Did the Introduction of a Reputation Mechanism for Stewardship Code Voluntary Disclosures Improve Investor Engagement?

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June 2023

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Keywords: Reputation, Engagement, Stewardship Code, Voluntary Disclosures, ESG, Institutional Investors

JEL Classifications: G23, K22, Q50

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Abstract

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"Shareholder engagement is a hallmark of our public capital markets"
Jay Clayton, SEC Chairman (2017)

1. Introduction

The growth of institutional investor ownership, coupled with the 2008 financial crisis, led regulators to think about ways to spur institutional investors to engage more actively with their portfolio firms. One response was the introduction of national stewardship codes, which contain distinct delineations of the duties of investors on how and when to engage with their investee firms. The first stewardship code was released in 2010 by the United Kingdom (UK Stewardship Code); within 10 years, 20 additional jurisdictions rolled out their own codes, mostly based on the UK model (Katelouzou and Puchniak, 2022).

The success of the UK code, and other codes by extension, in bringing about additional investor oversight has been questioned. The underlying issue behind the criticisms is that investor engagement is purely voluntary – that is, there are no laws or regulations mandating that institutional investors need to engage with their portfolio firms. As such, the UK Stewardship Code necessarily was structured to be a voluntary exercise. Being a signatory to a stewardship code was, and still is, a deliberate decision by the investor. Compliance consisted of signatories voluntarily issuing reports to the Financial Reporting Council (FRC) in which they describe, often in broad terms, the engagement activities they carried out in the previous year. Legal scholars judged these reports as being a "box-ticking exercise" (Arsalidou, 2012) or containing "boilerplate" information (Reisberg, 2015), thus rendering the UK Code inadequate in describing the levels of engagement activity across institutional investors. That the Code reports were published by the investor without comment or scrutiny by the overseer regulator led to additional criticisms attached to the veracity and transparency associated with strictly voluntary disclosures.

In response to these critiques, the FRC introduced, in 2016, a classification of the UK Code's signatories based on the quality of their Code reports. This system distinguished among signatories who reported well and displayed their commitment to stewardship (Tier 1), and others who did not report well or who showed a low level of stewardship (Tiers 2 and 3). Not only was the UK the first country to rank its signatories, but thus far, it is the only country to apply a classification system based on the quality of the submitted report (Katelouzou and Puchniak, 2022).

Our overall research question is whether the introduction of the external classification system to the signatories of the UK Stewardship Code provided a reputation effect, which, led to an increase in engagement activities for UK firms by Tier 1 investors. We posit that an investor's decision to engage, which includes the intensity and subject of the engagement, is based on a cost-benefit analysis of that engagement. Specifically, we note that although many institutional investors hold thousands of stocks in their portfolios, they allot relatively few resources to their engagement activities (Bebchuk and Hirst, 2020). Thus, we predict that those choosing to engage would prioritize their attention towards firms that would provide them with the greatest benefits from such activities. One of these benefits may be the investor burnishing its reputation as an active and engaged monitor.

We examine this question through three interlinking and consecutive inquiries.

First, we assess whether the 2016 tiering classification system accurately captures differences in engagement quality across institutional investors. That is, did tiering alleviate "cheap talk" allegations (Crawford and Sobel 1982) implicit in the voluntary disclosure environment as put forth by its critics? Consistent with prior papers, we use the percentage of "Against" votes in ISS contested management proposals as an observable measure of investor engagement (Appel, Gormley and Keim, 2016; Nguyen and Wang, 2019; Corum, Malenko and Mallenko, 2022; Griffin, 2020; Heath et al., 2022). We find that from 2014-2018, UK firms with Tier 1 institutional owners received a higher percentage of votes against ISS contested ballots than UK firms without UK code signatory investors (our NoTier investors). Our findings hold both for the full time period and on a year-by-year basis. We thus present evidence consistent with the hypothesis that the 2016 classification system differentiated between the level of engagement activities for Tier 1 and non-signatories to the Code.

We next turn to our main research question, which is whether the introduction of the classification system in 2016 led to an increase in engagement for Tier 1 institutional investors. That is, did the Tier 1 classification create a mechanism akin to the credibility model of Kim and Verrecchia (1991)? Anecdotally, we find that investors cared about receiving the Tier 1 label, and, more importantly, in keeping the label. In 2016, the FRC placed the Tier 1 classification on only 60.4% of the signatories to the UK Code, with the remaining 39.6% being classified as Tier 2 (22.2%) or Tier 3 (15.2%). According to the FRC, an immediate reaction came from many of the Tier 3 investors, who asked the FRC to provide guidance on how they could improve their

classification to either Tier 1 or Tier 2, or alternatively, be dropped as a signatory (FRC, 2017b). In 2017, the FRC dropped the Tier 3 category from their classification system, thus removing the stigma of any signatory being thus classified. More recently, several prominent institutional investors denied "Tier 1" status by the UK regulator have expressed their "frustration" (Schroders), their "commitment to the principles of engagement" (Pimco) and their interest in being given such status the "next year" (AllianzGI) (see, The Financial Times 2021).[1] As for maintaining the Tier 1 status, a managing director of BlackRock Investment Stewardship spoke to us on how the introduction of the 2016 classification system spurred BlackRock to reevaluate and focus more on its future ESG initiatives. In addition, there is anecdotal evidence that, over time, being considered a "Tier 1" signatory to the UK Code may be critical in attracting large pension funds. For example, the Scottish Widows Pension Fund's (SWPF) recent policy is to invest only with institutional investors that are signatories to the UK Stewardship Code. The SWPF dates back to the year 1815 and today has over £190 billion of AUM with over 6 million customers. According to a former London investment banker that we spoke to, the SWPF is considered to be a "crucial" investor – that is, being able to tell other potential investors that they have secured the funds of the Scottish Widows Pension Fund is critical in obtaining the business of many other UK pension funds. Thus, the banker's investment house has an incentive to meet and maintain its "Tier 1" status.

We explicitly test our reputation-enhancing hypothesis by using a difference-in-differences (DiD) methodology around the introduction of the 2016 Tiering classification system. Initially, we examine *overall* engagement quality by using the percentage of "Against" votes in ISS contested management proposals as our output variable. Treatment firms are UK firms on the FTSE 350 with Tier 1 investors, whereas control firms are those listed on the London Stock Exchange (LSE) with only NoTier investors. Our results are consistent with Tier 1 investors increasing their monitoring activity after 2016 when compared to NoTier investors. These findings provide evidence consistent with the tiering system creating a reputation mechanism.

We next examine whether, after 2016, Tier 1 investors increased their ESG engagement activities on UK firms to further enhance their reputation of being high quality monitors. We begin by asking whether high engagement institutional investors care more about a firm's ESG

[1]In 2019, the FRC replaced their two-tiered classification system with a heightened scrutiny on their signatories to the UK code. In a private conversation with the FRC, under the new system, only those investors which, in their opinion, would have been classified as Tier 1 under the prior regime can now be signatories to the Code.

performance than low engagement investors when making their portfolio decisions. Intuitively, we expect institutional investors that factor ESG performances into their portfolio decisions to be more vigorous monitors of that performance. Although there are many aspects of ESG that investors may consider, we select those ESG performance measures which, ex post, institutional investors had been particularly vocal about – carbon emissions, gender diversity on the board and workplace, and board independence. We regress these metrics on the percentage of equity owned by Tier 1 and NoTier investors, respectively, for all stocks continually listed on the FTSE 350 between 2014 and 2018. Our regression results are consistent with Tier 1 investors taking ESG performance metrics into account. Specifically, the coefficients on the percentage of Tier 1 equity ownership are significantly positive. In contrast, the coefficients on the percentage of NoTier shareholdings are insignificantly different than zero, consistent with these investors not systematically using ESG measures in their portfolio decisions.

Having validated that Tier 1 investors care about ESG performances, we test our reputation hypotheses by using a similar DiD methodology as before, but with ESG performance metrics as our output variable. As before, our treatment firms are FTSE 350 firms with Tier 1 ownership. In a first set of tests, we use UK firms without Tier 1 investors as our control sample. This allows us to compare changes in ESG performances for firms listed in the UK with high and low quality engagement investors. In a second set of tests, we change the venue but keep the ownership structure the same. That is, our new control sample consists of firms trading on the Frankfurt Stock Exchange (FSE) with Tier 1 ownership. The FSE is domiciled in Germany, a country without a Stewardship Code. Thus, the treatment and control firms have the same set of Tier 1 equity holders (we match also by the percentage of Tier 1 ownership) but the portfolio firms are in two separate countries.

Our findings are consistent with the UK classification system providing a reputation effect for engagement quality that resulted in increases in investees' ESG after 2016. Specifically, we see a significant increase in ESG metrics for firms in our treatment sample vis-à-vis each of the control samples. In particular, we are struck by how UK firms with Tier 1 experience an increase in ESG performance after the initiation of the tiering system, but German firms with the same set of investors do not experience such an increase. Our results hold for all ESG measures that we use – carbon emissions, board independence, board diversity, and workplace diversity, as well as for ESG scores. We also perform many tests to examine the robustness of the findings, along with

possible alternative explanations. These tests include entropy balance and propensity scoring matching techniques, different specifications of the ESG variables, re-estimating our analyses with NoTier investors only, and using an earlier shock event that may have had an effect on motivating investors or firms to improve their ESG performances. Our empirical findings and implications are robust to all of these tests and alternative explanations.

Our paper makes several contributions to the literature on the monitoring role of institutional investors over their portfolio firms. First, it relates to studies examining the agency problem of institutional investors with respect to investor engagement (Gilson and Gordon, 2013; Appel et al., 2016; Bebchuk, Cohen, and Hirst, 2017; Broccardo, Hart, and Zingales, 2022; Heath et al., 2022). These papers describe the costs and benefits of being an active monitor. Our study presents evidence that investors can overcome the costs of engagement by prioritizing their activities towards a venue that would increase their reputation as high quality monitors.

Second, we add to a growing literature documenting the effectiveness of quality investor engagement in promoting better ESG outcomes in investee companies. Prior studies that use propriety data from one activist investor (Becht, Franks, and Wagner, 2019; Dimson, Karakas and Li, 2015; Hoepner et al. 2022; Barko, Cremers, and Renneboog, 2021; Bauer, Derwall, and Tissen, 2022) or the "Big Three" (i.e., BlackRock, Vanguard and State Street Global Advisors (Azar et al., 2021) report positive associations between engagement and future ESG metrics. The first four papers' conclusions are based on samples involving one single active engager who is willing to share its engagment history with researchers; the latter examines three of the most influential and outwardly-activist institutional investors. Our paper uses a fuller set of institutional investors comprised mainly of non-activist-type institutions. Thus, we are able to generalize the results found in previous papers to a wider sample of investors.

Third, and most importantly, we provide evidence consistent with the notion that providing credible voluntary disclosures produces real effects from the disclosing entity. This finding is consistent with papers looking at credible mandatory disclosures for firms, for example, Christensen et al. (2017), Leuz (2018), and Bonetti, Leuz and Michelon (2023).

Our paper also contributes to the literature on stewardship codes in general (Shiraishi, et al., 2022) and to the UK Stewardship Code in particular (Cheffins, 2010; Arsalidou, 2012; Reisberg, 2015). The conventional wisdom is that being a signatory to the UK Stewardship Code is ineffective in increasing monitoring by institutional investors (Cheffins, 2010; Arsalidou, 2012;

Reisberg, 2015; Lu, et al., 2018). Our paper differs from these papers in that it examines the usefulness of the UK Stewardship Code *tiering classification* to assess the quality of engagement. As such, our paper carries policy implications on how regulators and institutional investors can implement stewardship codes. It also speaks directly to the criticisms of the Kingman Report (Kingman, 2018), which derided the FRC classification system as being uninformative. Our findings suggest the opposite conclusion.

Finally, although this development lies beyond the timeframe of our empirical analysis, one result of the criticisms raised by the Kingman Review on the practical effectiveness of the Code, was for the FRC to publish a substantially revised version of the Code in October 2019 that came into effect on January 1, 2020. The 2020 version significantly deviates from the previous one in that it places heavier emphasis on environmental social and governance (ESG) factors and aims to integrate them into good stewardship (Katelouzou and Klettner, 2022). Our paper strongly suggests that many institutional investors already were considering ESG factors when determining their engagement strategies.

2. Institutional background, hypotheses and literature review

2.1. Institutional Background

The UK was the first country to adopt a stewardship code, thus introducing a new wrinkle to how institutions may govern themselves. The first version of the UK Stewardship Code was adopted in 2010 by the FRC, a quasi-governmental agency responsible for regulating auditors, accountants and actuaries.[2] Its adoption was a response to a recommendation included in the Walker Review (Walker, 2009), which asked the FRC to adopt a Stewardship Code to encourage institutional investors to adhere to best practice principles. In response to a number of issues raised by a public hearing promoted by the FRC on the 2010 Code, a revised version of the Code was published in September 2012. The revised Code, without altering the previous structure articulated in its seven principles, included some revisions and a new introductory section aimed at clarifying the definition and aim of stewardship (Katelouzou, 2022).[3]

[2] The FRC was created in the 1980's as a company limited by guarantee, which it remains today. It is now classified by the Government and the Office for National Statistics as a public (central government) body in view of the various statutory functions it fulfills and powers delegated to it by the Secretary of State. See Kingman (2018).

[3] Specifically, the seven principals are that institutional investors should: (1) publicly disclose their policy on how they will discharge their stewardship responsibilities (2) have a robust policy on managing conflicts of interest in relation to stewardship and this policy should be publicly disclosed (3) monitor their investee companies (4) establish

The UK Stewardship Code is based on the premise that the responsibility for overseeing publicly listed companies is shared between the board, which oversees its management, and investors, who hold the board accountable for its responsibilities (FRC, 2012, paragraph 2). As stated in the first two sentences of the 2012 Code: "Stewardship aims to promote the long term success of companies in such a way that the ultimate providers of capital also prosper. Effective stewardship benefits companies, investors and the economy as a whole" (FRC, 2012).

