
1-10bn	25.0%	35.1%	33.2%	16.8%	14.6%	15.8%	16.4%
10-100bn	47.2%	19.6%	19.9%	5.1%	3.3%	3.5%	4.8%
>100bn	0.0%	3.4%	4.8%	0.3%	0.1%	0.3%	0.4%
Portfolio characteristics							
Total ESG scores	0.36	0.18	0.22	0.12	0.01	0.01	0.05
Number of stocks	1196	808	820	277	212	208	270
Industry concentration	0.00	0.00	0.01	0.01	0.02	0.04	0.02
Portfolio turnover	0.28	0.27	0.28	0.40	0.37	0.33	0.37
Portfolio activeness	0.69	0.82	0.82	0.89	0.90	0.88	0.88
Average stock size (USD, million)	11.7	19.7	22.9	15.1	17.3	25.1	17.9

Table 2. Reported ESG strategies by PRI signatory institutional investors

This table compares the ESG strategies of PRI signatory institutional investors as reported in the PRI surveys from 2013 to 2017. Panel A shows the percentage of signatories' AUM that is covered by an ESG strategy (*%-Screening*, *%-Thematic*, *%-Integration*). We define the level of ESG incorporation based on whether PRI signatories report in the PRI survey that they apply ESG incorporation strategies (i.e., screening, thematic, or integration) to all of their equity AUM (*PRI: Full ESG incorporation*), part of their equity AUM (*PRI: Partial ESG incorporation*), or none of their equity AUM or do not report (*PRI: No reported ESG incorporation*). Panel B provides the frequency by which PRI signatories report using negative screening, positive screening, norms-based screening, thematic investment, integration of ESG factors, and engagement. Overall engagement is further broken down into individual engagement, collaborative engagement, and internal voting. The strategies are not mutually exclusive. Panel C provides the frequency by which PRI signatories report having a formal ESG policy, Board involvement in ESG, C-suite involvement in ESG, asset manager involvement in ESG, and having a dedicated ESG staff. The panel also reports the number of ESG employees per total employees and the number of other responsible initiatives that the investor has committed to. Detailed definitions of these variables are available in Table IA2 of the Internet Appendix. The first column of each panel reports the number of investor-year observations.

Panel A: Fraction of PRI signatories' equity AUM covered by ESG incorporation strategies

	PRI overall			
	Total	**%-Screening**	**%-Thematic**	**%-Integration**
Overall	2,796	50%	11%	66%
by Year				
2013	442	46%	8%	62%
2014	497	49%	10%	61%
2015	556	51%	11%	65%
2016	625	50%	12%	68%
2017	676	51%	13%	69%
by Region				
Europe	1,379	60%	12%	62%
North America	777	37%	11%	62%
Asia-Pacific + others	640	42%	10%	77%
by Type				
Asset owner	184	57%	8%	67%
Investment manager	2,612	49%	11%	65%
by AUM (USD)				
<1bn	1,202	47%	12%	58%
1-10bn	919	55%	10%	68%
10-100bn	560	49%	10%	75%
>100bn	115	43%	12%	79%
	PRI by level of ESG incorporation			
US investors:				
PRI: Full ESG incorporation	372	54%	18%	89%
PRI: Partial ESG incorporation	112	31%	4%	44%
PRI: No reported ESG incorporation	168	0%	0%	0%
Non-US investors:				
PRI: Full ESG incorporation	1,596	66%	14%	83%
PRI: Partial ESG incorporation	275	36%	4%	46%
PRI: No reported ESG incorporation	273	0%	0%	0%

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Table 2. Reported ESG strategies of PRI signatories (contd.)

Panel B: Percentage of PRI signatories that apply different sub-types of ESG strategies

	Total	**Negative screening**	**Positive screening**	**Norms-based screening**	**Thematic**	**Integration**	**Engagement**	**Individual engagement**	**Collaborative engagement**	**Internal voting**
Overall	2,796	68%	38%	33%	33%	77%	86%	81%	65%	72%
	PRI by level of ESG incorporation									
US investors:										
PRI: Full ESG incorporation	372	84%	43%	33%	42%	93%	94%	86%	68%	78%
PRI: Partial ESG incorporation	112	88%	52%	32%	31%	89%	85%	71%	52%	76%
PRI: No reported ESG incorporation	168	1%	1%	0%	1%	1%	39%	35%	30%	27%
Non-US investors:										
PRI: Full ESG incorporation	1,596	79%	44%	40%	38%	91%	93%	89%	73%	81%
PRI: Partial ESG incorporation	275	81%	53%	39%	45%	89%	96%	91%	68%	86%
PRI: No reported ESG incorporation	273	0%	0%	0%	0%	0%	54%	47%	44%	26%

Panel C: ESG organizational resources of PRI signatories

	Total	**ESG policy**	**Board ESG involvement**	**C-Suite ESG involvement**	**Asset manager ESG involvement**	**ESG staff**	**% ESG employees**	**Other initiatives**
Overall	2,796	95%	59%	90%	95%	72%	5%	4.6
	PRI by level of ESG incorporation							
US investors:								
PRI: Full ESG incorporation	372	93%	44%	94%	92%	74%	7%	4.8
PRI: Partial ESG incorporation	112	86%	38%	92%	99%	68%	6%	5.2
PRI: No reported ESG incorporation	168	89%	49%	74%	82%	43%	2%	2.5
Non-US investors:								
PRI: Full ESG incorporation	1,596	98%	65%	94%	97%	73%	5%	4.7
PRI: Partial ESG incorporation	275	92%	57%	94%	98%	87%	8%	6.2
PRI: No reported ESG incorporation	273	87%	58%	67%	85%	65%	2%	3.7

Table 3. Are ESG portfolio scores better for PRI signatory institutional investors?

This table regresses portfolio-level ESG scores on the *PRI dummy* (which takes the value of 1 for institutional investors that sign the PRI from the signature year onwards) and institutional investors' characteristics. The dependent variables are the value-weighted ESG scores of institutional investors' equity portfolios: *Total ESG scores*, *Environmental scores*, *Social scores*, and *Governance scores*. Panel A reports the results for the full sample, Panel B for US investors, and Panel C reports for non-US investors. Appendix Table A1 provides definitions of the variables. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The sample period is from 2003 to 2017. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

Panel A: Full sample

	Dependent variable:			
	Total ESG scores (1)	Environmental scores (2)	Social scores (3)	Governance scores (4)
PRI dummy	0.06^{***} (0.01)	0.01 (0.01)	0.04^{***} (0.01)	0.10^{***} (0.02)
Europe	0.33^{***} (0.03)	0.24^{***} (0.02)	0.21^{***} (0.03)	0.42^{***} (0.04)
North America	0.05^{*} (0.03)	-0.10^{***} (0.03)	-0.12^{***} (0.02)	0.57^{***} (0.04)
Investment manager	-0.03 (0.02)	-0.03 (0.02)	-0.04^{**} (0.02)	0.00 (0.02)
Number of stocks	-0.19^{***} (0.01)	-0.19^{***} (0.01)	-0.16^{***} (0.02)	-0.10^{***} (0.01)
Industry concentration	-0.43^{***} (0.04)	-0.42^{***} (0.05)	-0.36^{***} (0.04)	-0.23^{***} (0.02)
Portfolio turnover	-0.20^{***} (0.02)	-0.18^{***} (0.01)	-0.19^{***} (0.01)	-0.07^{***} (0.01)
Portfolio activeness	-1.47^{***} (0.09)	-1.60^{***} (0.11)	-1.13^{***} (0.12)	-0.91^{***} (0.09)
Average stock size	-0.17^{***} (0.01)	-0.17^{***} (0.01)	-0.15^{***} (0.01)	-0.06^{***} (0.01)
AUM	0.14^{***} (0.01)	0.13^{***} (0.01)	0.12^{***} (0.01)	0.05^{***} (0.01)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	76,335	76,335	76,335	76,335
Adjusted R^2	0.33	0.35	0.33	0.29

Panel B: US institutional investors

	Dependent variable:			
	Total ESG scores (1)	Environmental scores (2)	Social scores (3)	Governance scores (4)
PRI dummy	-0.05^{*} (0.03)	-0.05 (0.03)	-0.03 (0.02)	-0.04^{**} (0.02)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	43,620	43,620	43,620	43,620
Adjusted R^2	0.35	0.36	0.31	0.25

Panel C: Non-US institutional investors

	Dependent variable:			
	Total ESG scores (1)	Environmental scores (2)	Social scores (3)	Governance scores (4)
PRI dummy	0.07^{***} (0.02)	0.05^{***} (0.02)	0.06^{***} (0.01)	0.04^{*} (0.02)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	32,715	32,715	32,715	32,715
Adjusted R^2	0.24	0.24	0.20	0.17

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Table 4. Do ESG portfolio scores improve after signing the PRI?

