# Does The Introduction of a Credibility Mechanism for Stewardship Disclosures Improve Investor Engagement?

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## Abstract

We study the effectiveness of institutional investor engagement on the ESG performance of a sample of UK firms listed in the FTSE 350 Index. To measure the quality of engagement, we exploit the introduction of the tiering classification system by the Financial Reporting Council (FRC) in 2016 for signatories' reporting under the UK Stewardship Code. Using an entropy matched difference-in-differences research design, we show that the introduction of the tiering system was associated with increases in ESG performances in investee companies. Further, our results are consistent with high quality engagement investors (Tier 1) being more effective than lower quality engagement investors (No Tier) in improving ESG performance overall. Our results contribute to the growing literatures on the effectiveness of institutional investor monitoring investees' ESG behavior, as well as the role stewardship codes play in this arena. Our findings have policy implications - from a regulatory perspective, we validate the assumption of a strong correlation between the quality of stewardship-related disclosures and the quality of engagement. Our results also suggest that disclosure-based reputational incentives are effective in influencing institutional investors preferences.

**Keywords***:* Voice, Engagement, Stewardship Code, Tiering, ESG, institutional investors.
**JEL**: G23, K22, Q50

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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 contains 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 2021).

The success of the UK code, and other codes by extension, in spurring additional investor oversight has been severely questioned. Being a signatory to a stewardship code is strictly voluntary, and compliance generally consists of institutional investors voluntarily disclosing in broad terms what engagement activities they have carried out in the previous year. Legal scholars have criticized the 2010 (and an updated 2012) UK Stewardship Code 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 UK 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 this critique, the UK introduced, in 2016, a classification of the Code's signatories based on the quality of their Code reports. This system distinguishes among signatories who report well and display their commitment to stewardship (Tier 1), and others who do not report well or show a low level of stewardship (Tiers 2 and 3, and No Tier)[1]. 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 2021).

[1] As the 2015 FRC Annual Report explains: "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). The Report further states that Tier 2 signatories will be those "where improvements are needed."

Our overall research question is whether the introduction of an external classification system to the signatories of the UK Stewardship Code led to an improvement in investor engagement for Tier 1 investors. 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. Using a difference-in-differences (DiD) methodology around the introduction of the 2016 Tiering classification system, we examine voting patterns for FTSE 350 UK firms with institutional owners classified as Tier 1 engagers against those UK listed firms without Tier institutional owners (NoTier). We find that the percentage of votes against ISS contested ballots for UK firms listed on the FTSE 350 increased substantively with Tier 1 investors vis-à-vis No Tier investors after the introduction of the UK classification system. We also find that from 2014-2018, UK firms with Tier1 institutional owners received a higher percentage of votes against ISS contested ballots when compared to UK firms without Tier1 owners. These finding provide evidence consistent with the tiering system being indicative of investor engagement quality.

We next examine institutional ownership and ESG performance. Public interest on ESG issues has risen dramatically over the past several years, with institutional owners responding to their investors' heightened concerns by establishing "green" investing funds (Schanzenbach and Sitkoff 2020; Curtis, Fisch, and Robertson 2021), and by advocating for greater corporate responsibility in, for example, curtailing carbon emissions or establishing board nominating slates with greater gender and racial equity (Hunnicutt 2017; Mooney 2020; Naaraayanan, Sachdeva, and Sharma 2021; Azar, et al. 2021). However, the ability of institutional investors, particularly passive investors, to render such changes has been questioned in the academic literature, the media, and by government regulators.

We begin by asking whether high engagement institutional investors care more about a firm's ESG performance than low engagement investors when making their portfolio decisions. Specifically, we regress ESG performance metrics for all stocks continually listed on the FTSE 350 between 2014 and 2018 on the percentage of equity owned by high engagement institutions and by low engagement institutions, respectively. ESG is an umbrella concept encompassing disparate aspects of the environment (e.g., climate change and transitional assets), social activities of the firm (e.g., fair labor practices, board and workplace diversity, product liability) and firm

governance (e.g., board independence, compensation contracts). Our output variables reflect this broad definition; that is, we use carbon emissions (an "E" measure), gender diversity on the board and in the workplace ("S" measures) and board independence (a "G" measure) as our output variables. We consider these analyses to be more descriptive in nature; specifically, we do not use it to infer causality between engagement quality and ESG. However, intuitively, institutional investors that care more about ESG performance might also be better monitors of that performance.