Institutional investors can exercise their voice either by exiting their positions (Edmans, 2009) or they can engage directly with the firm (Hirschman, 1970; McCahery, Sautner, and Starks, 2016). Broccardo et al., (2022) studies the relative effectiveness of exit vs. engagement in promoting socially desirable outcomes in companies; it concludes that exit is less effective than engagement in pushing firms to act in a socially responsible manner.[4] Investor engagement, in turn, involves voting, the submission of shareholder proposals, and direct interactions with management, the latter including meetings with the chair or other board members, meetings with management, writing letters to the company, and raising key issues through a company's advisers (Grewal and Serafeim, 2020).[5]

The UK Code embraces a robust style of investor engagement. It states that "stewardship is more than just voting" and that it includes "monitoring and engaging with companies… [through] purposeful dialogue" (FRC, 2012). It also specifies that "institutional investors should establish clear guidelines on when and how they will escalate their stewardship activities" (Principle 4), and says that "when companies are not responsive to collaborative engagement, institutional investors should escalate their actions, for example, by holding additional private meetings with management, the chairman or other board members to discuss concerns, or making

clear guidelines on when and how they will escalate their activities as a method of protecting and enhancing shareholder value (5) be willing to act collectively with other investors where appropriate (6) have a clear policy on voting and disclosure of voting activity (7) report periodically on their stewardship and voting activities.

[4] In addition, passive index funds cannot exercise their voice through exit as they are obligated to hold shares of all stocks (usually value-weighted) in their respective indexes.

[5] For example, BlackRock states clearly: "BlackRock believes we have a responsibility in relation to monitoring and providing feedback to companies, sometimes known as stewardship. These ownership responsibilities include engaging with management or board members on corporate governance matters, voting proxies in the best long-term economic interests of shareholders, and engaging with regulatory bodies to ensure a sound policy framework consistent with promoting long-term shareholder value creation." See, Blackrock Statement on compliance UK Stewardship Code 2020 p. 1, https://www.blackrock.com/corporate/literature/fact-sheet/blk-responsible-investment-statementoncompliance-uk-stewardshipcode.pdf

See BlackRock, Investment Stewardship Global Corporate Governance & Engagement Principles" (January 2020) at https://www.sec.gov/Archives/edgar/data/1051004/000119312520262143/d847437dex99globalcorpgo.htm

a public statement in advance of General Meetings or submitting resolutions and speaking at General Meetings" (Principle 5). As far as voting is concerned, Principle 6 states that institutional investors should seek to vote all shares held and not automatically support the board. For example, they should abstain or vote against management when "they have been unable to reach a satisfactory outcome through active dialogue." (FRC, 2012, Principle 6-guidance).

Notably, the UK Stewardship Code is a voluntary code in that institutional investors can choose or refrain from being signatories to the Code. Signatories are not confined to UK investors, and the roster contains many non-UK financial institutions (see Table 1 Panel B). Further, many institutional investors choose not to be signatories; for example, our sample of FTSE 350 firms has 1,916 non-signatory investors. We designate the non-signatories to the Code as being "NoTier" investors.

Beginning in 2010, Principle 7 of the Code asks signatories to disclose information about their stewardship policies and compliance record on their website, using a comply and explain format. Initially, these stewardship reports were published without comment by the FRC. Consequently, they were criticized as being a "box-ticking exercise" (Arsalidou, 2012) or containing "boilerplate" information (Reisberg, 2015). In addition, its comply and explain disclosure format was judged as being too lax or uninformative to investors (Cheffins, 2010; Reisberg, 2015).

In response to these and other criticisms, in 2016, the FRC began classifying signatories based on the quality of their Code statements against its seven principles and supporting guidance. Thus, the Code moved beyond being a purely voluntary disclosure in the sense that the contents of the disclosures would now be scrutinized and rated by the FRC. Asset managers (e.g., mutual funds) were categorized into three tiers, whereas asset owners (e.g., pension funds) were placed into two tiers. As specified by the FRC, Tier 1 signatories "will be those that meet our reporting expectations and provide evidence of the implementation of their approach to stewardship. We will pay particular attention to information on conflicts of interest disclosures, evidence of engagement, and the approach to resourcing and integration of stewardship."(FRC, 2016a, p. 12). Tier 2 signatories will be those "where improvements are needed" (FRC, 2016a, p. 12) and Tier 3 signatories are those in which "significant reporting improvements need to be made to ensure the approach is more transparent" (FRC, 2016b).

According to the FRC, the tiering classification was successful in improving the quality of Code statements (FRC, 2017a, p. 24), a conclusion reiterated two year later by Katelouzou (2019). Important to our research question, the FRC found that many signatories chose to include more information on their environmental and social activities in their Code statements beginning in 2016 (FRC 2017a, p. 25).

2.2. Hypotheses Development

The first hypothesis is whether the Tier 1 and NoTier designations accurately reflect substantive differences in institutional investors' engagement levels. There are several reasons why this may not be true. First, we do not know why so many institutional investors did not sign onto the UK code (see Table 1 Panel A). One explanation is that non-signatories do not incorporate significant engagement strategies in their investment approach (FRC 2010). However, we cannot preclude the possibility that many of our NoTier investors were actively engaging with their portfolio firms, but chose to not be a signatory for other reasons. Second, the FRC based its Tiering designations strictly on the contents of the Code Report issued by the signatory. That is, they did not factor in actual engagement outputs into their rating system. This omission was noted in the conclusion of the Kingman Review (Kingman, 2018), which stated that if "the Code remains simply a driver of boilerplate reporting, serious consideration should be given to its abolition" (Kingman, 2018, p.10). Third, there is an extensive literature on the nuances surrounding voluntary disclosures. Many papers present evidence questioning the veracity and transparency of voluntary disclosures that firms make in their financial reports (e.g., Li, 2008; Brown and Tucker, 2011; Dyer, Lang and Stice-Lawrence, 2017; Batish et al., 2021; Georgiev, 2021; Baker et al., 2023). Further, institutional investors have been chastised for making unsubstantiated claims about their commitment to environmental causes.

In contrast, there is empirical evidence showing that the certification of nonfinancial voluntary disclosures by independent, outside sources can alter firm or investor behavior by effecting the cost-benefit trade-off through improved transparency for various stakeholders (for example, Flammer, 2021 (green bonds); Pan et al., 2022 (pay ratios), and Gipper, Leuz and Maffett, 2020 (audit inspections)). These papers suggest that the FRC can use the Code Reports to accurately assess the engagement quality of their signatories.

Given the above discussion, we present the first hypothesis in the null form as:

H1: Institutional investors assigned a Tier 1 classification by the FRC in 2016, on average, have equal engagement quality as compared to institutional investors without a tiering classification, i.e., those institutions that we classify as NoTier institutions.

Our second hypothesis relates to the institution of the FRC classification system itself.

We begin with the proposition that the decision for any institution to engage with its investee firms is strictly voluntary, with the amount of engagement being a function of its costs and benefits of engagement. In general, institutional investors have little incentive to engage due to their highly diversified portfolios, costs of engagement, and collective action problems (Bebchuk et al., 2017; Bebchuk and Hirst, 2020). However, Kahan and Rock (2021) and Fisch, Hamdani, and Solomon (2019) contend that engagement can create higher investee returns and therefore effectuate new fund inflows, which accordingly will result in increased fees earned by the institutions. Consistent with these cost and benefit tradeoffs, McCahery et al. (2016) reports a wide berth of investor engagement levels and strategies among their surveyed investors, with 19% never engaging, 39% exiting a portfolio firm due to dissatisfaction with that firm's governance, and 53% and 63% of investors voting against management, or having private discussions with management, respectively.

Further, most if not all institutional investors, have (1) limited budgets with respect to engagement activities and (2) investments in hundreds if not thousands of companies throughout the world. Using the "Big 3" as an example, at the end of 2019, BlackRock, Vanguard and State Street Global Assets employed 45, 21 and 21 people, respectively, in their stewardship departments with corresponding outlays of (in $millions) of $13.5, $6.3, and $3.6 (Bebchuk and Hirst, 2019). In contrast, these investment firms respectively held 11,246, 13,225, and 12,291 different companies in their portfolios, taking in (in $millions) $9,107, $3,467, and $2,625 in fees for the same year (Bebchuk and Hirst, 2019). These numbers strongly suggest that institutional investors cannot engage all of their portfolio companies, but instead, must make choices as to which companies to target.

We propose that significant monitoring costs, coupled with the scarcity of resources devoted to stewardship activities, would incentivize high quality engagement institutional

investors to prioritize their engagement activities towards those providing the highest benefits. One such benefit could be solidifying their reputation as being an active and successful steward. If the newly-established external FRC classification system provided a vehicle in which investors could credibly signal their engagement quality, thus mitigating allegations of "cheap talk" communications (Kim and Verrecchia, 1991; Crawford and Sobel, 1982), then we hypothesize that after 2016, high quality engagement investors would prioritize their engagement activities towards UK firms in their portfolios to maintain the status of being classified a "Tier 1" investor.

Given the above discussion, we present hypothesis 2 in the null form as:

> H2: After the initiation of the 2016 FRC classification system, the increase in overall engagement quality for UK firms held by Tier 1 investors will not be different than firms held by NoTier investors.

Our third hypothesis relates to ESG engagement activities.

The debate on whether institutional investors should engage portfolio firms towards better ESG performances is quite vigorous. One debate focuses on whether ESG, in fact, influences firm value, with both sides arguing about its perceived costs and benefits to investors. Edmans (2021) and Gordon (2022) argue that good ESG policies increase firm profits or mitigate systematic risks such as climate change risk, financial stability risk and social stability risk. In support of these views, Bolton and Kacperczyk (2021) presents evidence of climate risk being priced as a systematic risk, and Pástor, Stambaugh and Taylor (2021), Hoepner et al. (2022) and Brandon and Krueger (2018) show that improved environmental policies can reduce left tail risks from investor portfolios. Bebchuk and Tallarita (2020) and Masulis and Reza (2015), however, take an opposite view, contending that ESG activities are costly to the firm and fraught with potential agency issues, thus harming shareholder value. Most tellingly, it is unclear whether investments in firms with high ESG performances out- or underperform their counter peers (The Economist, 2022).

A second debate focuses on the authenticity of ESG engagement activities by institutional investors. What cannot be disputed is that there is an ever-increasing demand by investors for ESG funds, per se, particularly from younger clients who are interested in investing in better ESG-performing firms (Barzuza, Curtis and Webber, 2020; 2023; Ceccarelli, Glassner, and Homanen,

2022).[6] Institutional investors benefit from this demand by charging higher fees for ESG funds, thus creating an incentive to create and maintain these funds.[7] In addition, as Ceccarelli et al. (2022) show, institutional investors enjoy an increase in monthly fund flows after disclosing favorably on their voluntary commitments towards the principles articulated in the PRI, thus providing a motivation for investors to establish a reputation as being an active engager of ESG performances.[8]

However, investors have been accused of engaging in "greenwashing" activities, claiming to be supportive of good ESG practices when, in fact, they do not factor in these metrics when selecting their portfolio firms. Morningstar, for example in February 2022, dropped the labels of "ESG" and "sustainable" from over 1,200 European funds on the basis that the funds were providing misleading statements on their commitment to ESG, and in May 2022, the SEC fined BNY Mellon's investment adviser division $1.5 million for misstating ESG information about the mutual funds it managed.[9] In addition, many papers find that many signatories to the United Nations Principles of Responsible Investment (PRI) platform either invest in firms with poor ESG practices (Liang, Sun and Teo, 2021; Brandon et al. 2022) or do not increase engagement on ESG with their portfolio companies (Kim and Yoon, 2023). Finally, ESG engagements can be quite costly; Hoepner et al. (2022) documents that the average successful ESG institutional engagement campaign is 35 months.

Given the above discussion, we present the third hypothesis in the null form, as:

H3a: After the initiation of the 2016 FRC classification system, the increase in ESG performances for UK firms held by Tier 1 investors will not be different than firms held by NoTier investors.

[6] Globally, the assets under management for ESG designated funds have increased from $19 trillion in 2014 to $55 trillion in 2022 (Collins and Taylor 2022).
See:https://assets.contentstack.io/v3/assets/blt4eb669caa7dc65b2/blt36de8b5594de0582/62c6e888181754349ea2fa66/U.S._Fund_Fee_Study_2021.pdf

[7] Morningstar reports that, in 2021, the asset-weighted average expense ratio for ESG funds stood at 0.55% versus 0.39% for their traditional peers

[8] The examination of fund flows is beyond the scope of this paper.

[9]See: https://www.bloomberg.com/news/articles/2022-02-10/funds-managing-1-trillion-stripped-of-esg-tag-by-morningstar.

H3b: After the initiation of the 2016 FRC classification, the ESG performances for firms with Tier 1 investors will not be different for firms domiciled in the UK than firms domiciled in Germany.

H3a keeps the jurisdiction of the portfolio firms the same, i.e., all portfolio firms are located in the UK, but predicts differences in ESG performances by the engagement quality of their investors. H3b keeps the engagement quality of their investors the same, i.e., all are Tier 1 investors, but predicts differences in ESG performances by whether the portfolio firm is in a country with a Stewardship Code.

3. Data, Sample Selection, and Descriptive Statistics

In this section, we describe the data and sample selection used in the analyses. We use several databases.