This table regresses portfolio-level ESG scores on the *PRI dummy*, *Post-signature dummy*, and institutional investors' characteristics. The dependent variables are the value-weighted portfolio-level ESG scores. *Post-signature dummy* takes the value 1 for investor-year observations from the year an institutional investor signs the PRI onwards (also for non-PRI institutions, matched on AUM, region, and institution type), and 0 otherwise. *PRI dummy* takes the value 1 for PRI signatories, and 0 for matched non-signatories *Post-signature x PRI* interacts the previous two dummy variables. Panel A reports the results for the full sample, Panel B for US investors, and Panel C reports for non-US investors. Definitions of the variables are provided in Appendix Table A1. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The sample period is from 2003 to 2017, but trimmed to [-3;+3] years around the signature dates for each PRI signatory (and matched non-PRI investor). *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

Panel A: Full sample

	Dependent variable:			
	Total ESG scores	Environmental scores	Social scores	Governance scores
	(1)	(2)	(3)	(4)
Post-signature x PRI	0.04^{**} (0.02)	0.01 (0.01)	0.05^{***} (0.01)	0.03 (0.03)
Post-signature dummy	-0.02^{*} (0.01)	-0.02^{**} (0.01)	-0.03^{***} (0.01)	-0.01 (0.01)
PRI dummy	0.05^{**} (0.02)	0.05^{***} (0.02)	0.02 (0.02)	0.02 (0.02)
Number of stocks	-0.20^{***} (0.03)	-0.17^{***} (0.02)	-0.13^{***} (0.03)	-0.17^{***} (0.03)
Industry concentration	-0.70^{***} (0.09)	-0.60^{***} (0.09)	-0.61^{***} (0.07)	-0.46^{***} (0.11)
Portfolio turnover	-0.25^{***} (0.03)	-0.21^{***} (0.03)	-0.25^{***} (0.03)	-0.07^{*} (0.04)
Portfolio activeness	-0.73^{***} (0.12)	-0.74^{***} (0.11)	-0.39^{***} (0.11)	-0.97^{***} (0.14)
Average stock size	-0.20^{***} (0.02)	-0.18^{***} (0.02)	-0.16^{***} (0.02)	-0.10^{***} (0.02)
AUM	0.17^{***} (0.02)	0.16^{***} (0.02)	0.12^{***} (0.02)	0.09^{***} (0.02)
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Type fixed effects	Yes	Yes	Yes	Yes
Observations	8,601	8,601	8,601	8,601
Adjusted R^2	0.31	0.32	0.30	0.27

Panel B: US institutional investors

	Dependent variable:			
	Total ESG scores	Environmental scores	Social scores	Governance scores
	(1)	(2)	(3)	(4)
Post-signature x PRI	-0.03 (0.03)	-0.03 (0.03)	-0.04 (0.03)	-0.03 (0.02)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Type fixed effects	Yes	Yes	Yes	Yes
Observations	2,345	2,345	2,345	2,345
Adjusted R^2	0.34	0.34	0.27	0.18

Panel C: Non-US institutional investors

	Dependent variable:			
	Total ESG scores	Environmental scores	Social scores	Governance scores
	(1)	(2)	(3)	(4)
Post-signature x PRI	0.07^{**} (0.03)	0.04^{*} (0.02)	0.08^{***} (0.02)	0.06 (0.03)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
Type fixed effects	Yes	Yes	Yes	Yes
Observations	6,256	6,256	6,256	6,256
Adjusted R^2	0.21	0.21	0.17	0.18

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Table 5. Are the ESG portfolio scores of PRI signatories different by extent of ESG incorporation?

This table regresses portfolio-level ESG scores on the intensity of ESG incorporation as reported in the PRI reporting framework. We split the *PRI dummy* into three groups based on whether PRI signatories report in the PRI survey that they use ESG incorporation strategies (i.e., screening, thematic, or integration). These signatories report incorporating ESG to 100% of their equity AUM (*PRI: Full ESG incorporation*), to 1-99% of their equity AUM (*PRI: Partial ESG incorporation*), or to 0% of their equity AUM or do not report (*PRI: No reported ESG incorporation*). Panel A reports the results for the full sample, Panel B for US investors, and Panel C reports for non-US investors. As in Table 3, we control for institutional investor's region, type, and portfolio characteristics. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The sample period is from 2013 to 2017 (the years of the PRI survey). *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

Panel A: Full sample

	Dependent variable:			
	Total ESG scores (1)	Environmental scores (2)	Social scores (3)	Governance scores (4)
PRI: Full ESG incorporation	0.06** (0.02)	0.02 (0.02)	0.05** (0.01)	0.06** (0.02)
PRI: Partial ESG incorporation	0.03 (0.02)	0.02 (0.02)	0.04* (0.02)	−0.02 (0.03)
PRI: No reported ESG incorporation	−0.02 (0.02)	−0.05 (0.02)	−0.01 (0.02)	0.00 (0.02)
Controls and year fixed effects	Yes	Yes	Yes	Yes
Observations	30,511	30,511	30,511	30,511
Adjusted R^2	0.34	0.34	0.30	0.25

Panel B: US institutional investors

	Dependent variable:			
	Total ESG scores (1)	Environmental scores (2)	Social scores (3)	Governance scores (4)
PRI: Full ESG incorporation	−0.04 (0.03)	−0.06 (0.04)	−0.03 (0.03)	−0.03 (0.03)
PRI: Partial ESG incorporation	−0.07 (0.05)	−0.08 (0.05)	−0.04 (0.03)	−0.06* (0.03)
PRI: No reported ESG incorporation	−0.12** (0.04)	−0.13** (0.03)	−0.08 (0.04)	−0.04 (0.03)
Controls and year fixed effects	Yes	Yes	Yes	Yes
Observations	17,641	17,641	17,641	17,641
Adjusted R^2	0.34	0.36	0.26	0.15

Panel C: Non-US institutional investors

	Dependent variable:			
	Total ESG scores (1)	Environmental scores (2)	Social scores (3)	Governance scores (4)
PRI: Full ESG incorporation	0.09** (0.02)	0.05** (0.02)	0.07** (0.02)	0.05 (0.03)
PRI: Partial ESG incorporation	0.06 (0.03)	0.07* (0.03)	0.07* (0.03)	−0.05 (0.04)
PRI: No reported ESG incorporation	0.06 (0.03)	0.03 (0.03)	0.05 (0.03)	0.04 (0.04)
Controls and year fixed effects	Yes	Yes	Yes	Yes
Observations	12,870	12,870	12,870	12,870
Adjusted R^2	0.22	0.23	0.17	0.18

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Table 6. Are other ESG portfolio outcomes of PRI signatories also different by extent of ESG incorporation?

This table regresses alternative portfolio-level ESG outcomes on different levels of reported ESG incorporation in the PRI survey. The dependent variables are the *Total ESG scores*, *Top–bottom ESG stocks*, *Top ESG stocks*, *Bottom ESG stocks*, and *Sin and fossil fuel stocks*. Panel A reports the results for US investors and Panel B reports for non-US investors. As in Table 3, we control for institutional investor's region, type, and portfolio characteristics. Definitions of the variables are provided in Appendix Table A1. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The sample period is from 2013 to 2017. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

Panel A: US institutional investors

	Dependent variable:				
	Total ESG scores	Top–bottom ESG stocks	Top ESG stocks	Bottom ESG stocks	Sin and fossil fuel stocks
	(1)	(2)	(3)	(4)	(5)
PRI: Full ESG incorporation	−0.04 (0.03)	−0.01 (0.01)	0.01 (0.01)	0.02 (0.01)	−0.02** (0.01)
PRI: Partial ESG incorporation	−0.07 (0.05)	−0.03 (0.01)	−0.01 (0.01)	0.02** (0.01)	−0.01 (0.01)
PRI: No reported ESG incorporation	−0.12** (0.04)	−0.03 (0.02)	−0.01 (0.01)	0.02 (0.01)	0.01 (0.02)
Controls and year fixed effects	Yes	Yes	Yes	Yes	
Observations	17,641	17,641	17,641	17,641	17,641
Adjusted R^2	0.34	0.21	0.20	0.09	0.02

Panel B: Non-US institutional investors

	Dependent variable:				
	Total ESG scores	Top–bottom ESG stocks	Top ESG stocks	Bottom ESG stocks	Sin and fossil fuel stocks
	(1)	(2)	(3)	(4)	(5)
PRI: Full ESG incorporation	0.09** (0.02)	0.04** (0.01)	0.03* (0.01)	−0.01** (0.00)	−0.01** (0.00)
PRI: Partial ESG incorporation	0.06 (0.03)	0.02 (0.01)	0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
PRI: No reported ESG incorporation	0.06 (0.03)	0.02 (0.01)	0.02 (0.01)	−0.00 (0.00)	−0.00 (0.01)
Controls and year fixed effects	Yes	Yes	Yes	Yes	
Observations	12,870	12,870	12,870	12,870	12,870
Adjusted R^2	0.22	0.16	0.12	0.10	0.02

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Table 7. What are the motivations of PRI signatories to commit to different levels of ESG incorporation?