Our regression results provide evidence of a significantly negative association between the percentage of Tier 1 (high engagement quality) equity ownership and the amount of carbon emissions for their investee firms; we also find significantly positive associations between the percentage of Tier 1 equity ownership and board diversity, workplace diversity, and board independence, respectively. In contrast, we find no significant associations between equity ownership for the No Tier (low engagement quality) institutional investors and our ESG variables. These results are consistent with high engagement quality investors caring more about a firm's ESG performance metrics than low engagement quality investors when placing a firm in their investment portfolio. ESG performance scores from Eikon Thomson Reuters and from Sustainalytics produce similar results.[2] 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.

We next turn to our main research question, which is whether the introduction of the UK institutional investor engagement quality classification system in 2016 led to an increase in ESG engagement for high quality engagement 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 in general, and in ESG

[2] There have been many criticisms raised about the appropriateness of using ESG ratings 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, Marsh and Staunton (2020) 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. Despite these criticisms, our results throughout the paper are highly robust to the use of these scores.

activities specifically, would tilt their engagement activities towards firms that would provide them with the greatest benefits from such engagements. One of these benefits may be the investor burnishing its reputation as an advocate of better ESG practices.

The UK tiering system was intended to substantiate and delineate the engagement quality of its signatory investors, with Tier 1 investors receiving the accolade of having the highest quality. Thus, it introduced a mechanism akin to the credibility model derived from Kim and Verrecchia (1991) or to the alleviation of a "cheap talk" communication as articulated by Crawford and Sobel (1982). Institutional investors interested in being tagged as Tier 1 investors could take advantage of this mechanism by concentrating their engagement activities more towards UK firms, and by clearly disclosing these activities in the Code reports. Anecdotally, in a private conversation, Michelle Edkins, the managing director of BlackRock Investment Stewardship, spoke to how the introduction of the 2016 classification system spurred BlackRock to reevaluate and focus more on its future ESG initiatives.

We test this hypothesis by estimating DiD regressions of ESG outcomes on the percentage of Tier 1 ownership around the institution of the 2016 classification system. Our treatment firms are FTSE 350 firms with Tier 1 ownership. First, we compare UK listed firms with Tier 1 investors to UK listed firms without Tier 1 (that is with No Tier) institutional investors. 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 with Tier 1 ownership. The Frankfurt Stock Exchange 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 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. 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. To account for differences in firm characteristics between treated and control group firms, we do several things. First, we present both unmatched and matched-sample regression results (using both entropy balancing and propensity score matching), thus alleviating concerns that our results are driven by correlated omitted firm

variables. Our findings and interpretations are similar across all specifications. Second, we repeat our analyses using the year 2012 as an alternative "shock" event year. The year 2012 introduced a heightened description of engagement activities into a signatory's Code report, but it pre-dated the initiation of the tiering system. In addition, 2013, the first post-period year for this analysis, was the initial year in which UK firms not entitled to the small firm exception were required to include disclosures in their annual report about ESG, strategy, and their business models for a better understanding of the company's conditions and perspectives (Strampelli 2018). Thus, whereas these two initiatives might increase ESG for all firms after 2012, there is no reason to believe they would rise more for Tier 1 invested firms vis-à-vis No Tier investees. Our regressions yield few differences in ESG changes between Tier 1 and No Tier invested firms, thus providing additional evidence that the 2016 classification system motivated institutions to increase their monitoring of their investees' ESG scores.