Firm and institutional ownership data: The Orbis Bureau Van Dijk (Orbis) database collects ownership data for private and publicly-listed firms worldwide, including the United Kingdom and Germany. We begin by selecting all companies listed on the FTSE 350 Index between 2009 and 2018. These are the largest publicly-traded companies in the UK and thus are widely owned by institutional investors. We choose 2009 as our beginning year since it precedes the initiation of the UK Stewardship Code by one year. For each firm, we obtain detailed ownership information from Orbis, including the list of shareholders and related annual percentages of ownership. Market data, such as market capitalization and the book value of shareholders' equity, are from the Eikon Thomson Reuters (Eikon) database. To maintain balanced samples across our DiD estimations, we impose the requirement that firms be in the FTSE 350 Index for the full 10-year period. The final sample of treatment firms is comprised of 245 FTSE 350 firms.

We obtain the list of asset managers and asset owners classified in the three different tiers directly from the FRC, and we manually code each as a Tier 1, 2, 3 institutional investor, respectively. As Table 1, Panels A and B show, we begin with 2,332 unique institutional investors. Of these investors, 416 are classified by the FRC as Tier 1 (n=316), Tier 2 (n=63), or Tier 3 (n=37). Thus, two-third of the institutional investors submitting to the classification system were classified as being Tier 1. We classify the remaining 1,916 institutional investors in the FTSE350 as NoTier.

Table 1, Panel B has descriptive statistics for the institutional investors by classification. One of the criticisms aimed at the Code was that since only UK institutional investors were required to become signatories, foreign (non-UK) institutions would choose not to become signatories. As such, the Code would not be effective in promoting investor engagement due to an important sector being absent from the Code's mandates (Cheffins, 2010). However, as Panel B illustrates, 231 of the 416 signatories (55.5%) are non-UK investors, with 170 of the 316 (53.8%) Tier 1 investors being represented by non-UK funds. These Tier 1 foreign investors include BlackRock, State Street Global Advisors, Vanguard Asset Management (the Big 3), as well as other major investors, for example, Goldman Sachs Investment Management, J.P. Morgan Asset Management and Morgan Stanley Investment Management.

Table 1, Panel C has annual summary statistics for the institutional investors' holdings of the firms in our treatment sample. Over the 2014-2018 timeframe, Tier 1 institutions own, on average, 34% of the equity of their FTSE 350 portfolio firms, higher than the 26% average holdings for NoTier institutions. In contrast, the percentage of ownership for Tier 2 and Tier 3 institutions are very small, 2.42% and 1.42%, respectively. We also note that over the 2014-2018, there are no discernible changes in the percentage of ownership for any of the groups, thus minimizing the possibility that our findings are unduly influenced by temporal changes in institutional ownership. Due to the small ownership of Tier 2 and 3 institutions we do not use their shareholding in our analyses.

Control samples: We create two control samples. To test H3a, we create a control group of UK firms without any Tier 1 investors, but with at least one NoTier investor. Because all FTSE 350 firms have at least one Tier 1 investor, we expand the population of portfolio firms to include all firms listed on the LSE. This gives us a control sample of 964 firms. To test H3b, we create a sample of firms listed on the FSE that also have at least one institutional investor in Tier 1. The FSE is the largest stock exchange in Germany and thus correlates well with the type of firms that would be listed on the FTSE 350. This screen gives us a control sample of 338 firms.

ESG data: We initially use three output variables to measure a firm's ESG performances. Our choice of output variables is motivated partially by two engagement activities that dominated institutional investors over our time period: environmental concerns and gender diversity. To calibrate its impact on the environment, we use the direct GHG emissions scope level (Scope 1) defined by the Greenhouse Gas (GHG) Protocol, a standardized framework to measure and

manage GHG emissions. We retrieve greenhouse gas emissions data measured in equivalents of metric tons of CO_2 (tCO_2eq) from Trucost, a widely used source of firm carbon emission data for the corporate sector.[10] For our initial measure of social performance, we look to board diversity (the percentage of women on the board) retrieved from Eikon. In later tests, we examine diversity among the portfolio firm's workforce, namely its percentage of women employees and its percentage of women managers, both variables hailing from the Eikon database. We also use Workforce, a combined measure taken from Eikon that is meant to capture a company's capability of ensuring workforce diversity, opportunity, safety and job satisfaction. To measure variations in governance, we retrieve the metric board independence (the percentage of independent board members) from the Eikon database.

We further use ESG scores from both the Eikon and Sustainalytics databases as alternative ESG measures. These scores commonly are used throughout the literature and provide a different perspective on ESG performances. However, several papers show that different data providers produce different sustainability scores for the same firm, thus necessitating the use of more than one database. We also find that the two databases have differential coverages of geographic venues, with the Eikon database being more populated with European companies than Sustainalytics.

Table 1 Panel D divides our sample into treatment and control groups on a yearly basis. The top panel uses the NoTier UK firms as our control sample; the bottom panel uses firms listed on the FSE. We note that for the initial ESG measures, *Carbon Intensity*, *Board Diversity,* and *Board Independence*, the treatment group exhibits better ESG performances than the control group in the pre-2016 period (all significantly different from zero except for *Carbon Intensity* for the UK control group in the year 2014). This is an important observation because it rules out the possibility that bigger post-period changes in the ESG variables for the treatment group are due to these firms starting at lower ESG levels, thus being in greater need of improvement than the group of control firms.

Voting data: We obtain voting data from ISS Voting Analytics (i.e., its Company Vote Results Global database) for all the UK listed firms covering the period 2014-2018. This database covers global corporate elections from 2013 onward, and provides the identities of the companies

[10]Azar et al. (2021) provides a description of the process followed by Trucost to assess corporate carbon emissions and an example of the computation of a firm's total CO_2 emissions.

holding elections, descriptions of each proposal measure, the number of shares voted "For," "Against," or "Abstain," and ISS's recommendation for each ballot item. Our sample includes a total of 71,989 ballot measures (untabulated), with the 245 firms in our FTSE 350 sample having 32,341 proposal votes compared to 39,648 proposal votes for the 964 firms in the control sample (see Table 2 Panel A).

4. Research design

Hypothesis 1 examines if the classification system differentiates between high and low quality engagement institutions. To test this hypothesis, we compare the voting behavior between Tier 1 firms and NoTier firms on ISS contested management proposals, i.e., proposals in which firm management is "for" and the ISS is "against". Our main variable of interest is *%Against,* the average percentage of shares voted against contested proposals for firm *i* in year *t.*

We choose this setting for several reasons. First, McCahery et al. (2016) reports that investors view voting against management as a robust form of engagement, with over one-half of their surveyed investors indicating at least one such vote in a five-year window. Second, fund voting is visible, thus providing us with a transparent engagement measure. In contrast, many engagements between institutions and their portfolio firms are unobservable, making it difficult to measure the quality (or even quantity) of institutional investor engagement.[11] Third, contested proposals are fairly unusual with just 7.2% of the proposals from 2014 to 2018 falling under this category (this refers to the full UK sample, untabulated). Thus, their agenda, most likely, reflects a position ripe for institutional investor engagement. Fourth, several papers use voting behavior on contested ballots as their measure of institutional investor monitoring activity (Nguyen and Wang 2019; Heath et al. 2022), allowing us to compare our findings with other papers on institutional investor engagement.

Hypotheses 2 exploits the adoption of the Tiering Classification in the UK Stewardship Code in 2016. We use a DiD research design to analyze the average treatment effect of institutional engagement for UK listed firms. All of the DiD equations are estimated around the introduction

[11] Engagement channels include in-person closed-door discussions with management or the board, private letters, emails, and phone calls (Grewal and Serafeim, 2020). Even when observed, however, the relative efficacy in improving firm outputs attributable to each of these tactics is unclear; for example, Azar et al. (2021) excludes letter writing from their analysis of the Big 3's private engagements on climate change.

of the tiering classifications in 2016. Using a two-year window surrounding the year 2016, observations in 2014-2015 are included in the pre-period and those in 2017-2018 are part of the post-period. Specifically, we estimate:

$$\%AGAINST_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2(Post \times TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE_i + YearFE_t + \varepsilon_{i,t} \quad (1)$$

where *Post* is one for the observations in 2017-2018 and zero for those in 2014-2015. The choice of the control variables (*Controls*) are based on Dyck et al. (2019), and they are firm size (the log of market capitalization), leverage, profitability, and book-to-market (BTM). We further control for year and firm fixed effects to mitigate any confounding factors and to absorb any omitted variables. All standard errors are clustered at the firm level. See Appendix A for detailed definitions for all variables. The main variable of interest is (*Post x TIER1_%IO),* which measures the change in voting behavior for firms held by Tier 1 investors after the initiation of the tiering classification.

Hypothesis 3a tests whether, after the initiation of the 2016 FRC classification system, ESG performance increased more for UK firms with Tier 1 investors than for UK firms without Tier 1 investors (NoTier). Specifically, we estimate:

$$ESG_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2(Post \times TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE_i + YearFE_t + \varepsilon_{i,t} \quad (2a)$$

where *ESG* is one of the three ESG variables defined above, and the other variables are defined as before. All standard errors are clustered at the firm-level. The main variable of interest is (*Post x TIER1_%IO*), which measures the change in ESG for firms held by Tier 1 investors after the initiation of the tiering classification. To be conservative, we drop firms with negative income to control for the possibility that differences in ESG expenditures may be due to larger (Tier 1) firms being more profitable than smaller (NoTier) firms. When we include all firms, those with positive and negative income, we get similar results and implications (untabulated).

The treatment group for equations (1) and (2a) is comprised of FTSE 350 companies with at least one Tier 1 investor. The control group contains UK companies without any Tier 1 investors,

but also with at least one NoTier investor. Almost by definition, these treatment and control firms should be different from each other, as one hales from the FTSE 350 whereas the other is from other firms listed on the LSE. As Appendix B Table B1 Panel A shows, treatment firms are significantly larger (*Mktcap*), have more leverage (*Leverage*), but are less risky (*BTM*) than the control firms. To account for these differences, and consistent with the literature, we employ two separate empirical methods: unmatched samples with control variables, and matched samples using entropy balancing (Hainmueller 2012; McMullin and Schonberger 2020).[12] For entropy balancing, we follow Ferri, Zheng, and Zou (2018) and match on both the mean and variance by industry and our selected control variables - *Mktcap*, *ROA*, *Leverage*, *BTM* and as well as on industry at the beginning of 2014 (first year of analysis). After entropy matching, differences between the matched variables fade away.

In hypothesis 3b, we use the same treatment group as before, but replace the control sample with a sample of firms listed on the FSE that also have at least one institutional investor in Tier 1. We maintain the same research design approach as reported above, but we now introduce a country variable *UK*, equal to 1 for the matched sample of UK firms with Tier 1 shareholders listed on the FTSE350 continually during the years 2009-2018, zero otherwise. Specifically, we estimate:

$$ESG_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_{i,t}) + Controls_{i,t} + FirmFE_i + YearFE_t + \varepsilon_{i,t} \quad (2b)$$

The main variable of interest in the regression model is the interaction term, (*Post x UK),* which captures the DiD effect. As before, we run the regressions with an unmatched sample, as well as entropy matching and propensity score matching (PSM) approaches, using the same set of control variables as in equation (2a).[13] However, ownership in German firms is more concentrated, with institutional investors usually not owning a majority of the shares in listed companies (Ringe, 2015, 2021; De La Cruz, Medina, and Tang, 2019). Therefore, in theory, they are less well positioned to influence the ESG conduct of their investee firms, particularly in the presence of a

[12] As a robustness check, we also employ a 1-on-1 propensity scoring match between treatment and control firms (Rosenbaum and Rubin, 1983). Specifically, we estimate a logit model using all of the possible treatment and control firms, with the independent variables being the same as those used in our entropy matching approach. We use a caliper-based nearest-neighbor match (matching 1:1 without replacement with a caliper of 0.25). Our data are from 2014. The dependent variable is equal to 1 for firms held by Tier 1 investors and 0 for other firms.

[13] Recall that firms in UK and German do not switch country during the period. Thus, our fixed effects specifications cannot include a UK indicator.

controlling shareholder (Dharmapala and Khanna, 2021; Puchniak, 2021). Thus, differences in findings could be attributed to fundamental differences in institutional ownership between the UK and Germany, and not necessarily to the introduction of the 2016 classification system in the UK. To account for potential differences in ownership, we also match on *Tier1_%IO.* To control for the possibility that our results are influenced by companies with concentrated ownership (with whom it is more difficult to engage), we exclude firms where the first shareholder has at least 30% ownership. Appendix B, Table B1 Panel B presents summary statistics for the treatment and sample firms' matching variables. Prior to entropy balancing, we find that the UK firms (treatment), on average, are larger (*Mktcap*), more profitable (*ROA*), and have higher Tier1 institutional investor ownership (TIER1_%IO) than the German firms; treatment firms also, on average, have lower growth opportunities (*BTM*) than the control firms.

Figures 1 and 2 present parallel trend analyses between UK treatment firms and UK control firms (figure 1) and German FSE control firms (figure 2). Specifically, we separately estimate yearly regressions of ESG over the years 2014 through 2018, respectively, with the year 2015 being our baseline year as it is one year prior to our "shock" year (2016). The regression with the UK control firms uses TIER1_%IO, the control variables, and fixed effects from equation (2a); figure 1 presents the coefficients on *TIER1_%IO* for the regressions on *Carbon Intensity* (Panel 1), *Board Independence* (Panel 2), and *Board Diversity* (Panel 3), respectively. The regression with the German control firms uses *UK,* the control variables and fixed effects from equation (2b); figure 2 has the coefficients on *UK* for the regressions on the same three ESG variables (Panels 1-3). Both figure 1 and 2 show no discernible patterns nor significant coefficients on the coefficients for TIER1_%IO for the pre-2016 period, thus validating the parallel trends assumption.