This table presents the results of a multinomial logit, in which the dependent variable consists of four groups: *PRI: Full ESG incorporation*, *PRI: Partial ESG incorporation*, *PRI: No reported ESG incorporation*, and Non-PRI investors (the baseline group). Appendix Table A1 provides detailed definitions of the variables. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The sample period is from 2013 to 2017. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

	Dependent variable:		
	PRI: Full ESG incorporation	PRI: Partial ESG incorporation	PRI: No reported ESG incorporation
	(1)	(2)	(3)
US dummy	-1.45^{***}	-1.05^{***}	-0.22
	(0.22)	(0.32)	(0.25)
World values	4.40^{***}	1.77	2.23
	(0.87)	(1.39)	(1.39)
Stewardship codes	-0.16	-0.30	0.16
	(0.21)	(0.29)	(0.18)
PRI regional share	7.55^{***}	6.09^{**}	6.79^{***}
	(1.81)	(2.59)	(1.62)
Past alpha	-12.37	-15.64	-10.40^{**}
	(9.03)	(10.74)	(4.14)
Past flows	-0.17	-0.16	-0.04
	(0.11)	(0.13)	(0.06)
Investment manager	-0.10	0.50	-0.57^{**}
	(0.20)	(0.48)	(0.28)
Number of stocks	0.30^{***}	0.59^{**}	0.25^{*}
	(0.10)	(0.30)	(0.13)
Industry concentration	-0.24	1.32^{**}	1.39^{***}
	(0.56)	(0.64)	(0.30)
Portfolio turnover	-0.41^{**}	-0.41	0.44^{*}
	(0.17)	(0.25)	(0.24)
Portfolio activeness	-0.12	0.23	-1.82^{**}
	(0.53)	(0.79)	(0.84)
Average stock size	0.25^{**}	0.01	0.25^{**}
	(0.11)	(0.28)	(0.11)
AUM	0.23^{**}	0.23	-0.02
	(0.10)	(0.27)	(0.10)
Year fixed effects	Yes	Yes	Yes
Observations	28199	28199	28199

Table 8. Are investors' asset flows different by level of ESG incorporation?

This table tests if investor flows are sensitive to signing the PRI and different levels of ESG incorporation. We regress the growth of institutions' AUM due to investors in- or outflows (annual asset flows) on the PRI signing dummy or different levels of reported ESG incorporation. The dependent variable is *Annual flows*, which is calculated based on the investor's disclosed equity holdings. We calculate the quarterly flows as the change in total equity assets (for which ESG scores are available) scaled by total equity assets of the previous quarter-end. We adjust the change in total equity assets for stock price changes during the quarter. We then compute annual flows by cumulating the quarterly flows. Panel A reports the results for US investors and Panel B reports for non-US investors. The sample period is from 2003 to 2017 (full sample) in the first column and from 2013 to 2017 (survey years) in the second column. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels. Definitions of the variables are provided in Appendix Table A1.

Panel A: US investors

	Dependent variable:	
	Annual flows	
	(1)	(2)
PRI dummy	0.09***	
	(0.02)	
PRI: Full ESG incorporation		0.08**
		(0.03)
PRI: Partial ESG incorporation		0.07
		(0.04)
PRI: No reported ESG incorporation		0.16**
		(0.04)
Past alpha	1.28	0.55
	(0.87)	(0.73)
Past flows	0.04**	0.05**
	(0.01)	(0.01)
Investment manager	0.01	−0.02
	(0.01)	(0.03)
Number of stocks	−0.41***	−0.54***
	(0.06)	(0.06)
Industry concentration	0.15**	0.14*
	(0.06)	(0.06)
Portfolio turnover	0.48***	0.46***
	(0.10)	(0.04)
Portfolio activeness	0.08	−0.41**
	(0.17)	(0.11)
Average stock size	−0.40***	−0.52***
	(0.04)	(0.06)
AUM	0.38***	0.49***
	(0.04)	(0.05)
Year fixed effects	Yes	Yes
Observations	40,054	16,110
Adjusted R^2	0.13	0.15

Panel B: Non-US investors

	Dependent variable:	
	Annual flows	
	(1)	(2)
PRI dummy	−0.00	
	(0.02)	
PRI: Full ESG incorporation		−0.05***
		(0.01)
PRI: Partial ESG incorporation		−0.06**
		(0.02)
PRI: No reported ESG incorporation		−0.03
		(0.03)
Past alpha	2.36*	2.83**
	(1.10)	(0.93)
Past flows	0.03***	0.03*
	(0.01)	(0.02)
Investment manager	0.10***	0.06**
	(0.03)	(0.02)
Number of stocks	−0.40***	−0.41***
	(0.03)	(0.03)
Industry concentration	0.13	0.16
	(0.09)	(0.12)
Portfolio turnover	0.66***	0.53***
	(0.11)	(0.02)
Portfolio activeness	0.48***	0.29*
	(0.12)	(0.12)
Average stock size	−0.38***	−0.42***
	(0.03)	(0.03)
AUM	0.39***	0.42***
	(0.03)	(0.03)
Year fixed effects	Yes	Yes
Observations	29,940	12,289
Adjusted R^2	0.15	0.18

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Table 9. US-institutional investors: What are the characteristics of "greenwashing" PRI signatories?

This table examines the characteristics of US institutional investors that fail to "walk the (ESG) talk". We regress portfolio-level ESG scores on different levels of ESG incorporation and split the dummy *PRI: No reported ESG incorporation* according to five different investor characteristics. Column 1 differentiates between institutional investors with low and high past portfolio performance, which we measure based on the median of an investor's 1-factor holdings-based alpha in the previous year. Column 2 differentiates institutional investors based on their client focus. An investor is considered to focus on "institutional" clients if it is covered by the eVestment platform, a database used extensively by institutional investment consultants in the US, and "retail" clients otherwise. Column 3 differentiates between institutional investors with high and low operational ESG risks, which we measure based on the median of the number of ESG incident news that the investor experiences in its investment company. The incident data comes from RepRisk. Column 4 differentiates between early and late PRI joiners, where "late" joiners are institutional investors that commit to the PRI in 2013 or after. Column 5 differentiates between left and moderate/right-leaning investors. We use the median of the Cook Partisan Voting Index determined based on the headquarter state of the institutional investor. As in Table 3, we control for institutional investor's region, type, and portfolio characteristics. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The sample period is from 2013 to 2017. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

	Dependent variable:				
	Total ESG scores				
	A: high past performance B: low past performance (1)	A: institutional clients B: retail clients (2)	A: low operational ESG risks B: high operational ESG risks (3)	A: early joiner B: late joiner (4)	A: left leaning B: moderate/right leaning (5)
PRI: Full ESG incorporation	−0.04 (0.03)	−0.04 (0.03)	−0.04 (0.03)	−0.04 (0.03)	−0.04 (0.03)
PRI: Partial ESG incorporation	−0.07 (0.05)	−0.07 (0.05)	−0.07 (0.05)	−0.07 (0.05)	−0.07 (0.05)
PRI: No reported ESG incorporation (A)	−0.07 (0.05)	−0.03 (0.05)	−0.03 (0.06)	−0.08 (0.04)	−0.10 (0.05)
PRI: No reported ESG incorporation (B)	-0.14^{**} (0.03)	-0.20^{**} (0.06)	-0.17^{*} (0.06)	-0.15^{**} (0.04)	-0.15^{**} (0.04)
Controls and year fixed effects	Yes	Yes	Yes	Yes	
Observations	17,633	17,641	17,579	17,641	17,641
Adjusted R^2	0.34	0.34	0.34	0.34	0.34

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Appendix

Table A1. Variable definitions

ESG portfolio outcomes
Sources: FactSet Ownership, MSCI IVA, ASSET4, Sustainalytics

Total ESG scores	is the (value-weighted) equity portfolio-level total ESG scores of an institutional investor. The first step is to calculate an equal-weighted ESG score for each stock in an investor's portfolio. We do so by taking an equal-weighted average of the normalized ESG scores from three ESG data providers (MSCI IVA, ASSET4, and Sustainalytics) or from the ones that are available if there is no coverage for one of them. The second step is to take the value-weighted average of the portfolio using the market value of each stock position.
Environmental scores	is the portfolio-level environmental scores of an institutional investor.
Social scores	is the portfolio-level social scores of an institutional investor.
Governance scores	is the portfolio-level governance scores of an institutional investor.
Top–bottom ESG stocks	is the percentage of equity assets invested in stocks with a normalized ESG score (based on MSCI IVA, ASSET4, and Sustainalytics) in the best decile minus the percentage of equity assets invested in stocks with an ESG score in the bottom decile.
Top ESG stocks	is the percentage of equity assets invested in stocks with a normalized ESG score in the best decile.
Bottom ESG stocks	is the percentage of equity assets invested in stocks with a normalized ESG score in the worst decile.
Sin and fossil fuel stocks	is the percentage of equity assets invested in sin stocks (Factset industries: alcoholic beverages, tobacco, casinos/gaming) and fossil fuel stocks (Factset industry codes: oil & gas production, integrated oil, oil refining/marketing, coal, contract drilling, oil & gas pipelines).

PRI signatories and country-level ESG variables
Sources: PRI signatory data from 2006 to 2017, OECD, World Value Survey, and European Value Study

PRI dummy	is one if the institutional investor is a PRI signatory in a given year, and zero if an investor is not a PRI signatory.
Stewardship code	takes the value of 1 for country-year observations that are covered by an investor stewardship code obtained from Katelouzou and Siems (2020, Table 1), and 0 otherwise.
World Values (ES)	is the average World Value E&S index from the World Value Survey and European Value Study for 1999-2010. We obtain the values from Dyck et al. (2019).
PRI regional share	is the percentage of PRI signatories among all institutional investors within a given region and year.