Our paper makes several contributions to the literature on the monitoring role of institutional investors over their portfolio firms. First it is related to studies examining the agency problem of institutional investors with respect to investor engagement (Gilson and Gordon 2013; Appel, Gormely and Keim 2016; Bebchuk, Cohen, and Hirst 2017; Broccardo, Hart, and Zingales 2020; Heath et al. 2021). These papers describe the costs and benefits of being an active monitor. Our study presents evidence that firms can overcome the costs of engagement by tilting 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) 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. However, 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, we provide evidence consistent with the notion that providing credible voluntary disclosures produces real effects from the disclosing entity. This finding is consistent with Christensen et al. (2017), Leuz (2018), and Ceccarelli, Glossner and Homanen (2022), and it responds to Leuz and Wysocki's (2016) encouragement to "examine nontraditional disclosure and reporting settings, especially to learn about the real effects of disclosure mandates" (p. 530). Our findings also are consistent with papers showing a disconnect between investors' stated intentions to improve their portfolio's ESG performances for example, by signing onto the PRI, and their actual commitments to improvements in ESG. For example, Liang, Sun, and Teo (2020) finds that a "non-trivial" number of hedge funds that endorse the PRI invest in firms with poor ESG practices, and Kim and Yoon (2020) presents evidence that funds that are signatories to the PRI do not increase engagement on ESG with their portfolio companies.

Our paper contributes also to the literature on stewardship codes in general (Shiraishi, et al. 2019) and to the UK Stewardship Code in particular (Cheffins 2010; Arsalidou 2012; Reisberg 2015; Davies 2020). The conventional wisdom among legal scholars and practitioners is that the UK Stewardship Code has proven ineffective in practice (Cheffins 2010; Arsalidou 2012; Reisberg 2015; Davies 2020). In addition, Lu, et al. (2018) finds that compliance by institutional investors with the UK Stewardship Code is not related to the earnings quality of their investee companies. 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 2020). 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

We present three interlinking hypotheses. The first is whether the tiering system of the UK Stewardship Code (Code) differentiates between high and low quality institutional investor engagement activities. This hypothesis is important to the rest of our paper, because we rely on the validity of the Tier 1 classification as being indicative of high quality engagement. The second hypothesis is whether institutional investors with high quality engagement (Tier 1) are more likely to include ESG as part of their portfolio decisions than institutional investors with low quality engagement. We view this hypothesis as an important link because it lends credence to the view that investors with high quality engagement care about ESG, and therefore, would include ESG issues in their engagement agenda. The third hypothesis, and the main focus of this paper, is whether the tiering classification instituted by the FRC in 2016 provides a reputational incentive for the Tier 1 (high quality) investors to increase their monitoring of their investee firms' ESG practices.

### *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.[3] 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.[4] 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).

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

[3] 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).

[4] The Walker Review was set up as a consequence of the 2005-2008 financial crisis, and thereby, was concerned with corporate governance practices of banks and other financial institutions only. However, its final report noted that a number of its recommendations could be applied generally to all types of listed companies.

investors, who hold the board accountable for its responsibilities (FRC 2012b, paragraph 2). As stated in the first sentence 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 2012b).

Institutional investors can exercise their voice either by exiting their positions (Edmans 2009) or they can engage directly with the firm (Hirschman 1970; McCahery, et al. 2016). Broccardo et al. (2020) studies the relative effectiveness of exit vs. engagement in promoting socially desirable outcomes in companies; they conclude that exit is less effective than engagement in pushing firms to act in a socially responsible manner.[5] 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).[6]

The UK Code embraces an activist 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 2012b). It also specifies that "institutional investors should establish clear guidelines on when and how they will escalate their stewardship activities" (Principle 4), and 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 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. In particular, institutional investors are recommended to abstain or vote against management when "they have

[5] 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.

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

been unable to reach a satisfactory outcome through active dialogue." (FRC 2012b, Principle 6-guidance).

Notably, the UK Stewardship Code is a voluntary code in that institutional investors can choose whether or not to be signatories to the Code. Signatories are not confined to UK investors, and the roster contains many non-UK financial institutions (see Table I panel B). 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. With the exception of UK-based financial institutions, non-signers are not obliged to disclose their reasons for not choosing to be a signatory of the code.