5. Results

5.1 Does the FRC Classification System Capture Differences in Overall Engagement Quality?

Hypothesis 1 tests for differences in engagement quality between firms with Tier 1 and NoTier investors. Our metric of institutional investor engagement quality is *%Against*, the percentage of "Against" votes in contested management proposals. Table 2 Panel B presents a year-by-year breakdown of *%Against* for treatment (Tier 1) and control firms (NoTier) groups over the five-year period surrounding the introduction of the tiering system. For the time-pooled samples, the average *%Against* vote for UK firms with Tier 1 investors is 9.66%; for UK firms

without Tier 1 investors (NoTier) the average is 3.82%. Testing for a difference in means produces a t-statistic of 16.54, significant at the 0.01% level. We note that this difference is not due to a higher prevalence of contested proposals for the treatment group; in fact, the opposite appears to be the case. For the pooled samples, the percentage of contested ballots are significantly lower (t-stat: -13.77) for the treatment sample when compared to the control group.

When we examine the *%Against* votes on a year-by-year basis, we find similar significant differences between treatment and control groups. Further, while the percentage of contested ballots for the control group rises over time (from 8.55% in 2014 to 11.78% in 2018), we do not see a similar increase for the treatment group (from 3.73% in 2014 to 3.92% in 2018). Thus, we cannot attribute the treatment group's temporal increase in *%Against* to a similar rise in ISS opposition to management proposals. In total, the evidence is consistent with the Code being an accurate reflection of the engagement quality for Tier 1 and NoTier investors (Hypothesis 1).

5.2 The Initiation of the 2016 FRC Classification System and Changes in Overall Engagement Quality

Hypothesis 2 tests if, after the initiation of the 2016 FRC classification system, the change in overall engagement quality differs between firms held by Tier 1 and NoTier investors. Table 3 presents summary statistics for our DiD regression estimations (equation 1); in column (1), we match for differences in firm characteristics through the use of control variables only; in column (2), we match via entropy balancing. Both methodologies produce results consistent with the introduction of the 2016 tiering classification system having an influence on Tier 1 institutional voting behavior. In column (1) the coefficient on (*Post x TIER1_%IO*) is 0.015 (t-value = 2.47), indicating a significant increase in votes against management for firms in the post-2016 period. Entropy balancing produces similar finding. Thus, we present evidence consistent with the introduction of the FRC tiering system eliciting an increase in stewardship for Tier 1 institutional investors.

5.3 The Initiation of the 2016 FRC Classification System and Changes in ESG Performances

We now turn to hypothesis 3, which is whether, the initiation of the 2016 FRC classification system was accompanied by an increase in ESG performances by UK firms with Tier 1 investors. We begin our analysis by presenting evidence consistent with Tier 1 investors caring about their

portfolio firms' ESG performances. Intuitively, we expect institutional investors that factor ESG performances into their portfolio decisions to be more active monitors of that performance. We then estimate DiD regressions around 2016 on various ESG measures.

5.3.1. Do Tier 1 Institutional Investors Care About Their Portfolio Firms' ESG Performances?

To examine whether Tier 1 and NoTier investors take ESG performances into account when making their portfolio decisions, we estimate the following regression:

$$ESG_{i,t} = \beta_0 + \beta_1 \%IO_{i,t} + Controls_{i,t} + FirmFE_i + YearFE_t + \varepsilon_{i,t} \quad (3)$$

Initially, we use three separate ESG variables to estimate equation (3): *Carbon Intensity*; *Board Independence*; and *Board Diversity*. $\%IO_{i,t}$ is the percentage of total institutional investor ownership by investor-type in firm *i* in year *t*; we estimate equation (3) separately for high quality investor engagement ownership (*TIER1_%IO)* and for low quality investor engagement ownership (*NoTIER_%IO)*. The control variables are as before. All standard errors are clustered two-ways at firm and year level.

Table 4 presents summary statistics for equation (3). The findings are consistent with Tier 1 and No Tier institutional investors placing different weights on the importance of their portfolio firms' ESG performances. As columns (1)-(3) illustrate, the percentage of the firm's equity owned by Tier1 institutional investors *(TIER1_%IO*) is associated with higher ESG performances. In contrast, as columns (4)-(6) show, we find no association between *NoTIER _%IO* and our three ESG metrics, as evidenced by the insignificant coefficients on *NoTIER_%IO*.

5.3.2 UK Setting: Tier 1 vs. NoTier Institutional Investors

To examine a reputation effect associated with the institution of the 2016 FRC classification system of institutional investors, we adopt a DiD research design around the year 2016. Our treatment firms are UK listed firms owned by Tier 1 institutional investors. In this subsection, our control group consists of UK listed firms without Tier 1 ownership (hypothesis 3a).

Table 5 presents summary statistics for the DiD regressions. Columns (1)-(3) do not employ any matching mechanism, but instead control for the covariates between Tier 1 and NoTier firms.

Columns (4)-(6) use entropy balancing weights on the control firms.[14] Both methodologies yield results consistent with each other. In columns (1) and (4), the coefficient on (*Post x TIER1_%IO*) is significantly negative for the regression on *Carbon Intensity*, consistent with our treatment firms reducing their carbon emissions more rapidly after 2016. Similarly, the coefficients on *(Post x TIER1_%IO*) are significantly positive for the regressions on *Board Independence* (columns 2 and 5) and on *Board Diversity* (columns 3 and 6). We also find significantly positive coefficients on *Mktcap* for the regressions on *Board Independence*, and *Board Diversity*, consistent with other studies showing that larger firms are more likely to have higher ESG scores, ceteris paribus (see Larcker et al. 2022). Using a PSM matching method (untabulated) produces similar, even statistically stronger, results to those using entropy balance matching. Thus, our findings are robust to whether and how we match our treatment and control firms.

The results in Table 5 are consistent with the introduction of the FRC classification system in 2016 bringing forth a reputation effect for more effective investor engagement. One alternative explanation is that the increases in ESG performances for the treatment group were due to trends in ESG made prior to the initiation of the 2016 tiering system. However, as figure 1 illustrates, the pre-period trends are (1) parallel for the treatment and control groups and (2) generally are not improving over that time period. These two observations considerably dampen down this alternative explanation. A second alternative explanation is that the pre-period ESG performances for the treatment firms began at a lower level than those for the control firms, thus inducing the treatment firms to play "catch up" in ESG to the group of control firms. However, we find this possible explanation to be invalid; in fact, the difference in the mean of *Carbon Intensity* (*Board Independence* and *Board Diversity*) for 2014 and 2015 are lower (higher) for treated UK firms versus UK control firm (Table 1, Panel D).

5.3.3 International Setting: Control Sample are German Listed Firms Held by Tier 1 Investors

Our results are consistent with the institution of the FRC tiering classification system producing a reputation effect for Tier 1 investors. However, despite the use of entropy balancing, propensity scoring matching, controls for covariates, and year and firm fixed effects, our findings

[14] We use firm fixed effects in our analyses. However, because entropy balancing assigns different weights to our treatment firms, fixed effects may bias these effects when estimating our regressions. We therefore repeat our analyses but remove the fixed effects from equation (2a). Our results with this new specification yield stronger coefficients on *Post x TIER1_%IO* than those shown in columns 1-6.

may be driven by omitted variables related to whether a firm is on or off the FTSE 350. We therefore re-do our analyses using a different set of control firms – firms listed on the FSE that are held by at least one Tier 1 institutional investors. Thus, we keep the investors the same (Tier 1), but vary our analysis by whether the country has (the UK) or does not have (Germany) a Stewardship Code (hypothesis 3b).

The LSE and the FSE have many similarities. Both are among the oldest exchanges in the work, each establishing its roots in the late 16th century. The LSE is the largest single country stock exchange in Europe with, as of June 2022, approximately $3 trillion of market capitalization for its listed stocks; the FSE is Europe's third largest stock exchange in terms of the market capitalization of its listed domestic firms, with a market capitalization of approximately $1.75 trillion. These numbers compare to approximately $26 trillion and $17.5 trillion for the NYSE and the NASDAQ, and to approximately $6.4 trillion for the Euronext. Both the LSE and the FSE are home to some of the largest companies in their respective countries, for example, AstraZeneca and BP in London, and Volkswagen and Bayer in Frankfurt.

There are some distinct differences, however, between the two exchanges. As of June 2022, the LSE has about 2,800 listed firms, whereas the FSE has about 450 listed firms. Further, as discussed above, LSE firms, on average, are larger, have more Tier1 institutional ownership, higher book-to-market ratios, but are less leveraged and not as profitable as the FSE listed firms.

We estimate equation (2b) in which the treatment firms are UK FTSE350 firms with Tier 1 investors and the control group are FSE listed firms with Tier 1 investors. After imposing our requirements that the firm must trade and have non-missing data over the 2014-2018 period, we have 245 UK firms listed on the FTSE 350 and 338 (primarily German) firms listed on the FSE.[15] Table 6, Panel A contain summary statistics on the DiD regressions using unmatched (columns 1-3) and entropy balancing matching (columns 4-6). As the table illustrates, we find significantly negative coefficients on (*Post x UK)* for the regressions on *Carbon Intensity* in columns (1) and (4), consistent with Tier 1 investors exerting more effort into reducing Scope 1 emissions for their UK portfolio firms after 2016. We also report significantly positive coefficients on (*Post x UK)*

[15] The FSE contains a small number of firms domiciled in Luxembourg, Netherlands, Cyprus, Switzerland, Malta, and Austria. During our time period, none of these countries had a stewardship code.

for the regressions on *Board Independence* (columns 2 and 5) and *Board Diversity*[16] (columns 3 and 6). Using a PSM approach yields consistent results (untabulated).

As a robustness check, we expand the control sample to include firms listed on all of the German stock exchanges. In the UK, the LSE is the only major stock exchange. In contrast, in Germany, there are eight stock exchanges, each legally equivalent and independent public law institutions: two in Berlin, and one each in Düsseldorf, Frankfurt (the largest), Hamburg, Hannover, Munich, and Stuttgart. Expanding the sample gives us 534 control firms. Panel B of Table 6 contains the summary statistics on these regressions. As the Panel shows, our findings are consistent with those shown in Panel A.

If, as we posit, tiering established a reputation effect for high engagement investors, then our findings in Table 6 are consistent with Tier 1 investors (remember, we keep the investors the same in this analysis) concentrating their ESG engagement efforts in the UK vs. Germany to burnish their reputations. The parallel trends for the pre-period diminish the alternative explanation that the increase in ESG performances for firms in the UK vis-à-vis Germany is due to a continuation of earlier trends. We also rule out the possible explanation that UK firms are catching up to their German counterparts due to the former group of firms beginning our time period (2014) with poorer ESG metrics. In fact, we find that the difference in the mean of *Carbon Intensity* (*Board Independence* and *Board Diversity*) for 2014 is significantly lower (higher) for treated UK firms versus our control group of German FSE firms (Table 1, Panel D).

6. Additional Analyses

6.1 DiD Around the Year 2012: UK Tier 1 vs. UK NoTier Firms

Our findings are consistent with the view that the introduction of the tiering system in 2016 led to an increase in ESG monitoring by Tier 1 investors, thus leading to a rise in average ESG for their portfolio firms. We attribute this phenomenon to the tiering system establishing a reputation

[16] In March 2015, Germany enacted a comply or explain law requiring that at least 30% of the members of supervisory boards of publicly listed companies with 50/50 co-determined supervisory boards, i.e. supervisory boards in which half of the members are employee representatives, be women. The top 100 companies in Germany were given a year to comply, with the remaining approximately 3,500 companies being required to "come up with a plan" by September 2015. This requirement could influence our board diversity findings, although any increase in gender diversity for German firms would mute our findings due to the German firms being our control group. In section 6.3.2, we use diversity within the managerial ranks and for the overall firm as alternative measures of gender diversity. The German law of 2015 does not affect these groups of employees, although we note that in 2021, Germany passed a law starting in August 2022 requiring firms to appoint at least one woman to its executive board.

effect for Tier 1 institutional investors, a reputation they strive to maintain by increasing their engagement levels. However, it is possible that the observed rise in ESG for the 2017-2018 period might be due to factors other than the published FRC designations, for example, omitted correlated variables or overall trends in ESG metrics for our treatment sample.

To explore this possibility, we searched for a year earlier than 2016 that contained an event that might have induced investors or their portfolio firms to improve their ESG performances. The year we choose is 2012. We select this year for two reasons. First, although the UK Stewardship Code was established in 2010, the FRC published a new Code in 2012 with increased clarifications as to what the role and functions of engaged institutions should constitute. This Code basically remained in place until the year 2020. Thus, if the heightened Code of 2012, itself, created a push for greater activism by Tier 1 firms, then we should see a movement in ESG scores for their investees in 2013-2014. Second, in 2013, the UK introduced a Strategic Report for all listed firms, requiring each firm to provide disclosures on strategy, its business model, diversity, environmental, social and employee matters, and human rights issues, where necessary, for a better understanding of the company's conditions and perspectives (Strampelli 2018).[17] Thus, the introduction of ESG information in investees' UK annual reports in 2013 may be responsible for our observed increase in their ESG by Tier 1 firms if these firms are more influenced by their need to disclose relevant information about ESG in their annual reports. For example, according to a survey conducted by Hummel and Rötzel (2019), the percentage of firms in the FTSE350 providing information about GHG emissions (gender distributions) increased from 76% (30%) in 2012 to 90% (73%) in 2013. If the introduction of the Strategic Report pushed listed firms to improve their ESG performance, then we should observe those improvements over the years 2013-2014.