PRI signatories: by level of ESG incorporation
Sources: PRI signatory data from 2013 to 2017, PRI surveys from 2013 to 2017, eVestment, and RepRisk

PRI: Full ESG incorporation	is one if a PRI signatory reports that it applies ESG incorporation strategies (i.e., screening, thematic, or integration) to 100% of its equity AUM, and zero if a PRI signatory applies ESG strategies to less than 100% of its equity AUM or if an investor is not a PRI signatory. We take the percentage of equities to which incorporation strategies are applied in LEI 01.1 of the PRI survey.

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PRI: Partial ESG incorporation	is one if a PRI signatory reports that it applies ESG strategies (i.e., screening, thematic, or integration) to between 1-99% of its equity AUM, and zero if a PRI signatory applies ESG strategies to 100% or 0% of its equity AUM or if an investor is not a PRI signatory. We take the percentage of equities to which incorporation strategies are applied in LEI 01.1 of the PRI survey.
PRI: No reported ESG incorporation	is one if a PRI signatory reports that it applies ESG strategies (i.e., screening, thematic, or integration) to 0% of its equity AUM or does not report this number, and zero if a PRI signatory applies ESG strategies to more than 0% of its equity AUM or if an investor is not a PRI signatory. We take the percentage of equities to which incorporation strategies are applied in LEI 01.1 of the PRI survey.

PRI signatories: break-downs by investor characteristics

Sources: PRI signatory data from 2013 to 2017, PRI surveys from 2013 to 2017, eVestment, and RepRisk

A: Low or B: high past performance	is low if an investor had a below-median 1-factor alpha of the holdings-based returns in the past year, and low if the alpha was above the median. We use AQR's global equity market factor to calculate the alpha.
A: Institutional or B: retail clients	is institutional if an investor is in the eVestment database, and retail if the investor is not in the eVestment database.
A: Low or B: high operational ESG risks	is high if an investor has an above-median ESG incident rate in her own investment company in a given year, and zero if the incident rate is below the median. We proxy the ESG incident rate of an investor based on a weighted moving average of an institutional investor's history of ESG incidents (the "Peak RepRisk Index"). The range of this measure is from 0 to 100, where a higher value signals that an investor had more or more severe ESG incidents in the past years. RepRisk calculates this measure by collecting ESG incidents from news sources and weighting them according to an incident's severity, reach, and novelty. The measure increases when an investor has new incidents and it decays over time when an investor has no new incidents.
A: Early or B: late joiner	is early if an investor committed to the PRI before 2013, and late if an investor joined the PRI in 2013 or later.
A: Left or B: moderate/right leaning	is left if the investor's headquarter is located in a state with a Cook Partisan Voting Index (PVI) in the bottom tercile and moderate/right if the investor's headquarter is in a state with a PVI in the middle and top terciles.

Portfolio characteristics

Sources: FactSet Ownership and Datastream returns

Europe	is one if the institutional investor is domiciled in Europe.
North America	is one if the institutional investor is domiciled in North America.
Investment manager	is one if the institution is an investment company or adviser and zero if it is an asset owner (pension funds, endowments, and sovereign wealth funds).
Number of stocks	is the number of unique stocks (in logs) held by an investor.
Industry concentration	is a dummy that takes the value of one if an investor holds stocks from two or less different industries.
Portfolio turnover	is the portfolio turnover of an investor. It is defined as the average portfolio churn rate of the last 4 quarters. See Gaspar, Massa, and Matos (2005) for more details.
Portfolio activeness	is the active share measure (versus the MSCI All Country World Index) of an institutional investor. We calculate active share as in Cremers and Petajisto (2009).
Average stock size	is the logarithm of the stocks' average market capitalizations.
AUM	is the logarithm of the total market value of an investors' equity holdings for which ESG scores are available.

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Investment performance and flows

Sources: FactSet Ownership, Datastream returns, AQR, and Fama-French Equity Factors

Mean return	is the mean of the portfolio holdings-based returns over 12 months. We calculate the returns of an institutional investor as the buy-and-hold returns based on an institutions' disclosed equity holdings (for which ESG scores are available). We assume no interim trading between reported quarter-ends.
Std return	is the standard deviation of the holdings-based returns over 12 months.
Sharpe	is the Sharpe ratio of the holdings-based returns over 12 months.
Alpha	is the 1-factor alpha of the holdings-based returns over 12 months. We use AQR's global equity market factor to calculate the alpha.
Systematic risk	is the systematic risk of the holdings-based returns over 12 months. We use AQR's global equity market factor to calculate the systematic risk.
Idiosyncratic risk	is the idiosyncratic risk of the holdings-based returns over 12 months.
Annual flows	are the annual flows of an institutional investor calculated based on her disclosed equity portfolio. We calculate the quarterly flows as the change in total equity assets (for which ESG scores are available) scaled by total equity assets of the previous quarter-end. We adjust the change in total equity assets for stock price changes during the quarter. We assume no interim trading between reported quarter-ends.

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Internet Appendix

Fig. IA1. Densities of portfolio-level ESG scores: PRI signatories vs. non-PRI investors

PRI denotes those institutional investors in the FactSet Ownership data that signed the UN Principles for Responsible Investment (PRI). PRI Signatories are denoted *PRI* from their signature year onwards. *Non-PRI* denotes all institutional investors in the FactSet Ownership data that did not sign the PRI. The densities are computed based on value-weighted portfolio-level ESG scores for all stocks with available ESG scores. Panel A compares the *Total ESG scores* for PRI and Non-PRI investors, while the other panels compare the densities of the *Environmental scores* (Panel B), *Social scores* (Panel C), and *Governance scores* (Panel C). The sample period is from 2003 to 2017.

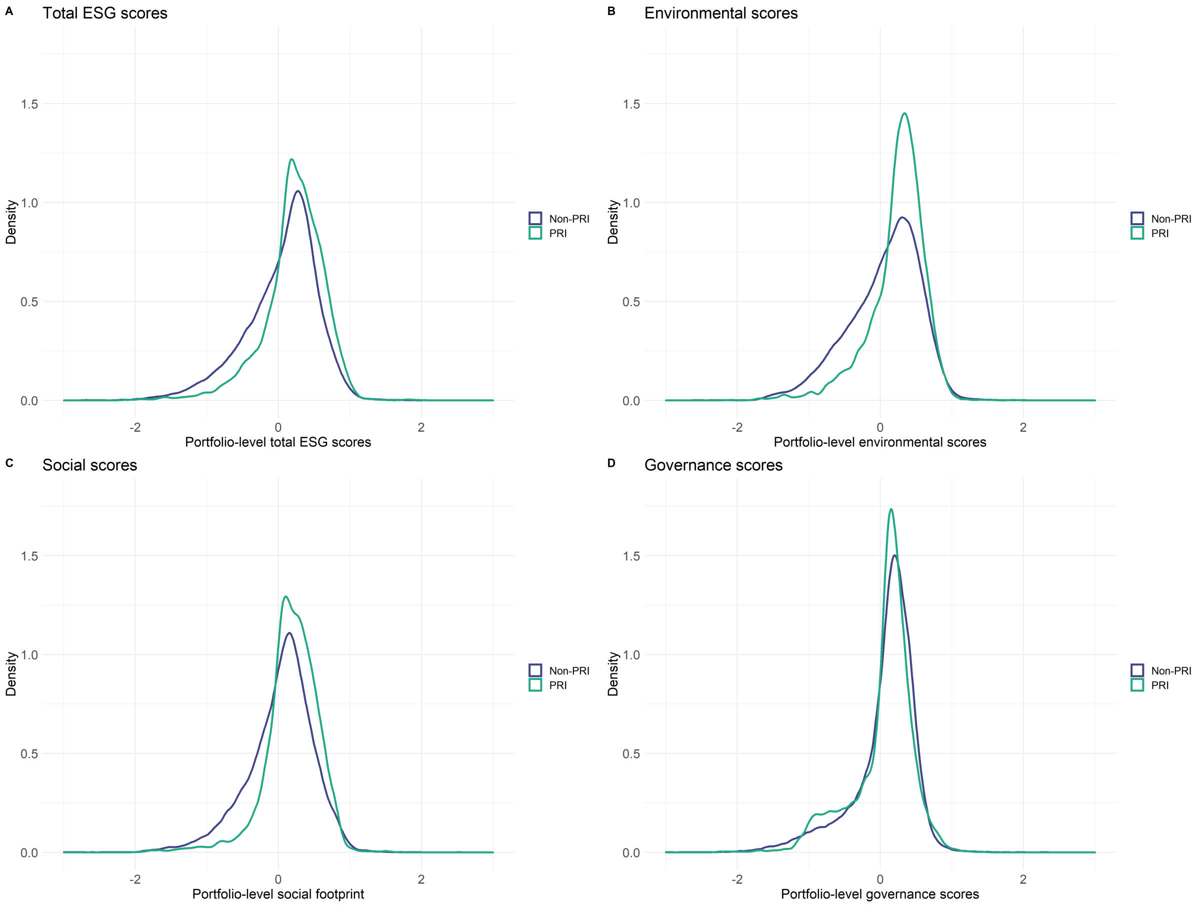

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Fig. IA2. PRI Survey: Indicator LEI 01.1 (ESG incorporation strategy)