Initially, the Code reports were published without comment by the FRC. Consequently, legal scholars criticized them as being a "box-ticking exercise" (Arsalidou 2012) or containing "boilerplate" information (Reisberg 2015), thus rendering the Code inadequate in describing the levels of engagement activity across institutional investors. In addition, its "comply and explain" disclosure format was criticized 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 in three tiers, whereas asset owners (e.g., pension funds) were placed in two tiers. As specified by the FRC, Tier 1 signatories provide a "good quality and transparent descriptions of their approaches to stewardship and explanations of an alternative approach where necessary" (FRC 2016b). Tier 2 signatories "meet many of the reporting expectations, but report less transparently on their approaches to stewardship, or do not provide explanations of how they depart from provisions of the Code" (FRC 2016b). Tier 3 signatories provide no, or poor, explanations of how they depart from provisions of the Code, thus their reports lack an adequate level of transparency.

The 2016 classification system produced a differentiation among signatories of their engagement quality. There are 416 single entity investment companies belonging to the family of 239 asset managers/owners who signed the stewardship code. Of these, 316 were classified as Tier

1, 63 as Tier 2, and 37 as Tier 3.[7] In addition, according to the FRC, the tiering classification also was successful in improving the quality of Code statements (FRC 2017, 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 2017, 25).

### *2.2. Hypotheses Development*

The first hypothesis is whether our Tier 1 and NoTier designations accurately reflect institutional investors' engagement levels.

Investor engagement is strictly a voluntary action, i.e., there are no extant laws or regulations requiring any institutional investor to be an active engager. Therefore, the decision and intensity of engagement by any individual institution, most likely, are made on a cost-benefit basis to that institution. On the one hand, 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). Activist hedge funds overcome some of these free-rider issues by holding large stakes in their target firms (Brav, et al. 2008; Klein and Zur 2009), and by showing a willingness to take the lead in activist campaigns, relying on the implicit voting support of other institutional investors (Gilson and Gordon 2013; Wong 2020). On the other hand, 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) report 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.

As the 2015 FRC Annual Report explains: "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,

[7] For instance, Blackrock has several branches that invest in UK such as: Blackrock Asset Management Ireland Limited, Blackrock Investment Management (Uk) Limited. However, given that our unit of analysis is the aggregated percentage of all TIER 1 ownership, the number of investment companies does not affect our analyses.

evidence of engagement, and the approach to resourcing and integration of stewardship"(FRC 2016a, p. 12). We designate "NoTier" institutional investors as those that either do not sign onto the UK Code or request that their Code statements not be classified by the FRC. One explanation consistent with these investors not being part of the classification system is that NoTier investors do not incorporate significant engagement strategies within their investment approach (FRC 2010).

However, many papers question the transparency and usefulness of voluntary disclosures, even those that are given as part of a regulatory requirement. For example, textual disclosures in 10-K reports have been shown to be less readable, less specific, more sticky, and more boilerplate over time (Li 2008; Miller 2010; Brown and Tucker 2011; Dyer, Lang and Stice-Lawrence 2017). Recent SEC-required disclosures on human capital management have been criticized as being uninformative, consisting primarily of boilerplate disclosures (Batish et al. 2021; Georgiev 2021). Further, whereas nondisclosure is based legally on the item being immaterial, many firms are sued for not disclosing material information about their financial positions or operating activities. Institutional investors also have been accused of being opaque or making unsubstantiated claims about their investing activities, particularly as it pertains to ESG investing. Morningstar, 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.[8]

Thus, it is very possible that although the FRC acted in good faith about properly classifying their signatories as high or low engagement investing firms, in reality, the process did little to differentiate among investors' engagement levels. In fact, this was the conclusion of the Kingman Review (Kingman 2018), which called for a "fundamental shift in approach" that "more clearly differentiates excellence in stewardship" (Kingman 2018, p. 10). Specifically, the Kingman Review recommends that the FRC "should focus on outcomes and effectiveness, not on policy statements. If this cannot be achieved, and the Code remains simply a driver of boilerplate reporting, serious consideration should be given to its abolition" (Kingman 2018, p. 10).