Table 7 contains summary statistics for equation (2a) in which the "shock" year is now 2012. The pre-period is the years 2010-2011 and the post-period is the years 2013-2014. The findings are consistent with changes in ESG performances in the 2013-2014 post-period being unrelated to the magnitudes of equity held by Tier 1 institutional investors. For all specifications,

[17] Section 414A of the Companies Act of 2006 requires the directors of all companies other than those entitled to a small companies' exemption to prepare a strategic report in which the contents are identified in section 414C-414CB. With respect to ESG disclosures, sections 414C-414CB, require listed companies to include information about (i) environmental matters (including the impact of the company's business on the environment), (ii) the company's employees, and (iii) social, community and human rights issues, including information about any policies of the company in relation to those matters and the effectiveness of those policies.

the coefficients on (*Post x TIER1_%IO*) are insignificantly different from zero. Further, when we eschew fixed effects, (untabulated) all of the coefficients on the interactive terms remain insignificantly different from zero. These findings differ from those presented in Table 5, which show significantly improvements in ESG over the post-2016 time period.

6.2 UK vs. German Firms: NoTier Investors

Our previous findings are consistent with UK Tier 1 investors concentrating their ESG engagement activities on UK firms vs. German firms to reap the reputational advantages of being classified by the UK regulator as a Tier 1 investor. However, despite our efforts to control for differing characteristics and investment environments between UK and German firms, our findings might be due to inherent, uncaptured dissimilarities between the two settings. We explore this possibility by estimating DiD regressions around the year 2016 of ESG output measures on the NoTier investors' equity positions. Notably, NoTier institutional investors choose to not be part of the FRC classification system.

Our strategy is to estimate equation (2b), but to substitute *UK* with $UK\_NoTIER_{i,t}$, an integer variable for whether a NoTier investor has an equity stake in a UK firm i in year t. Our treatment firms are UK listed firms without a Tier 1 investor (964); our group of control firms are German listed firms in one of the eight German stock exchanges without a Tier 1 institutional investor (534). As before, we match on Industry, *Mktcap*, *ROA*, *Leverage*, *BTM*, and *NoTIER_%IO*. Table 8 presents summary statistics for the DiD regressions without (columns 1-3) and with (columns 4-6) entropy balancing. The main takeaway from these regressions is that we find no significant associations between ESG metrics over 2017-2018 and the venue in which NoTier investors are holding their portfolio stocks. These findings differ from Table 6, which presents evidence consistent with UK firms with Tier 1 investors displaying significantly greater measures of ESG than German firms with Tier 1 investors after the introduction of the 2016 classification system.

6.3 Alternative Specifications or Measures of ESG

6.3.1 Alternative Statistical Transformations of Carbon Intensity

We test for the robustness of our *Carbons Intensity* variable by using three alternative specifications: *ln(Emissions)*, *ln(Emissions/COGS)*, and *ln(Emissions/Revenues).* The purpose of

these tests is to see whether the original transformation of the CO_2 emissions data influences our findings. We first replicate equation (1), in which we examine if high quality engagement institutional investors care more about ESG (in this case the environment) than lower quality investors. After replacing our original specification of *Carbon Intensity* with the three alternative measures, we find results that are qualitatively the same (untabulated) as those presented in Table 5; specifically, we find significantly negative coefficients on *TIER1%IO* for each regression but no significant coefficients on *NoTIER_%IO*. Table 9 Panels A and B present our findings for our tests of hypotheses 3a and 3b, respectively. Substituting the new measures of *Carbon Intensity* into the regression using yields significantly negative coefficients on all three alternative measures of *Carbon Intensity* for all specifications.

6.3.2 Alternative Measures of "S" Variables: Workplace Diversity

Our paper thus far uses board gender as its measure of diversity. This metric has several advantages. First, board gender diversity is highly visible and easy to measure. Second, since 2017, achieving more diverse boards (specifically eliminating boards with no women) has been at the forefront of State Street's and BlackRock's ESG agenda. Greater board gender diversity also has been a goal of many European countries. In 2007, Norway mandated a board gender quota of 40% women; other European nations followed, including Belgium (33%) in 2012, Austria (35%) in 2013, France (40%) and Italy (33%) in 2014 and Germany (30%) in 2015. Third, investors vote for board members; thus an engagement strategy dedicated to changing board composition can produce tangible changes. However, it can be argued that a "true" social engagement agenda should be to increase the gender diversity of the portfolio firm's workforce, its management team, and overall working conditions for women, and not just its board of directors. Several papers have demonstrated an indirect link between board diversity and workplace diversity for US-listed firms (Matsa and Miller, 2011; Carter, Franco, and Gine, 2017; Billings, Klein and Shi, 2022), but a natural question to ask is if the increased monitoring by institutional investors after 2017 resulted in an overall increase in workplace diversity for their portfolio firms.

To answer this question, we use three alternative social performance measures: *Women Employees* is the percentage of women among all employees; *Women Managers* is the percentage of women among all managers; *Workforce* is a combined measure of the firm's "capability of ensuring workforce diversity, opportunity, safety and job satisfaction." All three variables are

taken from the Eikon database. We begin by replicating equation (3), and find (untabulated) evidence that Tier 1 investors prefer to invest in UK firms with higher social performance measures, whereas NoTier investors show no preference for these firms. We next continue on to hypotheses 3a and 3b, substituting our measures of workplace diversity for board diversity. As Table 10 shows, we find clear evidence that workplace diversity, as measured by *Women Employees* and *Women Managers*, and workplace environment, as measured by *Workplace* increase significantly for the target firms vis-à-vis UK firms with low engagement quality (Panel A) or German firms with the similar percentages of Tier 1 investors.

6.4 Do We Get Similar Results Using ESG Performance Scores?

Many papers use ESG performance scores from established vendors as output variables. In this section, we examine whether our findings are robust to using these scores.[18] Eikon is one of several vendors that accrues ESG ratings for firms on a worldwide basis, and we use their scores from their database for our UK and German firms. Score values for each firm range from 0 to 100, with 100 as the highest score for each of the individual E (Environmental), S (Social), and G (Governance) measures, respectively. It also provides an aggregate ESG rating as the equally weighted average of the three underlying dimensions: Over our sample period of 2014-2018, the average annual ESG score among sample firms (untabulated) is 44.37, with a quartile range of 27.57 to 62.55. Environmental mean scores, on average, are lowest (37.85), followed by Governance (45.62) and Social (47.10) scores.

Table 11 contains summary statistics for our main variables of interest. As Panel A illustrates, we find significantly (all at the 0.01 levels) positive coefficients on *TIER1_%IO* on the regression on the composite ESG score (column 1), as well as on the regressions with E, S, and G, separately (columns 2-4). In contrast, the coefficients on *NoTIER_%IO* are insignificantly different from zero for all specifications. Thus, our implications of Tier 1 investors caring more about ESG performance metrics than NoTier investors carries over to using ESG scores instead of

[18] There have been many criticisms raised about the appropriateness of using ESG scores as unbiased measures of ESG outcomes. These criticisms include a lack of comparability in ratings across firms (Kotsantonis and Serafeim 2019), possible gaming strategies by firms who supply much of the inputs to the ESG providers (Larcker et al. 2022), and the use of different attributes or weights on these attributes by the various ESG providers (Dimson, Marsh and Staunton, 2020; Berg, Kölbel, and Rigobon, 2022). Dimson, Karakaş, and Li (2021) and Christensen, Serafeim and Sikochi (2022) report low correlations among the different ESG providers for their ESG measures, lending evidence to the lack of transparency and usefulness of their ESG metrics.

performance variables. These findings are in contrast to those found by Brandon et al. (2022), who uses United Nations Principles for Responsible Investment (PRI) signatories as their measure of shareholder engagement, and finds mixed results in discerning differences in ESG scores between signatory and non-signatory investors.

Panels B and C present summary statistics for the reputation enhancing test. Panel B presents our findings with the UK control sample. As the Panel illustrates, we observe an increase in Tier 1 portfolio firms' ESG performances after 2016; all coefficients on (*Post x %TIER1_Own)* are significantly positive. Panel C presents our results using the control sample of FSE listed firms. The coefficients on *Post x UK*, are significantly positive for all specifications, supporting the view that UK firms with Tier 1 investors increased their ESG performances after 2016 when compared to German firms with the same Tier 1 investors. Panel D replicates the additional test in which we move the shock to 2012.

In summary, our findings are robust to our different specification of ESG performance metrics. That is, they hold similarly for whether we use real output variable, or alternatively, ESG scores as provided by Eikon. We also do the same analysis using ESG scores from Sustainalytics (untabulated); the results are qualitatively the same using this alternative database.

7. Conclusion

Institutional investors have limited resources dedicated to engagement activities, yet, in many cases they hold thousands of stocks in their portfolios. We propose that high-quality engagement institutional investors choose their engagement activities to further enhance their engagement quality. We use the introduction of the tiering classification system by the FRC in 2016 for signatories' reporting under the UK Stewardship Code as a reputation enhancing mechanism. Our findings can be broadly summarized as follows:

First, we find that the introduction of the 2016 tiering system is associated with an increase in the percentage of Tier 1 institutional investors voting against management during these contests, thus demonstrating an overall increase in investor monitoring. In contrast, we find no such voting patterns for NoTier investors. Second, we present results consistent with Tier 1 investors being more effective than NoTier investors in improving the ESG performances of their portfolio companies after the introduction of the 2016 tiering system. We also provide evidence that Tier 1 investors are more effective in increasing ESG performance for their UK portfolio firms vis-à-vis

their German portfolio firms, a venue without a stewardship code. Our findings are robust to various matching techniques, different specifications of ESG performance, comparisons between NoTier firms only in the UK and in Germany, and to the introduction of the Strategic Report in the UK in 2013 acting as an alternative mechanism for UK firms to improve their ESG performances. The implications of this paper are consistent with the view that credible voluntary disclosure leads to changes in the disclosers' behavior. In our setting, the introduction of a third-party classification system of engagement quality by the FRC on its signatories led to increases in engagement quality in general, and more specifically, to engagement on ESG matters by higher scoring investors.

Whether stewardship codes are effective in spurring institutions to improve or maintain high stewardship standards has been the subject of much debate among academics and practitioners. To the best of our knowledge, our paper is the first to empirically test the efficacy of the UK Stewardship Tiering classification to assess the quality of the engagement. We believe our results have policy implications because they suggest that asset managers and asset owners need to clearly communicate their engagement strategies and execution. Moreover, evidence on the impact of the Tiering system suggests that regulators should implement disclosure-based enforcement systems, like the UK Tiering classification, with the goal of more scrutiny on institutional investors' compliance with stewardship codes. Overall, our paper demonstrates that introducing a validation mechanism into voluntary disclosure provides a good incentive to make institutional investor accountable to their shareholders. Thus, our paper contributes to the disclosure literature in addition to the literature on shareholder activism and ESG performance.

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Appendix A: Variable Definitions

Variable	Definition
	Institutional investors information
Institutional investors	Shareholders are categorized as an institutional investor if the investor is: 1) a signatory to the FRC tiering system or 2) classified as an institutional investor by Bushee "Institutional Investor Classification Data" website; or 3) a professional money manager, mutual fund, pension fund, bank trust, and insurance company (as classified by the Orbis Bureau Van Dijk database).
TIER_%IO	The percentage of ownership of the institutional investors classified as Tier 1 (*TIER1_%IO*), Tier 2 (*TIER2_%IO*), or Tier 3 (*TIER3_%IO*).
NoTIER_%IO	The percentage of ownership of the institutional investors not classified as Tier 1, Tier 2, or Tier 3.
UK	Dummy variable to identify the UK target firms (FTSE350 firms with institutional investors in Tier 1) when we match them with similar FSE German firms.
UK_NoTIER	Dummy variable to identify the UK control firm (UK firms without institutional investors Tiers 1, 2 or 3) when we match them with similar German firms.
AUM	The total value of assets under management for an investor (in Billion GBP).
	Institutional investors voting
No. Proposals	The number of management and shareholder proposals in shareholder meetings.
No. Contested Ballots	The number of proposals where the management is "*for*", and the ISS recommendation is "*Against.*" This is the sum of No. of Pass plus No. Fail plus others, where others are ballots that are withdrawn or pending.
No. Passed	The number of the contested ballot proposals that passed.
No. Failed	The number of the contested ballot proposals that failed.
% Contested Ballots	The number of contested ballots over the number of proposals.
% Passed	The number of passed contested proposals over the number of contested ballots.
% Failed	The number of failed contested proposals over the number of contested ballots.
% Against	The average of the percentage of votes "against" in contested ballots.
	Firm-level ESG performance
Board Independence	Percentage of independent board members on the board.
Board Diversity	Percentage of women on the board.
Carbon Intensity	The natural logarithm of one plus the value of CHG scope 1 emissions measured in equivalent of metric tons of CO_2 (tCO_2eq) scaled by the previous years' cost of goods sold: ln(1+Scope1/COGS t-1); see, Naaraayanan, et al. (2021). This is our main metric for carbon emissions.
ln(Emissions)	Natural logarithm of CHG scope 1 emissions measured in equivalent of metric tons of CO_2; see (Downar, et al., 2021).
ln(Emissions/COGS)	Natural logarithm of CHG scope 1 emissions measured in equivalent of metric tons of CO_2 scaled by COGS; see, Downar, et al. (2021).
ln(Emissions/Sales)	Natural logarithm of CHG scope 1 emissions measured in equivalent of metric tons of CO_2 scaled by Sales; see, Downar, et al. (2021).
Women Employees	Percentage of women among all employees.
Women Managers	Percentage of women among all managers.
Workforce	Combined measure of the firm's capability of ensuring workforce diversity, opportunity, safety and job satisfaction.
ESG_score	ESG score, it weighs the E, S, and G score to obtain a company overall ESG performance. Values range from 0 to 100, with 100 as the highest score. We use Thomson Reuters Eikon in our main analysis and Sustainalytics as robustness.
E	Environmental Score: this component reflect a firm's business actions in terms of environmental responsibility. We use Thomson Reuters Eikon in our main analysis and Sustainalytics as robustness.
S	Social Score: this component reflects a firm's commitment to the community. We use Thomson Reuters Eikon in our main analysis and Sustainalytics as robustness.