Retrieved from the Listed Equity Incorporation (LEI) module of the PRI reporting framework. Principle 1 states that PRI signatories must incorporate ESG factors into investment analysis and decision-making processes. The purpose of this indicator is to capture the proportions of the listed equity assets of the PRI signatories that are covered by different approaches in implementing this principle. For instance, if a signatory applies two strategies to the same asset, she needs to select the relevant combination options. For example, one may apply screening for only 5% of one's assets, and for the remainder a combination of screening and integration. In these cases, one would report 'Screening alone' for 5% and 'Screening and Integration strategies' for the remaining 95%. If one does not apply any incorporation approach, then the option 'We do not apply incorporation strategies' should account for 100% of your listed equity assets. *Screening* is defined as a) negative/exclusionary screening: The exclusion from a fund or portfolio of certain sectors, companies or practices based on specific ESG criteria; b) positive/best-in-class screening: Investment in sectors, companies or projects selected for positive ESG performance relative to industry peers; or c) norms-based screening: Screening of investments against minimum standards of business practice based on international norms. *Thematic* is defined as investment in themes or assets specifically related to sustainability (for example, clean energy, green technology or sustainable agriculture). *Integration* is defined as the systematic and explicit inclusion by investment managers of environmental, social and governance factors into traditional financial analysis.

	Indicator status	Purpose	Principle
LEI 01	MANDATORY	CORE ASSESSED	PRI 1

LEI 01	INDICATOR	
LEI 01.1	Indicate • which ESG incorporation strategy and/or combination of strategies you apply to your actively managed listed equities; and • the breakdown of your actively managed listed equities by strategy or combination of strategies.	
	ESG incorporation strategy (select all that apply)	**Percentage of active listed equity to which the strategy is applied — you may estimate +/- 5%**
	❑ Screening alone (i.e. not combined with any other strategies)	%
	❑ Thematic alone (i.e., not combined with any other strategies)	%
	❑ Integration alone (i.e., not combined with any other strategies)	%
	❑ Screening and integration strategies	%
	❑ Thematic and integration strategies	%
	❑ Screening and thematic strategies	%
	❑ All three strategies combined	%
	❑ We do not apply incorporation strategies	%
	Total actively managed listed equities	**100%**

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Fig. IA3. PRI Survey: Indicator LEI 04.1 (ESG screening)

Retrieved from the Listed Equity Incorporation (LEI) module of the PRI reporting framework. This indicator asks PRI signatories to describe which ESG screens are used and whether they are used in combination with other screens. Screening can be based on: a) *products*—e.g., specified weapons, tobacco; b) *activities*—e.g., specific products within a sector that is not in itself excluded such as uranium mining; c) *sectors*—e.g., oil and gas, mining; d) *countries/geographic regions*—e.g., Sudan, Iran; e) *environmental and social practices and performance*—e.g., child labor, environmental damage, sustainability reporting; or f) *corporate governance*—e.g., excessive executive remuneration, non-independent boards.

	Indicator status	Purpose	Principle
LEI 04	MANDATORY	DESCRIPTIVE	PRI 1

LEI 04	INDICATOR		
LEI 04.1	Indicate and describe the type of screening you apply to your internally managed active listed equities.		
	Type of screening	**Screened by**	**Description**
	Negative/exclusionary screening	❒ Product ❒ Activity ❒ Sector ❒ Country/geographic region ❒ Environmental and social practices and performance ❒ Corporate governance	
	Positive/best-in-class screening	❒ Product ❒ Activity ❒ Sector ❒ Country/geographic region ❒ Environmental and social practices and performance ❒ Corporate governance	
	Norms-based screening	❒ UN Global Compact Principles ❒ The UN Guiding Principles on Business and Human Rights ❒ International Labour Organization Conventions ❒ United Nations Convention Against Corruption ❒ OECD Guidelines for Multinational Enterprises ❒ Other; specify______________	

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Fig. IA4. PRI Survey: Indicator LEA 02.1 (engagement)

Retrieved from the Listed Equity Active Ownership (LEA) module of the PRI reporting framework. This indicator targets engagements that seek better ESG-related disclosure and transparency, and relate to Principles 2 and 3. There are many different configurations of engagement. The defining characteristics of an *individual/internal staff engagement* are: a) it is carried out by your internal staff alone; and b) it is conducted in the name of your organization. *Collaborative engagement* is engagement that an investor conducts jointly with other investors. This includes: a) groups of investors working together without the involvement of a formal investor network; b) groups of investors working together within a formal investor network, with some level of support but with individual members of the collaboration responsible for most of the engagement activity; and c) collaborative engagement coordinated and facilitated by a formal investor network (i.e. PRI coordinated investors coalitions). *Service provider engagements* include engagements conducted via: a) commercial parties that provide stand-alone engagement services without managing their clients' underlying assets; and b) investor organizations that conduct engagement on their members' behalf and that have an explicit mandate from their members to represent them. These include engagements conducted entirely on an outsourced basis as well as those facilitated by the service provider with some involvement of the investor's own staff.

	Indicator status	Purpose	Principle
LEA 02	MANDATORY	GATEWAY	PRI 1, 2, 3

LEA 02	INDICATOR	
LEA 02.1	Indicate the method of engagement, giving reasons for the interaction.	
	Type of engagement	**Reason for interaction**
	Individual/Internal staff engagements	☐ To influence corporate practice (or identify the need to influence) on ESG issues ☐ To encourage improved/increased ESG disclosure ☐ Other; specify_________ ☐ We do not engage via internal staff. Please specify why your organisation does not engage via internal staff. (max. 200 words)
	Collaborative engagements	☐ To influence corporate practice (or identify the need to influence) on ESG issues ☐ To encourage improved/increased ESG disclosure ☐ Other; specify_________ ☐ We do not engage via collaborative engagements. Please specify why your organisation does not engage via collaborative engagement. (max. 200 words)
	Service provider engagements	☐ To influence corporate practice (or identify the need to influence) on ESG issues ☐ To encourage improved/increased ESG disclosure ☐ Other; specify_________ ☐ We do not engage via service providers. Please specify why your organisation does not engage via service providers. (max. 200 words

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Fig. IA5. PRI Survey: Indicator LEA 16.1 (internal voting)

Retrieved from the Listed Equity Active Ownership (LEA) module of the PRI reporting framework. This indicator relates to PRI signatories' voting policies. The provided answer options are self-explanatory.

LEA 16	Indicator status MANDATORY	Purpose DESCRIPTIVE	Principle PRI 2

LEA 16	INDICATOR	
LEA 16.1	Indicate how you typically make your (proxy) voting decisions.	
	Approach	**Based on**
	❍ We use our own research or voting team and make voting decisions without the use of service providers.	❍ Our own voting policy ❍ Our clients' requests or policy ❍ Other; explain__________
	❍ We hire service provider(s) that makes voting recommendations and/or provides research that we use to inform our voting decisions.	❍ The service provider voting policy we sign off on ❍ Our own voting policy ❍ Our clients' requests or policy ❍ Other; explain__________
	❍ We hire service provider(s) that make voting decisions on our behalf, except for some pre-defined scenarios for which we review and make voting decisions.	❍ The service provider voting policy we sign off on ❍ Our own voting policy ❍ Our clients' requests or policy ❍ Other; explain__________
	❍ We hire service provider(s) that make voting decisions on our behalf.	❍ The service provider voting policy we sign off on ❍ Our own voting policy ❍ Our clients' requests or policy ❍ Other; explain__________

Fig. IA6. PRI Survey: Indicator SG 01 (ESG policy)

Retrieved from the Strategy and Governance (SG) module of the PRI reporting framework. This indicator relates to the investment policy of a PRI signatory.

SG 01	Indicator status MANDATORY	Purpose CORE ASSESSED	Principle GENERAL

SG 01	INDICATOR	
SG 01.1	Indicate if you have an investment policy that covers your responsible investment approach.	
	❍ Yes	❍ No

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Fig. IA7. PRI Survey: Indicator SG 07 (organizational structure)

Retrieved from the Strategy and Governance (SG) module of the PRI reporting framework. This indicator relates to roles in a PRI signatory's organization and whether they have oversight or are involved in the implementation of responsible investment strategies.