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

In contrast, there is evidence that certification of disclosures by independent, outside sources introduces a credibility mechanism into the disclosure process, thus increasing the transparency and validity of these disclosures. For example, Flammer (2021) finds that firms issuing certified corporate green bonds have higher "E" performance ratings and lower $CO_2$ emissions than firms issuing non-certified green bonds, and Gipper, Leuz, and Maffett (2020) show that the introduction of the PCAOB audit inspection, a regulatory validation mechanism, introduced a newly-created credibility into the public audit process. Under this view, the classification process will sharpen the disclosures made in the Code statements, thus allowing the FRC to more accurately classify its signatory investing firms.

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.

Hypothesis 2 relates to whether institutional investors, in general, care about their portfolio firms' ESG performances and specifically, if high quality engagement investors invest more highly in companies with higher ESG metrics than low quality engagement investors. The debate on whether institutional investors should care about a firm's ESG performance is quite vigorous, with both sides arguing about its perceived costs and benefits to investors. Edmans (2020) and Gordon (2021) 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. They argue further that any type of ESG engagement should be done through legal or regulatory policies.

Institutional investors may want to cater to an ever-increasing demand by investors or other stakeholders for better ESG performances. Hart and Zingales (2022) and Pedersen, Fitzgibbons, and Pomorski (2021) argue that when externalities are important to investors, for example

environmental or social issues, then shareholder *welfare* maximization and not shareholder *value* maximization is an appropriate objective. Barzuza, Curtis and Webber (2020) propose that institutional investors promote good ESG practices among their investee firms to attract or maintain a clientele (particularly younger clients) who are interested in investing in better ESG-performing firms. Consistent with this contention, Ceccarelli, et al. (2022) presents evidence that institutional investors that disclose favorably on their voluntary commitment towards the PRI enjoy an increase in monthly fund flows compared to other funds.

Institutional investors benefit by charging higher fees for ESG funds. 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.[9] However, it is unclear whether investments in firms with high ESG performances out- or underperform their counter peers (The Economist 2022).

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

H2: The ESG performances of portfolio firms, on average, are equally important for institutional investors with high (Tier 1) and low (No Tier) quality engagement activities.

We note and emphasize that H2 is not a causal test. That is, it does not examine whether Tier 1 firms influence their portfolio firms' ESG measures, but instead, merely asks whether there is an association between high (low) quality engagement activities and the levels of investee ESG performance.

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

We begin by repeating our proposition that the decision for any institution to engage with its investee firms and the amount of engagement is a function of the costs and benefits of engagement. As we state above, there are many perceived benefits from increasing ESG performances among investee firms, for example, higher profits, lower portfolio risks, minimizing future regulatory risks, or catering to a clientele with an increasing appetite for limiting climate risks or more equitable labor practices. However, these engagements can be quite costly. Hoepner et al. (2022) documents that the average successful ESG institutional engagement campaign is 35 months. 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

[9]See:https://assets.contentstack.io/v3/assets/blt4eb669caa7dc65b2/blt36de8b5594de0582/62c6e888181754349ea2fa66/U.S._Fund_Fee_Study_2021.pdf

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 investments 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 engage.

Because institutional investor engagement activities primarily are private, they are unobservable to its investors. Institutional investors can bring sunlight to the process by voluntarily disclosing its engagement activities to its investors; however, given the "greenwashing" allegations attached to ESG engagement campaigns, these disclosures may not be believable. Further, investors may have legitimate reasons for keeping their campaigns private, for example, not wanting to publicly clash with their target firms' management.