G	Governance Score: this component reflects the firm's commitment to reach the best governance practices. We use Thomson Reuters Eikon in our main analysis and Sustainalytics as robustness.
	Firm-level control variables
BTM	Book-to-Market: book value of shareholders' equity divided by market capitalization of equity.
Mktcap	The natural logarithm of the market capitalization of equity.
ROA	Net income scaled by total assets.
Leverage	The ratio between the asset minus equity over total assets.
Industry	Four digit SIC code.

Appendix B: Entropy matching

Table B1: Pre-and post-weighting distributional properties.

This appendix shows the distributional properties (mean and variance) of treatment (FTSE 350 UK treatment firms) and control firms (Panel A: UK listed control firms; Panel B: FSE Germany control firms) before and after entropy balancing. The weights assigned to each control observation at the end of this procedure are then used in the difference-in-differences regressions. Entropy balancing requires us to select the distributional properties of interest (we focus on mean and variance) and the matching variables (we choose, in the year 2014: Mktcap, ROA, Leverage, BTM, and industry indicators). Panel C shows the distributional properties (mean and variance) of a sample of NoTier UK listed firms matched with a sample of NoTier German listed firms before and after entropy balancing. In the selection of both German control samples, we exclude those firms where any shareholder has at least 30% ownership. This allows us to control for the possibility that our results may be influenced by companies with concentrated ownership (with whom it is more difficult to engage).

Panel A. Pre-and post-weighting distributional properties of UK treatment firms and UK control firms.

Pre-entropy balancing

Variable	Treatment (N=245)		Control (N=964)			
	Mean	Variance	Mean	Variance	T-stat	p-value
Mktcap	6.335	11.73	1.491	5.308	26.01	0.000
ROA	0.077	0.028	0.071	0.147	0.216	0.828
Leverage	0.524	0.095	0.496	0.269	0.782	0.434
BTM	0.369	0.143	0.201	0.154	5.934	0.000

Post-entropy balancing

Variable	Treatment (N=245)		Control (N=964)	
	Mean	Variance	Mean	Variance
Mktcap	6.335	11.73	6.335	11.73
ROA	0.077	0.028	0.077	0.028
Leverage	0.524	0.095	0.524	0.095
BTM	0.369	0.143	0.369	0.143

Panel B. Pre- and post-weighting distributional properties of FTSE 350 UK treatment firms and FSE Germany control firms.

Pre-entropy balancing

Variable	Treatment (N=245)		Control (N=338)			
	Mean	Variance	Mean	Variance	T-stat	p-value
Mktcap	6.335	11.73	5.837	33.87	3.710	0.000
ROA	0.077	0.028	0.034	0.016	5.189	0.000
Leverage	0.524	0.095	0.745	0.129	-4.188	0.000
BTM	0.369	0.143	0.332	0.113	15.85	0.000
TIER1_%IO	29.83	381.9	10.53	334.3	11.99	0.000

Post-entropy balancing

Variable	Treatment (N=245)		Control (N=338)	
	Mean	Variance	Mean	Variance
Mktcap	6.335	11.73	6.335	11.73
ROA	0.077	0.028	0.077	0.028
Leverage	0.524	0.095	0.524	0.095
BTM	0.369	0.143	0.369	0.143
TIER1_%IO	29.83	381.9	29.83	381.9

Panel C: Pre-and post-weighting distributional properties of NoTier UK listed firms and NoTier German listed firms

Pre-entropy balancing

Variable	UK NoTier firms (N=964)		German NoTier firms (N=522)			
	Mean	Variance	Mean	Variance	T-stat	p-value
Mktcap	1.491	5.308	0.815	0.331	18.12	0.000
ROA	0.071	0.147	0.037	0.004	23.34	0.000
Leverage	0.496	0.269	0.443	0.111	4.452	0.000
BTM	0.201	0.154	0.058	0.115	28.99	0.000
NoTIER_%IO	8.282	213.8	1.514	8.231	23.66	0.000

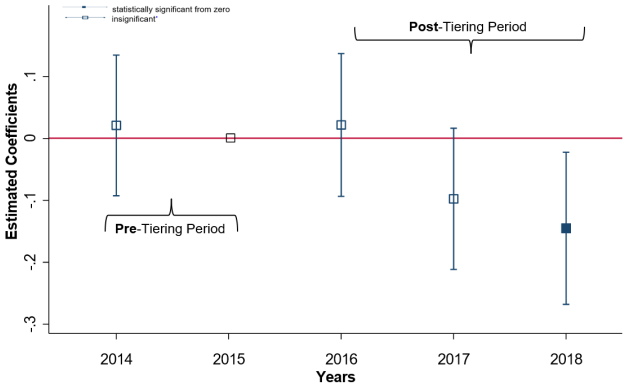
Post-entropy balancing

Variable	UK NoTier firms (N=964)		German NoTier firms (N=522)	
	Mean	Variance	Mean	Variance
Mktcap	1.491	5.308	1.491	5.308
ROA	0.071	0.147	0.071	0.147
Leverage	0.496	0.269	0.496	0.269
BTM	0.201	0.154	0.201	0.154
NoTIER_%IO	8.282	213.8	8.282	213.8

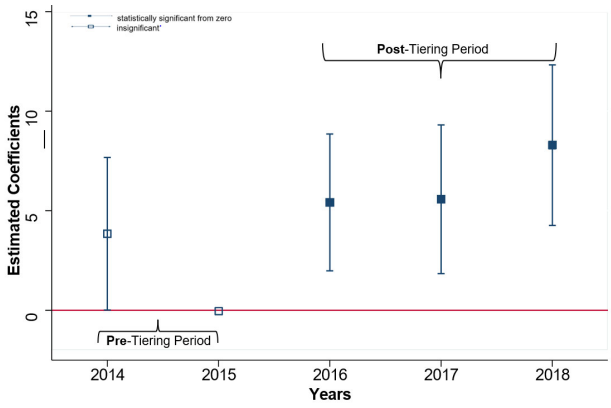
Figure 1
Parallel trend analysis between UK Tier 1 firms and UK NoTier firms around tiering adoption.

This figure plots yearly treatment point estimates together with 95% confidence intervals (based on the regression model as used in Table 5 column 4-5-6), for *Carbon Intensity* (Panel A); *Board Independence* (Panel B); *Board Diversity* (Panel C). As we omit the indicator 2015 × TIER1_%IO, the year 2015 serves as the benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre-shock period covers the years 2014-2015, while the post-shock period covers the years 2017-2018. The treatment sample is composed of UK listed firms with institutional investors classified as Tier 1, while the control sample is composed of UK No Tier listed firms.

Panel A. Carbon Intensity



Panel B. Board Independence



Panel C. Board Diversity

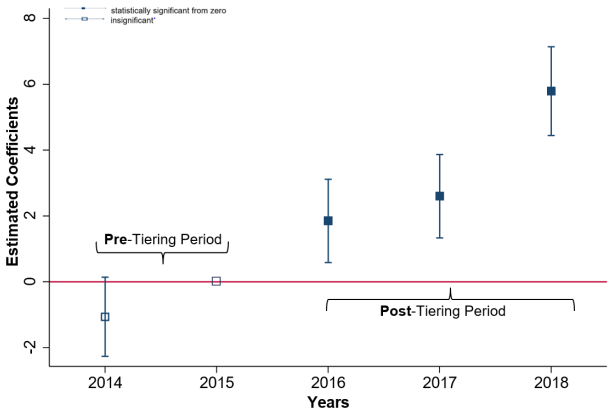
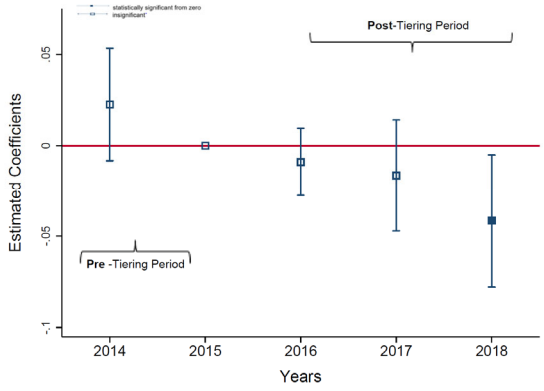


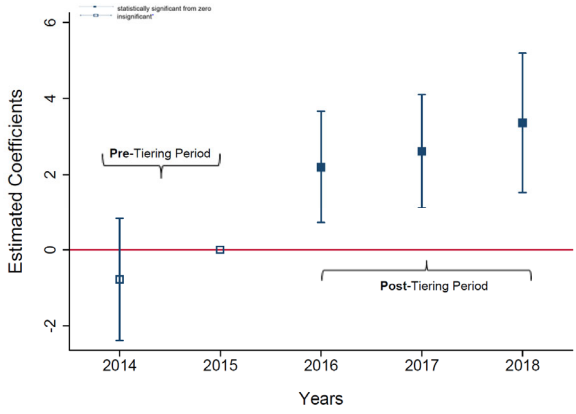
Figure 2
Parallel trend analysis between FTSE 350 UK firms and FSE Germany firms in Tier1 around tiering adoption.

This figure plots yearly treatment point estimates together with 95% confidence intervals (based on the regression model as used in Table 6 Panel A column 4-5-6), for *Carbon Intensity* (Panel A); *Board Independence* (Panel B); *Board Diversity* (Panel C). As we omit the indicator *2015 × UK*, the year 2015 serves as the benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre-shock period covers the years 2014-2015, while the post-shock period covers the years 2017-2018. The treatment sample is composed of FTSE 350 UK firms with institutional investors classified in Tier 1, while the control sample is composed of FSE Germany firms with institutional investors classified in Tier 1.

Panel A: Carbon Intensity



Panel B: Board Independence



Panel C: Board Diversity

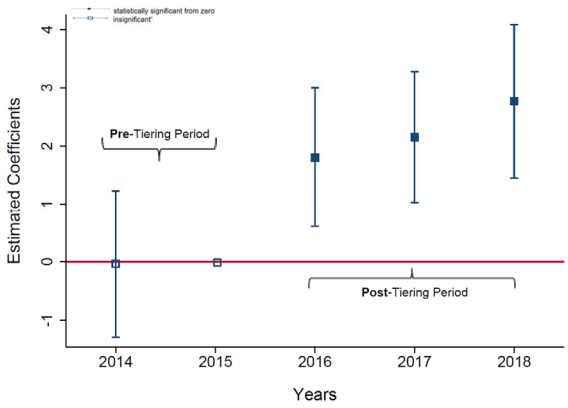


Table 1
Sample composition and summary statistics.

Panel A. Sample composition – Investee firms and institutional investors
This panel reports the sample composition of firms on the basis of the classification of their institutional investors. The treatment group is represented by UK FTSE350 listed firms that have institutional investors classified within the FRC tiering system, while the control group contains UK listed firms without institutional investors that are t classified within the FRC tiering system. The sample covers the time period from 2014 to 2018. Shareholders are categorized as institutional investors if the investor: 1) is a signatory to the FRC tiering system and/or classified by Bushee "Institutional Investor Classification Data" as institutional investor; 2) is a professional money manager, including mutual fund companies, pension funds, bank trusts, and insurance companies (as classified by Orbis Bureau van Dijk database). Among the institutional investors, we manually code asset managers and asset owners which are classified as Tier 1, Tier 2 and Tier 3 by the Financial Reporting Council.

	FTSE 350 Firms (Treatment Firms)		UK Listed Firms (Control Firms)
Number of Firms	245		964
	Single entity investment company	Family investment company	
No. of Institutional investors	2,332	1,205	5,102
No. of Institutional investors Tier 1, Tier 2, Tier 3	416	239	
No. of Institutional investors NoTier	1,916		5,102

Panel B. Summary statistics
This panel shows the number of institutional investors and their *Assets under Management (AUM)* for our sample firms. *AUM is* the average total value of asset holdings for an investor in billions GBP.

	FTSE 350 Firms (Treatment Sample)				UK Listed Firms (Control Sample)
	Tier 1	Tier 2	Tier 3	NoTier	NoTier
No. of institutional investors	316	63	37	1,916	5,102
AUM in Billions of GBP (mean)	60.4	22.2	15.2	58.70	11.8
No. of institutional investors not in UK	170	34	27	819	2,956

Panel C. Descriptive statistics for the ownership variables
This panel reports descriptive statistics for equity ownership by tiering and the distribution over the years 2014-2018 for firms in the treatment sample.

Ownership by Tiering - Mean	No. of Firms	Mean	Std. Dev	p25	Median	p75
TIER1_%IO	245	33.98%	15.34%	24.04%	34.35%	43.10%
TIER2_%IO	245	2.42%	2.41%	0.84%	1.68%	3.06%
TIER3_%IO	245	1.42%	3.00%	0.20%	0.39%	0.84%
NoTIER_%IO	245	26.17%	13.43%	18.32%	24.61%	31.85%

Ownership by Tiering – Mean	No. of Firms	2014	2015	2016	2017	2018	Total
TIER1_%IO	245	33.90%	33.70%	32.35%	34.91%	35.01%	33.98%
TIER2_%IO	245	2.64%	2.27%	2.55%	2.32%	2.35%	2.42%
TIER3_%IO	245	1.22%	1.31%	1.37%	1.25%	1.95%	1.42%
NoTIER_%IO	245	27.23%	26.19%	26.68%	26.83%	23.95%	26.17%

Panel D. Descriptive statistics: This panel reports the distribution by year of the means for treatment and control firms for both samples (FTSE 350 UK treated firms vs UK listed control firms, and FTSE 350 UK treated firms vs FSE Germany control firms) covering the time period from 2014 to 2018.