SG 07	Indicator status MANDATORY	Purpose CORE ASSESSED	Principle GENERAL

SG 07	INDICATOR			
SG 07.1	Indicate the roles in your organisation, and indicate for each whether they have oversight and/or implementation responsibilities for responsible investment.			
	Roles present in your organisation	**Oversight/ accountability for RI**	**Implementation of RI**	**No responsibility for RI**
	❑ Board members or trustees	❑	❑	❑
	❑ Chief Executive Officer (CEO), Chief Investment Officer (CIO), Investment Committee	❑	❑	❑
	❑ Other chief-level staff or head of department, specify_______________	❑	❑	❑
	❑ Portfolio managers	❑	❑	❑
	❑ ESG portfolio manager	❑	❑	❑
	❑ Investment analysts	❑	❑	❑
	❑ Dedicated responsible investment staff	❑	❑	❑
	❑ External managers or service providers	❑	❑	❑
	❑ Investor relations	❑	❑	❑
	❑ Other role, specify (1) _______________	❑	❑	❑
	❑ Other role, specify (2) _______________	❑	❑	❑
	For the roles for which you have RI oversight/accountability or implementation responsibilities, indicate how you execute these responsibilities.			

SG 07.3	Indicate the number of dedicated responsible investment staff your organisation has.
	☐

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Fig. IA8. PRI Survey: Indicator SG 09 (responsible initiatives)

Retrieved from the Strategy and Governance (SG) module of the PRI reporting framework. This indicator relates to the responsible initiatives of which a PRI signatory is a member or in which the investor participated.

SG 09	Indicator status MANDATORY	Purpose CORE ASSESSED	Principle PRI 4,5

SG 09	INDICATOR		
SG 09.1	Select the collaborative organisation and/or initiatives of which your organisation is a member or in which it participated during the reporting year and the role played.		
	Collaborative Organisation/ Initiative	Your organisation's role in the initiative during the reporting year (see definitions)	Provide a brief commentary on the level of your organisation's involvement in the initiative [OPTIONAL]
	☑ Principles for Responsible Investment (PRI)	Basic, Moderate, Advanced [drop down]	
	❑ Asian Corporate Governance Association	[same as above]	
	❑ Australian Council of Superannuation Investors	[same as above]	
	❑ AFIC—La Commission ESG	[same as above]	
	❑ BVCA—Responsible Investment Advisory Board	[same as above]	
	. . .		
	❑ United Nations Global Compact	[same as above]	
	❑ Other collaborative organisation/ initiative; specify_______	[same as above]	
	❑ Other collaborative organisation/ initiative; specify_______	[same as above]	
	❑ Other collaborative organisation/ initiative; specify_______	[same as above]	
	❑ Other collaborative organisation/ initiative; specify_______	[same as above]	

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Table IA1. Match between PRI signatory data and Factset Ownership equity data

This table describes how we construct the sample of PRI signatory data and equity holdings from Factset Ownership.

- We match the PRI signatory data to global institutional equity holdings obtained from FactSet Ownership. We match signatories that are asset owners or investment managers but not service providers because these do not manage assets by themselves.
- As a first step, we run a name-matching algorithm on the two lists of names cleaned for punctuation, accents, and non-alphanumeric and special characters using the Jaro-Winkler measure to determine the smallest distance between two given names in the lists.
- In a second step, we perform manual checks and improvements to the initial output of the name-matching algorithm by controlling for the country location of the signatory's headquarter, the asset class composition of its holdings as reported to PRI, and the website URLs reported to PRI and FactSet.
- Our matching of the PRI with the FactSet investor universe occasionally leads to double matches. This can happen when both the parent and the entity sign the PRI independently. In such cases, we give priority to entity over parent matches. In rare cases, even though both parent and entity signed, a valid report might not be available for the entity while it is available for the parent. Should this occur, we then prioritize the parent match. Whenever a parent signed but the entities did not, we assume that the entities inherit the PRI status, but not vice versa.
- We are able to match 684 PRI signatories with institutional investor names in FactSet using a name-matching algorithm and manual verifications. All of our analysis is conducted at the FactSet entity level. Of the 1,549 unique PRI identifiers, only 874 needed to complete the PRI modules relating to listed equity (the other 675 either do not hold publicly listed equities, do not incorporate responsible investment in their equities, or hold less than 10% of their AUM in actively managed equity strategies). Of those 874 signatories, we match 537 to the FactSet database leaving us with 337 unmatched entities. Some of the matches are at the group parent level and translate to 684 FactSet affiliated entities.
- A large proportion of the unmatched 337 signatories that do report to PRI on their listed equities do not have sufficient direct equity holdings to show up in FactSet. Many do hold a substantial proportion of their equity AUM under fund-of-funds, or simply do not have enough AUM. For example, the SEC Form 13-F filing of portfolio holdings of equity-like securities is required only for institutional investment managers that exercise discretion over US$ 100 million or more.

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Table IA2. Variable definitions of the PRI survey (presented in Table 2)

Reported ESG incorporation strategies (Panel A)

Sources: PRI surveys from 2013 to 2017, questions from the LEI (Listed Equity Incorporation) module of the PRI reporting framework

%-Screening	is the percentage of AUM covered by screening strategies. We take the percentage of equities to which screening is applied in LEI 01.1 of the PRI survey.
%-Thematic	is the percentage of AUM covered by thematic strategies. We take the percentage of equities to which thematic investment is applied in LEI 01.1 of the PRI survey.
%-Integration	is the percentage of AUM covered by integration strategies. We take the percentage of equities to which thematic investment is applied in LEI 01.1 of the PRI survey.

Reported ESG incorporation sub-strategies (Panel B)

Sources: PRI surveys from 2013 to 2017, questions from the LEI (Listed Equity Incorporation) and LEA (Listed Equity Active Ownership) modules of the PRI reporting framework

Negative screening	is one if the "Negative/exclusionary screening" type is selected in *LEI 04.1* of the PRI survey. This comprises the exclusion from a portfolio of certain sectors, companies, or practices based on specific ESG criteria.
Positive screening	is one if the "Positive/best-in-class screening" type is selected in *LEI 04.1* of the PRI survey. This comprises the investment in companies selected for positive ESG performance relative to industry peers.
Norms-based screening	is one if the "Norms-based screening" type is selected in *LEI 04.1* of the PRI survey. This comprises screening of investments against minimum standards of business practice based on international norms (UN Global Compact Principles, etc.).
Thematic	is one if any of the options containing the word "thematic" and/or "All three strategies combined" are ticked in *LEI 01.1* of the PRI survey. Thematic is defined as investment in companies specifically related to sustainability (e.g. clean energy, green technology, or sustainable agriculture).
Integration	is one if any of the options containing the word "integration" and/or "All three strategies combined" are ticked in *LEI 01.1* of the PRI survey. Integration is defined as the systematic and explicit inclusion by investment managers of environmental, social, and governance factors into traditional financial analysis.
Engagement	is one if any of the variables individual engagement, collaborative engagement, or internal voting is one.
Individual engagement	is one if the type of engagement in *LEA 02.1* of the PRI survey equals "Individual/Internal staff engagements" and the reason for interaction includes any of the following: "To influence corporate practice (or identify the need to influence) on ESG issues", "To encourage improved/increased ESG disclosure", or "Other; specify______"
Collaborative engagement	is one if the type of engagement in *LEA 02.1* of the PRI survey equals "Collaborative engagements" and the reason for interaction includes any of the following: "To influence corporate practice (or identify the need to influence) on ESG issues", "To encourage improved/increased ESG disclosure", or "Other; specify______"
Internal voting	is one if the approach in *LEA 16.1* of the PRI survey equals either "We use our own research or voting team and make voting decisions without the use of service providers." or "We hire service provider(s) that make voting recommendations or provide research that we use to inform our voting decisions."

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ESG organizational resources (Panel C)

Sources: PRI surveys from 2013 to 2017, questions from the SG (Strategy and Governance) module of the PRI reporting framework

ESG policy	is one if a PRI signatory has an investment policy that covers her responsible investment approach. We take the answer in SG 01.1 of the PRI survey.
Board ESG involvement	is one if the Board members or trustees of a PRI signatory are involved in the oversight or implementation of responsible investment. We take the answer in SG 07.1 of the PRI survey.
C-suite ESG involvement	is one if the C-suite of a PRI signatory are involved in the oversight or implementation of responsible investment. We take the answer in SG 07.1 of the PRI survey.
Asset manager ESG involvement	is one if the portfolio managers of a PRI signatory are involved in the oversight or implementation of responsible investment. We take the answer in SG 07.1 of the PRI survey.
ESG staff	is one if the PRI signatory has a dedicated ESG staff that is involved in the oversight or implementation of responsible investment. We take the answer in SG 07.1 of the PRI survey.
% ESG employees	is the number of dedicated responsible investment staff divided by the total number of employees. We take the answer in SG 07.4 of the PRI survey.
Other initiatives	is the number of other responsible investment initiatives that the PRI signatory is part of. We take the answer in SG 09.1 of the PRI survey.

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Table IA3. Top institutional investors by region

This table shows the top 10 institutional investors by portfolio AUM (as of the end of 2017) at the parent level domiciled for each *Region*. *Signing year* denotes the earliest year where either the parent or any of its entities signed the PRI. The *Parent AUM* and *PRI AUM covg* are the assets under management at the parent level and the proportion of the AUM (in percent) covered by the PRI signature. If *PRI AUM covg* is less than 100%, this means that the signatory committed to the PRI not for its parent but only for one or more of its entities. We calculate an investor's AUM as the sum of the market value of equity holdings for which ESG scores are available.

Parent name	Country	Region	Signing year	Parent AUM	PRI AUM covg
Norges Bank Investment Management	NO	Europe	2006	664 bn	100 %
UBS Group AG	CH	Europe	2009	316 bn	34 %
AXA SA	FR	Europe	2007	239 bn	100 %
BPCE SA	FR	Europe	2008	239 bn	34 %
Deutsche Bank AG	DE	Europe	2008	223 bn	1 %
Janus Henderson Group Plc	GB	Europe	2006	221 bn	9 %
Schroders Plc	GB	Europe	2007	189 bn	100 %
Standard Life Aberdeen Plc	GB	Europe	2007	179 bn	100 %
Amundi	FR	Europe	2006	168 bn	41 %
Legal and General Group Plc	GB	Europe	2010	157 bn	98 %
The Vanguard Group, Inc.	US	North America	2014	2732 bn	100 %
BlackRock, Inc.	US	North America	2008	2619 bn	100 %
State Street Corp.	US	North America	2012	1328 bn	90 %
The Capital Group Cos., Inc.	US	North America	2010	1265 bn	100 %
FMR LLC	US	North America	2017	938 bn	100 %
T. Rowe Price Group, Inc.	US	North America	2010	665 bn	100 %
JPMorgan Chase and Co.	US	North America	2007	491 bn	51 %
Wellington Management Group LLP	US	North America	2012	482 bn	99 %
The Bank of New York Mellon Corp.	US	North America	2006	423 bn	54 %
Northern Trust Corp.	US	North America	2009	384 bn	95 %
Nomura Holdings, Inc.	JP	Asia-Pacific + others	2011	250 bn	52 %
Sumitomo Mitsui Trust Holdings, Inc.	JP	Asia-Pacific + others	2006	141 bn	89 %
FIL Ltd.	BM	Asia-Pacific + others	2012	135 bn	100 %
ORIX Corp.	JP	Asia-Pacific + others	2006	128 bn	32 %
Mitsubishi UFJ Financial Group, Inc.	JP	Asia-Pacific + others	2006	119 bn	45 %
Daiwa Securities Group Inc.	JP	Asia-Pacific + others	2006	59 bn	99 %
Macquarie Group Ltd.	AU	Asia-Pacific + others	2015	57 bn	0 %
Asset Management One Co., Ltd.	JP	Asia-Pacific + others	2013	51 bn	100 %
Commonwealth Bank of Australia	AU	Asia-Pacific + others	2007	43 bn	27 %
Korea National Pension Service	KR	Asia-Pacific + others	2009	38 bn	48 %

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Table IA4. ESG strategies by PRI signatory institutional investors

This table compares the ESG strategies of PRI signatories as reported in the PRI surveys from 2013 to 2017. Panel A shows the frequency by which PRI signatories report using negative screening, positive screening, norms-based screening, thematic investment, integration of ESG factors, and engagement strategies. Overall engagement is further broken down into individual engagement, collaborative engagement, and internal voting. The strategies are not mutually exclusive. Panel B provides the frequency by which PRI signatories report having a formal ESG policy, Board involvement in ESG, C-suite involvement in ESG, asset manager involvement in ESG, and having a dedicated ESG staff. The panel also reports the number of ESG employees per total employees and the number of other responsible initiatives that the investor has committed to. Detailed definitions of these variables are available in Appendix IA1 of the Internet Appendix. The first column of each panel reports the number of investor-year observations.

Panel A: Percentage of PRI signatories that use ESG strategies

	PRI overall									
	Total	**Negative screening**	**Positive screening**	**Norms-based screening**	**Thematic**	**Integration**	**Engagement**	**Individual engagement**	**Collaborative engagement**	**Internal voting**
Overall	2,796	68%	38%	33%	33%	77%	86%	81%	65%	72%
by Year										
2013	442	61%	26%	19%	27%	73%	83%	79%	68%	64%
2014	497	64%	32%	29%	29%	72%	84%	78%	65%	71%
2015	556	70%	38%	30%	32%	76%	87%	81%	62%	74%
2016	625	69%	42%	38%	37%	78%	88%	82%	65%	75%
2017	676	71%	47%	41%	37%	82%	87%	83%	68%	74%
by Region										
Europe	1,379	72%	42%	44%	35%	76%	85%	79%	66%	67%
North America	777	63%	32%	22%	30%	72%	81%	74%	60%	67%
Asia-Pacific + others	640	65%	36%	20%	32%	85%	95%	91%	70%	89%
by Type										
Asset owner	184	51%	18%	38%	15%	72%	91%	86%	76%	84%
Investment manager	2,612	69%	40%	32%	34%	77%	86%	80%	65%	71%
by AUM (USD)										
<1bn	1,202	60%	34%	25%	29%	69%	78%	73%	55%	65%
1-10bn	919	70%	38%	36%	28%	79%	90%	82%	69%	73%
10-100bn	560	77%	46%	40%	47%	89%	94%	92%	78%	82%
>100bn	115	91%	40%	45%	48%	91%	100%	96%	84%	98%

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Table IA4. ESG strategies by PRI signatory institutional investors (contd.)

Panel B: ESG organizational resources of PRI signatories

	PRI overall							
	Total	**ESG policy**	**Board ESG involvement**	**C-Suite ESG involvement**	**Asset manager ESG involvement**	**ESG staff**	**% ESG employees**	**Other initiatives**
Overall	2,796	95%	59%	90%	95%	72%	5%	4.6
by Year								
2013	442	89%	55%	78%	93%	66%	3%	4.3
2014	497	94%	59%	90%	96%	72%	4%	4.4
2015	556	95%	58%	94%	95%	74%	6%	4.6
2016	625	97%	59%	93%	96%	73%	6%	4.9
2017	676	97%	63%	93%	94%	72%	6%	4.9
by Region								
Europe	1,379	96%	62%	92%	95%	75%	6%	4.8
North America	777	91%	47%	89%	92%	64%	5%	4.4
Asia-Pacific + others	640	96%	68%	87%	98%	74%	5%	4.6
by Type								
Asset owner	184	97%	84%	96%	91%	79%	2%	6.5
Investment manager	2,612	94%	57%	90%	95%	71%	5%	4.5
by AUM (USD)								
<1bn	1,202	95%	55%	90%	95%	62%	8%	3.7
1-10bn	919	94%	63%	88%	95%	75%	4%	4.5
10-100bn	560	95%	62%	93%	94%	84%	2%	6.3
>100bn	115	94%	61%	97%	97%	92%	1%	7.7

Table IA5. Are the ESG portfolio scores of PRI signatories different by the type and extent of ESG incorporation?

This table regresses portfolio-level ESG scores on different levels of reported ESG incorporation. We split the *PRI: Full ESG incorporation* dummy into four groups based on whether PRI signatories report in the PRI survey that they apply both screening and integration to 100% of their equity AUM (*PRI: Full ESG incorporation, 100% SCR & 100% INT*), screening to 100% of their equity AUM (*PRI: Full ESG incorporation, 100% SCR*), integration to 100% of their AUM (*PRI: Full ESG incorporation, 100% INT*), a mix of ESG strategies to 100% of their AUM (*PRI: Full ESG incorporation, Mix*). Panel A reports the results for the full sample, Panel B for US investors, and Panel C reports for non-US investors. As in Table 3, we control for institutional investor's region, type, and portfolio characteristics. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The sample period is from 2013 to 2017. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

Panel A: Full sample

	Dependent variable:			
	Total ESG scores	Environmental scores	Social scores	Governance scores
	(1)	(2)	(3)	(4)
PRI: Full ESG incorporation, 100% SCR & 100% INT	0.07** (0.02)	0.03 (0.02)	0.06** (0.02)	0.06* (0.03)
PRI: Full ESG incorporation, 100% SCR	0.04 (0.04)	−0.01 (0.03)	0.04 (0.03)	0.04 (0.03)
PRI: Full ESG incorporation, 100% INT	0.07* (0.03)	0.03 (0.02)	0.05* (0.02)	0.09** (0.03)
PRI: Full ESG incorporation, Mix	−0.01 (0.05)	−0.04 (0.05)	−0.02 (0.05)	−0.01 (0.06)
PRI: Partial ESG incorporation	0.03 (0.02)	0.02 (0.02)	0.04* (0.02)	−0.02 (0.03)
PRI: No reported ESG incorporation	−0.02 (0.02)	−0.05 (0.02)	−0.00 (0.02)	0.00 (0.02)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	30,511	30,511	30,511	30,511
Adjusted R^2	0.34	0.34	0.30	0.25

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Table IA5. Are the ESG portfolio scores of PRI signatories different by the type and extent of ESG incorporation?