FTSE 350 UK treated firms vs UK listed control firms

	Carbon Intensity				*Board Independence*				*Board Diversity*			
Year	Treatment Mean	Control Mean	Difference	t-stat	Treatment Mean	Control Mean	Difference	t-stat	Treatment Mean	Control Mean	Difference	t-stat
2014	0.024	0.036	-0.012	1.267	37.83	31.73	6.10***	3.149	36.61	32.96	3.65***	2.373
2015	0.026	0.037	-0.011**	1.957	48.75	41.63	7.12***	3.835	48.88	43.91	4.97***	3.102
2016	0.022	0.045	-0.023	1.001	57.36	44.04	13.32***	3.801	55.01	46.11	8.90***	3.213
2017	0.010	0.042	-0.032	0.081	59.87	46.31	13.56***	4.244	66.28	48.06	18.22***	3.602
2018	0.009	0.044	-0.035**	1.999	63.70	47.42	16.28***	4.145	68.56	52.40	16.16***	3.408
Total	0.018	0.040	-0.022***	2.003	53.50	42.22	11.28***	2.967	55.06	44.68	10.38***	4.015

FTSE 350 UK treated firms vs FSE Germany control firms

	Carbon Intensity				*Board Independence*				*Board Diversity*			
Year	Treatment Mean	Control Mean	Difference	t-stat	Treatment Mean	Control Mean	Difference	t-stat	Treatment Mean	Control Mean	Difference	t-stat
2014	0.024	0.038	-0.014***	2.337	37.83	35.88	1.95***	2.224	36.61	33.14	3.47***	2.336
2015	0.026	0.047	-0.021***	2.702	48.75	39.96	8.79***	2.388	48.88	39.36	9.52***	3.046
2016	0.022	0.049	-0.027***	2.311	57.36	40.85	16.51***	2.471	55.01	40.14	14.87***	3.213
2017	0.010	0.050	-0.040***	2.996	59.87	41.88	17.99***	2.358	66.28	42.00	24.28***	3.455
2018	0.009	0.051	-0.042***	2.837	63.70	45.01	18.69***	2.168	68.56	43.22	25.34***	3.574
Total	0.018	0.047	-0.029***	2.447	53.50	40.71	12.79***	5.135	55.06	39.57	15.49***	6.529

, **, and * denotes significance at the 10%, 5%, and 1% level, respectively.* All variables are defined in detail in the Appendix A.

Table 2
Voting statistics for UK firms by year.

This table presents the summary statistics for the voting proposals available in the ISS dataset for UK firms in both the treatment and control samples covering the time period 2014-2018. Panel A reports: *No. of Proposals* is the number of proposals in shareholder meetings; *No. of Contested Ballots* is the number of those proposals where the management is "*for*" and the ISS recommendation is "*against*"; *No. of Passed* is the number of the contested ballot proposals that passed; *No. of Failed* is the number of the contested ballot that failed. Panel B reports: *% Contested Ballots* is the number of contested ballots over the number of proposal; *% Passed* is the number of passed proposals over the number of contested ballots; *% Failed* is the number of failed proposals over the number of contested ballots; *% Against* is the average percentage of "against" votes in contested ballot. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. All variables are defined in detail in the Appendix A.

Panel A. The number of proposals for UK firms in treatment and control samples.

Proposals	Year	Treatment Sample (N=245)	Control Sample (N=964)
No. of Proposals	2014	6,188	7,932
	2015	6,058	7,947
	2016	6,380	7,04
	2017	7,090	7,942
	2018	6,625	8,787
	Total	32,341	39,648
No. of Contested Ballots	2014	231	678
	2015	205	737
	2016	214	623
	2017	289	939
	2018	260	1,035
	Total	1,199	4,012
No. of Passed	2014	222	649
	2015	203	684
	2016	207	589
	2017	271	877
	2018	247	985
	Total	1,150	3,784
No. of Failed	2014	2	3
	2015	1	1
	2016	3	8
	2017	4	10
	2018	4	12
	Total	34	14

Panel B. The percentage of proposals and %Against *for firms in both treatment and UK control samples.*

Proposals	Year	Treatment Sample (N=245)	Control Sample (N=964)	T-stat
% Contested Ballots	2014	3.73%	8.55%	-7.43***
	2015	3.38%	9.27%	-6.28***
	2016	3.35%	8.85%	-5.02***
	2017	4.08%	11.82%	-8.36***
	2018	3.92%	11.78%	-6.11***
	Total	3.71%	10.12%	-13.77***
% Passed	2014	96.10%	95.72%	6.99***
	2015	99.02%	92.81%	5.94***
	2016	96.73%	94.54%	4.77***
	2017	93.77%	93.40%	7.62***
	2018	95.00%	95.17%	-5.35***
	Total	95.91%	94.32%	12.88***
% Failed	2014	0.87%	0.44%	4.91***
	2015	0.49%	0.14%	2.97***
	2016	1.40%	1.28%	4.16***
	2017	1.38%	1.06%	4.84***
	2018	1.54%	1.16%	1.98*
	Total	1.17%	0.85%	6.93***
% Against	2014	9.28%	4.56%	4.94***
	2015	8.87%	3.01%	7.43***
	2016	9.03%	3.43%	5.99***
	2017	8.86%	4.36%	7.50***
	2018	12.26%	3.78%	9.84***
	Total	9.66%	3.82%	16.54***

, **, and * denotes significance at the 10%, 5%, and 1% level*

Table 3
Difference-in-differences regression for "%Against votes around the adoption of the FRC tiering classification

This table presents results from the estimation of Eq. (1) in order to test H2. The shock event corresponds to the tiering classification adopted by the Financial Reporting Council on the UK Stewardship Code in the year 2016. The dependent variable is *%AGAINST*, the average of the percentage of votes "against", where management is "For" and the ISS vote recommendation is "Against" - source: ISS Voting Analytics. *TIER1_%IO* is the percentage of ownership by Tier 1 institutional investors for the FTSE350 companies. The main variable of interest in the regression models is the interaction term (*Post x TIER1_%IO),* which capture the difference-in-differences effect in the post-treatment period of 2017-2018. Column 1 presents the results without entropy balancing; column 2 presents the results after employing entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept are untabulated. All variables are defined in detail in the Appendix A.

$$\%AGAINST_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	%AGAINST	
	Full Sample	Entropy Balancing
	(1)	(2)
TIER1_%IO	-0.003	-0.008
	[-0.08]	[-1.11]
Post x TIER1_%IO	0.015**	0.011***
	[2.47]	[3.85]
Mktcap	-0.101	-0.051
	[-1.20]	[-1.51]
ROA	0.115	0.669
	[1.24]	[0.52]
Leverage	0.553	0.095
	[0.89]	[0.21]
BTM	0.568	0.342
	[1.52]	[1.11]
FirmFE	Yes	Yes
YearFE	Yes	Yes
Adj. R^2	0.340	0.361
N	4,836	4,836

Table 4
Regressions of ESG performance on Tier 1 and NoTier equity ownership.

This table presents results from the estimation of Eq. (3) on *Carbon Intensity*, *Board Independence* and *Board Diversity* for companies that continually are part of the FTSE350 in the years 2014-2018. We regress the dependent variable on different types of institutional investors ownership (*%IO*). Institutional investors ownership is defined alternatively as: Tier 1 (*TIER1_%IO*), and not classified as Tier 1, Tier 2, or Tier 3 (*NoTIER_%IO*). We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept are untabulated. All variables are defined in detail in the Appendix A.

$$ESG_{i,t} = \beta_0 + \beta_1 \%IO_{i,t} + Controls_{i,t} + YearFE + FirmFE + \varepsilon_{i,t}$$

	(1)	(2)	(3)	(4)	(5)	(6)
	Carbon Intensity	*Board Indepen-dence*	*Board Diversity*	*Carbon Intensity*	*Board Indepen-dence*	*Board Diversity*
TIER1_%IO	-0.036***	0.101***	0.125***			
	[-2.64]	[2.77]	[2.26]			
NoTIER_%IO				0.006	0.025	0.058
				[1.35]	[0.94]	[1.22]
Mktcap	0.119*	0.105	0.119	0.263**	0.831	0.180**
	[1.68]	[1.26]	[1.40]	[2.19]	[1.16]	[2.12]
ROA	0.042	0.278	0.082	0.184	0.202	0.431*
	[0.34]	[1.02]	[0.94]	[1.34]	[0.99]	[1.74]
Leverage	0.020**	0.332	0.118	0.008	0.442*	0.208
	[2.17]	[1.39]	[0.44]	[0.57]	[1.71]	[0.68]
BTM	0.027*	0.312	0.133	0.003	0.446	0.237
	[1.76]	[1.18]	[0.53]	[0.18]	[0.24]	[0.85]
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.739	0.509	0.549	0.850	0.862	0.845
N	1,225	1,225	1,225	1,225	1,225	1,225

Table 5
Difference-in-differences regression for Tier 1 vs. NoTier UK firms.

This table presents results from the estimation of Eq. (2a) to test H3a using a treatment sample of 245 companies that continually are part of the FTSE350 ,and a control sample of 964 listed UK firms covering the years from 2014 until 2018. The shock event corresponds to the Tiering classification adopted by the Financial Reporting Council on the UK Stewardship Code in the year 2016. We regress *Carbon Intensity* (Columns 1, 4), *Board Independence* (Columns 2, 5) and *Board Diversity* (Columns 3, 6) on *TIER1_%IO* (percentage of the ownership by Tier 1 institutional investors) and *Post x TIER1_%IO* (the interaction term capturing the difference-in-differences effect). *Post* is 1 for treated firms in the post-treatment period of 2017-2018 and 0 otherwise. The first three columns (Columns 1, 2, 3) report the results without entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results after employing entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept are untabulated. All variables are defined in detail in the Appendix A.

$$ESG_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample			Entropy Balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	Carbon Intensity	*Board Independence*	*Board Diversity*	*Carbon Intensity*	*Board Independence*	*Board Diversity*
TIER1_%IO	-0.009	0.080*	0.043	-0.004	0.034	0.053
	[-0.56]	[1.80]	[1.49]	[-1.39]	[0.60]	[0.92]
PostxTIER1_%IO	-0.040**	0.078*	0.040***	-0.037**	0.025*	0.038***
	[-2.15]	[1.86]	[2.88]	[-2.20]	[1.98]	[2.39]
Mktcap	0.025**	0.086**	0.021***	0.140	0.024***	0.059***
	[2.41]	[2.46]	[5.18]	[0.64]	[2.76]	[6.25]
ROA	0.165	0.031	0.028	0.073	0.026	0.008
	[1.40]	[0.43]	[0.48]	[0.42]	[0.09]	[0.41]
Leverage	0.055	0.001	0.001	0.265	0.001	0.001
	[0.69]	[0.95]	[0.55]	[1.40]	[0.53]	[0.18]
BTM	0.062	0.002	0.002	0.001	0.002	0.002
	[1.36]	[1.44]	[1.33]	[0.11]	[0.61]	[0.39]
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.627	0.497	0.414	0.473	0.392	0.354
N	4,836	4,836	4,836	4,836	4,836	4,836

Table 6
Difference-in-differences regressions with German control samples

Panel A presents results from the estimation of Eq. (2b) to test H3b using a treatment sample of 245 companies that continually are part of the FTSE350, and a control sample of 338 firms listed on the German FSE. Panel B presents the results after replacing the control sample of FSE-listed firms with a sample of 534 German firms listed on the eight German stock exchanges. In both panels the samples (treatment and control) cover the years from 2014 until 2018. We drop firms in both control samples when any shareholder has at least 30% ownership. The shock event corresponds to the tiering classification adopted by the Financial Reporting Council on the UK Stewardship Code in the year 2016. We regress *Carbon Intensity* (Columns 1, 4), *Board Independence* (Columns 2, 5) and *Board Diversity* (Columns 3, 6) on *Post x UK* (the interaction term indicating the incremental effect on ESG performance of Tier1 ownership in the UK after the introduction of the FRC classification). The first three columns (Columns 1, 2, 3) report the results without entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results after employing entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept and controls are untabulated. All variables are defined in detail in the Appendix A.

$$ESG_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_i) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

Panel A. Difference-in-differences regressions for FTSE 350 UK Firms vs. FSE German firms.

	Full Sample			Entropy Balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	Carbon Intensity	*Board Independence*	*Board Diversity*	*Carbon Intensity*	*Board Independence*	*Board Diversity*
Post x UK	-0.012*	0.217***	0.250***	-0.011**	0.204**	0.233***
	[-1.98]	[5.31]	[4.92]	[-2.02]	[2.01]	[3.18]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.617	0.423	0.487	0.516	0.372	0.411
N	2,332	2,332	2,332	2,332	2,332	2,332

Panel B. Difference-in-differences regressions for UK firms vs. German firms on all German stock exchanges.

	Full Sample			Entropy Balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	Carbon Intensity	*Board Independence*	*Board Diversity*	*Carbon Intensity*	*Board Independence*	*Board Diversity*
Post x UK	-0.155***	0.345**	0.522***	-0.111***	0.234*	0.483***
	[-10.85]	[2.51]	[4.41]	[-5.28]	[1.91]	[3.18]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.165	0.503	0.537	0.182	0.482	0.501
N	3,116	3,116	3,116	3,116	3,116	3,116

Table 7
Using the year 2012 as an alternative shock year.

This table presents results from the estimation of Eq. (2a) to test H3a using a treatment sample of 245 companies that continually are part of the FTSE350, and a control sample of 964 listed UK firm covering the years from 2010 until 2014. The shock event corresponds to the year 2012. We regress *Carbon Intensity* (Columns 1, 4), *Board Independence* (Columns 2, 5) and *Board Diversity* (Columns 3, 6) on *TIER1_%IO* (percentage of the ownership by Tier 1 institutional investors), *Post x TIER1_%IO* (the interaction term capturing the difference-in-differences effect). *Post* is 1 for treated firms in the post-treatment period of 2017-2018, and 0 otherwise). The first three columns (Columns 1, 2, 3) report the results without entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results with entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept are untabulated. All variables are defined in detail in the Appendix A.

$$ESG_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample			Entropy Balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	Carbon Intensity	*Board Independence*	*Board Diversity*	*Carbon Intensity*	*Board Independence*	*Board Diversity*
TIER1_%IO	0.072	0.009	0.006	0.006	0.017	0.003
	[1.19]	[0.19]	[0.16]	[0.24]	[0.33]	[0.06]
PostxTIER1_%IO	-0.009	0.020	0.002	-0.041	0.011	0.069
	[-0.40]	[0.48]	[0.06]	[-1.58]	[1.22]	[0.91]
Mktcap	0.084	0.223	0.325	0.089***	0.299***	0.167
	[1.25]	[0.31]	[0.54]	[4.00]	[3.14]	[1.49]
ROA	-0.108	0.086	0.056	-0.032***	0.033	0.038
	[-1.60]	[0.06]	[0.61]	[-3.02]	[0.07]	[0.01]
Leverage	0.066	0.001	0.001	0.016**	0.001	0.001
	[1.54]	[0.57]	[0.34]	[2.02]	[1.09]	[0.45]
BTM	0.116	0.001	0.002**	0.028	0.003	0.004
	[1.40]	[1.14]	[2.00]	[1.08]	[1.11]	[0.82]
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.699	0.783	0.689	0.646	0.768	0.672
N	4,836	4,836	4,836	4,836	4,836	4,836

Table 8
UK vs. German firms: NoTier UK firms and NoTier German firms.

This table presents results from the estimation of Eq. (2b) using a sample of 964 NoTier UK listed firms matched with a sample of 534 NoTier German listed firms covering the years from 2014 until 2018, after dropping firms where any shareholder has at least 30% ownership. The shock event corresponds to the tiering classification adopted by the Financial Reporting Council on the UK Stewardship Code in the year 2016. We regress *Carbon Intensity* (Columns 1, 4), *Board Independence* (Columns 2, 5) and *Board Diversity* (Columns 3, 6) on *Post x UK_NoTIER* (the interaction term indicating the incremental effect on ESG performance of NoTier ownership in the UK after the introduction of the FRC classification). The first three columns (Columns 1, 2, 3) report the results without entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results with entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept are untabulated. All variables are defined in detail in the Appendix A.

$$ESG_{i,t} = \beta_0 + \beta_1(Post\ x\ UK\_NoTIER_i) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample			Entropy Balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	Carbon Intensity	*Board Independence*	*Board Diversity*	*Carbon Intensity*	*Board Independence*	*Board Diversity*
Post x UK_NoTIER	0.040	0.054	0.031	0.035	0.021	0.027
	[1.69]	[1.06]	[1.18]	[1.63]	[0.28]	[1.21]
Mktcap	0.028	0.019	0.009	0.027	0.012	0.007
	[1.92]	[0.87]	[0.89]	[1.59]	[1.94]	[1.56]
ROA	-0.086	0.063	0.043	-0.079	0.059	0.009
	[-1.60]	[1.21]	[0.14]	[-1.09]	[1.73]	[0.76]
Leverage	0.001	0.009	0.003	0.001	0.003	0.002
	[1.51]	[0.43]	[0.05]	[1.21]	[1.80]	[1.69]
BTM	0.032	0.011	0.057	0.009	0.033	0.022
	[1.74]	[1.38]	[1.51]	[0.75]	[1.13]	[1.12]
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.509	0.786	0.769	0.420	0.542	0.533
N	5,944	5,944	5,944	5,944	5,944	5,944

Table 9
Different specifications of carbon intensity.

This table: Panel A presents results from the estimation of Eq. (2a) to test H3a using a treatment sample of 245 companies that continually are part of the FTSE350, and a control sample of 964 listed UK firm covering the years from 2014 until 2018. Panel B presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE 350 and the control sample of 338 firms listed on the FSE covering the years from 2014 until 2018, after dropping firms where any shareholder has at least 30% ownership. The shock event corresponds to the Tiering classification adopted by the Financial Reporting Council on the UK Stewardship Code in the year 2016. *ln(Emissions)* is the natural logarithm of yearly emissions in metric tons of CO2eq (Columns 1, 4); *ln(Emissions/COGS)* is the natural logarithm of yearly emissions scaled by COGS (Columns 2, 5); *ln(Emissions/Sales)* is the natural logarithm of yearly emissions scaled by sales (Columns 3, 6). The first three columns (Columns 1, 2, 3) report the results without entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results with entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept and controls are untabulated. All variables are defined in detail in the Appendix A.

Panel A. Difference-in-differences regressions for Tier 1 vs. NoTier UK firms

$$Carbon\ Intensity_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample			Entropy Balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	ln (Emissions)	*ln (Emissions /COGS)*	*ln (Emissions /Sales)*	*ln (Emissions)*	*ln (Emissions /COGS)*	*ln (Emissions/ Sales)*
TIER1_%IO	0.297***	0.133**	0.045	0.121***	0.085**	0.012
	[3.09]	[2.11]	[0.97]	[4.53]	[2.00]	[1.26]
PostxTIER1_%IO	-0.049*	-0.043*	-0.024*	-0.027*	-0.023**	-0.010*
	[-1.82]	[-1.97]	[-1.81]	[-1.93]	[-1.98]	[-1.95]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.941	0.809	0.888	0.924	0.950	0.846
N	4,836	4,836	4,836	4,836	4,836	4,836

Panel B. Difference-in-differences for FTSE 350 UK Firms vs. FSE German Firms.

$$Carbon\ Intensity_{i,t} = \beta_0 + \beta_1 (Post\ x\ UK_i) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample			Entropy balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	ln (Emissions)	*ln (Emissions /COGS)*	*ln (Emissions/S ales)*	*ln (Emissions)*	*ln (Emissions /COGS)*	*ln (Emissions/S ales)*
Post x UK	-0.055*	-0.047*	-0.102***	-0.043*	-0.038*	-0.096***
	[-1.97]	[-1.98]	[-3.45]	[-1.92]	[-2.19]	[-3.53]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.878	0.882	0.854	0.304	0.483	0.355
N	2,332	2,332	2,332	2,332	2,332	2,332

Table 10
Alternative measures of the "S" in ESG: *Women Employees*, *Women Managers*, and *Workforce*

This table: Panel A presents results from the estimation of Eq. (2a) to test H2a using a treatment sample of 245 companies that continually are part of the FTSE350, and a control sample of 964 listed UK firms, covering the years from 2014 until 2018. Panel B presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE 350 and the control sample of 338 firms listed on the FSE, covering the years from 2014 until 2018, after dropping firms where any shareholder has at least 30% ownership. The shock event corresponds to the Tiering classification adopted by the Financial Reporting Council on the UK Stewardship Code in the year 2016. *Women Employees* (Columns 1, 4) is the percentage of women among all employees, *Women Managers* (Columns 2, 5) is the percentage of women among all managers, and *Workforce* (Columns 3, 6) is a measure of the company's capability of ensuring workforce diversity, opportunity, safety, and job satisfaction. The first three columns (Columns 1, 2, 3) report the results without entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results with entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. $*$, $**$, and $***$ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept and controls are untabulated. All variables are defined in detail in the Appendix A.

Panel A. Difference-in-differences regressions for Tier 1 vs. NoTier UK firms.

$$Y_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2(Post\ x\ TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample			Entropy Balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	Women Employees	*Women Managers*	*Workforce*	*Women Employees*	*Women Managers*	*Workforce*
TIER1_%IO	0.079*	0.107**	0.160***	0.072	0.011*	0.020***
	[1.85]	[2.32]	[3.32]	[1.28]	[1.79]	[3.23]
PostxTIER1_%IO	0.042*	0.049*	0.052*	0.061**	0.055*	0.042*
	[1.94]	[1.97]	[1.94]	[2.29]	[1.88]	[1.91]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.699	0.769	0.721	0.309	0.456	0.426
N	4,836	4,836	4,836	4,836	4,836	4,836

Panel B. Difference-in-differences regressions for FTSE 350 UK firms vs. FSE German firms.

$$Y_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_i) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample			Entropy balancing		
	(1)	(2)	(3)	(4)	(5)	(6)
	Women Employees	*Women Managers*	*Workforce*	*Women Employees*	*Women Managers*	*Workforce*
Post x UK	0.179***	0.150***	0.164***	0.044***	0.059***	0.034***
	[2.98]	[3.42]	[2.81]	[2.38]	[2.93]	[3.00]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.721	0.558	0.743	0.592	0.581	0.698
N	2,332	2,332	2,332	2,332	2,332	2,332

Table 11
ESG scores from Thomson Reuters Eikon.

This table presents regression analyses using ESG scores from Thomson Reuters Eikon as the dependent variable. Panel A show results from the estimation of Eq. (3) on ESG scores and its component E, S and G. Panel B presents results from the estimation of Eq. (2a) to test H3a. Panel C has results from the estimation of Eq. (2b) to test H3b. Panel D shows results from the estimation of Eq. (2a) to test H3a when the shock event corresponds to the year 2012. Columns 1-4 report the results without entropy balancing; Columns 5-8 report the results with entropy balancing. We winsorize annual firm-level data at the 1% and 95% levels. Our regressions include: 1) controls (*Mktcap, ROA, Leverage* and *BTM*), 2) firm and year fixed effects (*FirmFE*; *YearFE*). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. ∗, ∗∗, and ∗∗∗ denotes significance at the 10%, 5%, and 1% level, respectively. The coefficients for the intercept are untabulated. All variables are defined in detail in the Appendix A.

Panel A. Regressions of ESG scores on Tier 1 and NoTier equity ownership.

$$ESG\_score_{i,t} = \beta_0 + \beta_1\ \%IO_{i,t} + Controls_{i,t} + YearFE + FirmFE + \varepsilon_{i,t}$$

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	ESG	*E*	*S*	*G*	*ESG*	*E*	*S*	*G*
TIER1_%IO	0.325***	0.323***	0.218**	0.442***				
	[3.53]	[3.53]	[2.04]	[3.27]				
NoTIER_%IO					0.233	-0.072	0.226	0.412
					[1.43]	[-0.24]	[0.83]	[1.21]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.881	0.919	0.844	0.683	0.948	0.870	0.921	0.870
N	1,225	1,225	1,225	1,225	1,225	1,225	1,225	1,225

Panel B. Difference-in-differences regressions for Tier 1 vs. NoTier UK firms.

$$ESG\_score_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2(Post\ x\ TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample				Entropy Balancing			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG	*E*	*S*	*G*	*ESG*	*E*	*S*	*G*
TIER1_%IO	0.028***	0.017***	0.023***	0.034***	0.338***	0.217***	0.229***	0.462***
	[4.22]	[3.78]	[2.94]	[4.28]	[4.97]	[3.55]	[2.65]	[5.50]
Post x TIER1_%IO	0.420***	0.250***	0.578***	0.425***	0.253**	0.206*	0.280**	0.401**
	[6.81]	[4.07]	[7.22]	[4.42]	[2.57]	[1.92]	[2.06]	[2.51]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.930	0.939	0.905	0.883	0.898	0.897	0.864	0.854
N	4,836	4,836	4,836	4,836	4,836	4,836	4,836	4,836

Panel C. Difference-in-differences regressions for FTSE 350 UK firms vs. FSE German firms.

$$ESG\_score_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_i) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample				Entropy Balancing			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG	*E*	*S*	*G*	*ESG*	*E*	*S*	*G*
Post x UK	0.155***	0.032***	0.257***	0.375***	0.103***	0.021*	0.181**	0.253**
	[2.90]	[2.91]	[2.55]	[2.29]	[3.02]	[1.95]	[2.21]	[2.16]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.205	0.188	0.185	0.183	0.195	0.174	0.172	0.118
N	2,332	2,332	2,332	2,332	2,332	2,332	2,332	2,332

Panel D. Using the year 2012 as an alternative shock.

$$ESG\_score_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2(Post\ x\ TIER1\_\%IO_{i,t}) + Controls_{i,t} + FirmFE + YearFE + \varepsilon_{i,t}$$

	Full Sample				Entropy Balancing			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG	*E*	*S*	*G*	*ESG*	*E*	*S*	*G*
TIER1_%IO	0.018***	0.062**	0.018***	0.049	0.098	0.071	0.013	0.007
	[10.29]	[2.08]	[5.95]	[1.09]	[1.53]	[1.07]	[1.61]	[0.08]
Post x TIER1_%IO	0.015	0.010	0.011	0.018	0.003	0.006	0.009	0.002
	[1.40]	[0.31]	[1.13]	[0.03]	[0.46]	[0.69]	[0.83]	[0.20]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FirmFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YearFE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.964	0.955	0.954	0.915	0.941	0.933	0.932	0.874
N	4,836	4,836	4,836	4,836	4,836	4,836	4,836	4,836

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