Panel B: US institutional investors

	Dependent variable:			
	Total ESG scores	Environmental scores	Social scores	Governance scores
	(1)	(2)	(3)	(4)
PRI: Full ESG incorporation, 100% SCR & 100% INT	0.01 (0.05)	0.01 (0.05)	−0.00 (0.04)	−0.03 (0.05)
PRI: Full ESG incorporation, 100% SCR	−0.10* (0.04)	−0.15* (0.06)	−0.04 (0.06)	−0.05 (0.05)
PRI: Full ESG incorporation, 100% INT	−0.04 (0.05)	−0.04 (0.05)	−0.03 (0.04)	−0.03 (0.03)
PRI: Full ESG incorporation, Mix	−0.12 (0.09)	−0.25* (0.11)	−0.10 (0.08)	0.04 (0.05)
PRI: Partial ESG incorporation	−0.07 (0.05)	−0.08 (0.05)	−0.04 (0.04)	−0.06* (0.03)
PRI: No reported ESG incorporation	−0.12** (0.04)	−0.13** (0.03)	−0.08 (0.04)	−0.04 (0.03)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	17,641	17,641	17,641	17,641
Adjusted R^2	0.34	0.36	0.26	0.15

Panel C: Non-US institutional investors

	Dependent variable:			
	Total ESG scores	Environmental scores	Social scores	Governance scores
	(1)	(2)	(3)	(4)
PRI: Full ESG incorporation, 100% SCR & 100% INT	0.11** (0.03)	0.07** (0.02)	0.10*** (0.02)	0.07 (0.04)
PRI: Full ESG incorporation, 100% SCR	0.14** (0.05)	0.09* (0.04)	0.12** (0.04)	0.09 (0.05)
PRI: Full ESG incorporation, 100% INT	0.04 (0.03)	0.01 (0.02)	0.03 (0.02)	0.03 (0.04)
PRI: Full ESG incorporation, Mix	0.04 (0.05)	0.06 (0.04)	0.03 (0.04)	−0.07 (0.08)
PRI: Partial ESG incorporation	0.06 (0.03)	0.07* (0.03)	0.07* (0.03)	−0.05 (0.04)
PRI: No reported ESG incorporation	0.06 (0.03)	0.03 (0.03)	0.05 (0.03)	0.04 (0.04)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	12,870	12,870	12,870	12,870
Adjusted R^2	0.22	0.23	0.18	0.18

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Table IA6. US-domiciled institutional investors: Statistics on holdings-based returns

This table presents descriptive statistics for the institutional investors' holdings-based returns. The measures are the mean return (*Mean return*), standard deviation (*Std return*), Sharpe ratio (*Sharpe*), 1-factor alpha (*Alpha*), systematic portfolio risk (*Systematic risk*), idiosyncratic portfolio risk (*Idiosyncratic risk*), and the annual flows (*Annual flows*). The sample period is from 2013 to 2017.

Panel A: US institutional investors

Variable	Mean	Median	Std	Min	P05	P95	Max	Obs
Mean return	0.0114	0.0110	0.0151	-0.1331	-0.0073	0.0308	0.8537	17,747
Std return	0.0375	0.0323	0.0355	0	0.0127	0.0777	3.4334	17,747
Sharpe	0.4467	0.3442	0.4657	-3.4490	-0.1490	1.2897	3.7316	17,747
Alpha	0.0029	0.0033	0.0176	-0.3482	-0.0160	0.0197	0.8208	17,747
Systematic risk	0.0249	0.0244	0.0163	-0.2710	0.0043	0.0478	0.3736	17,747
Idiosyncratic risk	0.0241	0.0162	0.0347	0.0020	0.0084	0.0648	3.4331	17,745
Annual flows	0.0786	-0.0412	0.8535	-0.9760	-0.5613	0.9841	25.3554	17,737

Panel B: Non-US institutional investors

Variable	Mean	Median	Std	Min	P05	P95	Max	Obs
Mean return	0.0085	0.0068	0.0165	-0.1388	-0.0156	0.0321	0.1946	12,953
Std return	0.0445	0.0396	0.0252	0.0043	0.0157	0.0928	0.4011	12,953
Sharpe	0.3111	0.1622	0.4947	-1.2407	-0.2733	1.3453	2.9586	12,953
Alpha	-0.0020	-0.0016	0.0170	-0.1714	-0.0303	0.0232	0.1639	12,953
Systematic risk	0.0298	0.0305	0.0179	-0.0623	0.0034	0.0575	0.3186	12,953
Idiosyncratic risk	0.0289	0.0218	0.0238	0.0014	0.0077	0.0731	0.3689	12,953
Annual flows	0.0990	-0.0372	0.7821	-0.9723	-0.5596	1.2157	22.8329	12,944

Table IA7. Is the portfolio performance different by level of ESG incorporation?

This table regresses US-domiciled institutional investors' buy-and-hold return measures on different levels of ESG incorporation and portfolio characteristics. The dependent variables are these yearly holdings-based performance measures: *Mean return*, *Std return*, *Sharpe*, *Alpha*, *Systematic risk*, and *Idiosyncratic risk*. Panel A reports the results for US investors and Panel B reports for non-US investors. As in Table 3, we control for institutional investor's region, type, and portfolio characteristics. Appendix Table A1 provides detailed definitions of the variables. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. The coefficients are multiplied by 100. The sample period is from 2013 to 2017. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

Panel A: US institutional investors

	Dependent variable:					
	Mean return	Std return	Sharpe	Alpha	Systematic risk	Idiosyncratic risk
	(1)	(2)	(3)	(4)	(5)	(6)
PRI: Full ESG incorporation	−0.11*	0.48*	0.18	−0.06	0.04	0.42*
	(0.05)	(0.19)	(5.68)	(0.11)	(0.07)	(0.18)
PRI: Partial ESG incorporation	−0.08	0.73**	−4.68	−0.08	0.14	0.72**
	(0.06)	(0.20)	(2.69)	(0.10)	(0.09)	(0.17)
PRI: No reported ESG incorporation	−0.11	1.06**	−7.59*	−0.08	0.20	1.02**
	(0.13)	(0.30)	(3.19)	(0.14)	(0.10)	(0.28)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,641	17,641	17,641	17,641	17,641	17,641
Adjusted R^2	0.36	0.22	0.67	0.06	0.48	0.21

Panel B: Non-US institutional investors

	Dependent variable:					
	Mean return	Std return	Sharpe	Alpha	Systematic risk	Idiosyncratic risk
	(1)	(2)	(3)	(4)	(5)	(6)
PRI: Full ESG incorporation	−0.11	−0.03	−0.75	−0.17	0.06	−0.06
	(0.09)	(0.08)	(2.19)	(0.09)	(0.09)	(0.06)
PRI: Partial ESG incorporation	−0.14	0.19	−0.42	−0.24	0.17	0.15
	(0.14)	(0.15)	(2.76)	(0.14)	(0.12)	(0.13)
PRI: No reported ESG incorporation	−0.06	0.02	−3.35	−0.09	0.02	0.03
	(0.07)	(0.14)	(1.72)	(0.07)	(0.09)	(0.11)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,870	12,870	12,870	12,870	12,870	12,870
Adjusted R^2	0.32	0.38	0.63	0.08	0.49	0.33

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Table IA8. Do PRI signatories have better ESG portfolio scores over time?

This table shows annual cross-sectional regressions for the US and Non-US investor samples. Panel A regresses portfolio-level ESG scores on the PRI signatory dummy. Panel B regresses portfolio-level ESG scores on different levels of reported ESG incorporation. As in Table 3, we control for institutional investor's region, type, and portfolio characteristics. Robust standard errors double clustered at the investor-level and year-level are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels.

Panel A: PRI signatory status

	Dependent variable:											
	Total ESG scores											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US INSTITUTIONAL INVESTORS												
PRI dummy	-0.16^{***}	0.05	0.03	-0.03	-0.05	0.03	0.01	-0.03	-0.05	-0.13^{***}	-0.11^{***}	-0.04
	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
NON-US INSTITUTIONAL INVESTORS												
PRI dummy	-0.06	0.04	0.03	0.12^{***}	0.10^{***}	0.06^{*}	0.06^{**}	0.04	0.06^{**}	0.06^{***}	0.12^{***}	0.10^{***}
	(0.05)	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: PRI signatories by level of reported ESG incorporation

	Dependent variable:											
	Total ESG scores											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
US INSTITUTIONAL INVESTORS												
PRI: Full ESG incorporation								-0.01	-0.01	-0.09^{**}	-0.08^{*}	-0.01
								(0.04)	(0.06)	(0.05)	(0.04)	(0.04)
PRI: Partial ESG incorporation								-0.01	-0.07	-0.08	-0.13^{**}	-0.06
								(0.05)	(0.06)	(0.07)	(0.06)	(0.06)
PRI: No reported ESG incorporation								-0.05	-0.09^{**}	-0.19^{***}	-0.15^{**}	-0.11
								(0.07)	(0.04)	(0.05)	(0.06)	(0.08)
NON-US INSTITUTIONAL INVESTORS												
PRI: Full ESG incorporation								0.05^{*}	0.04	0.07^{***}	0.12^{***}	0.12^{***}
								(0.03)	(0.03)	(0.02)	(0.02)	(0.03)
PRI: Partial ESG incorporation								-0.01	0.09	0.06	0.11^{*}	0.05
								(0.05)	(0.06)	(0.04)	(0.06)	(0.06)
PRI: No reported ESG incorporation								0.02	0.08^{*}	0.04	0.12^{**}	0.01
								(0.05)	(0.04)	(0.05)	(0.06)	(0.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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