The FRC classification system was established to provide an objective, third-party assessment of its signatories' engagement quality. As such, it gave institutional investors a platform to credibly signal their engagement quality. This certification process is akin to a credibility model as articulated by Kim and Verrecchia (1991) or to the alleviation of a "cheap talk" communication model as proposed by Crawford and Sobel (1982). To take advantage of this unique platform, we propose that, after 2016, institutional investors interested in honing their reputation as being active and successful stewards will steer their engagement activities towards UK firms to reap the benefits of being classified a "Tier 1" investor. This would be especially true given the limited resources that institutional investors devote to stewardship in general, and ESG stewardship, in particular.

We divide our third hypothesis into three separate parts. To capture an overall change in engagement quality after 2016, we propose:

> H3a: Engagement quality for high quality engagement investors (Tier1) will increase more after the initiation of the 2016 FRC classification system than the engagement quality for low quality engagement investors (NoTier).

Engagement activities can encompass operational, financial, or ESG goals. Our paper examines ESG outcomes only. If the introduction of the 2016 classification system introduced a reputation effect into ESG engagement activities of an institutional investors, then we propose that:

> H3b: The ESG performances for firms in the UK with high quality engagement investors (Tier1) will increase more after the initiation of the 2016 FRC classification system than the ESG performances for firms with in the UK with low quality engagement investors (NoTier).

and

> H3c: The ESG performances for firms located in the UK with high quality engagement investors (Tier1) will increase more after the initiation of the 2016 FRC classification than the ESG performances for firms domiciled outside the UK with the same high quality engagement investors (Tier1).

H3b 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. H3c keeps the engagement quality of their investors the same, i.e., all are Tier1 investors, but predicts differences in ESG performances by the country of the portfolio firm.

## 3. DATA AND SAMPLE

We use several data bases for our analyses. The Orbis Bureau Van Dijk (Orbis) database collects ownership data for private and publicly-listed firms worldwide, including the United Kingdom. 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. In order to maintain balanced samples across our two DiD estimations, we impose the requirement that firms be in the FTSE-350 Index for the full 10-year period. Thus, the final sample is composed of 245 distinct firms, giving us a total of 2,450 firm-years observations.

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 Tier 1, 2, 3 institutional investors. As Table I, Panels A and B show, we begin with 2,332 unique institutional investors. Of these investors, 416 are classified by the FRC, in particular 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 as being "No Tier."

Table I, 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%) of the Tier 1 being represented by non-UK funds. These Tier 1 foreign funds include BlackRock, State Street Global Advisors, Vanguard Asset Management (the "Big 3"), as well as other major investors, for example, Goldman Sachs Sachs Investment Management, J.P. Morgan Asset Management and Morgan Stanley Investment Management.

Table I, Panel C has annual summary statistics for the institutional investors holding FTSE 350 firms (our treatment sample). Over the 2014-2018 timeframe, Tier 1 institutions own, on average, 34% of the equity of their portfolio firms, higher than the No Tier institutions, which own, on average, 26% of their portfolio firms' equity. 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 timeframe, there are no discernible changes in the percentage of ownership for any of the groups, thus minimizing the possibility that our findings will be 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.

We initially use three output variables to measure a firm's ESG performances. 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 from Trucost, a widely used source of firm carbon emission data for the corporate sector. For our initial measure of social performance, we look at 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 hailing from the Eikon database. We also use Workforce, a combined measure taken from Eikon which 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 our ESG measures. These scores are commonly 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 (see also footnote 3). 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 presents summary statistics for our initial ESG variables, as well as for the Eikon scores. Over our sample period of 2014-2018, the average annual *Carbon Intensity* [Log(1+Scope1/COGS t-1)] for the full sample firms is 0.029, with a quartile range of 0.001 to 0.052. The percentage of independent board members (*Board Independence*), on average, is 46.48% with a quartile range of 31.60% to 74.03%. Finally, the percentage of women on the board (*Board Diversity*), on average, is 46.60% with a quartile range of 17.88% to 76.30%.

Table 1 Panel E 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 in Germany. We note that for all measures, the treatment group exhibits better ESG performances than the control group in the pre-2016 period. 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.

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 identity of the companies holding elections, description of each ballot 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, with the 245 firms in our FTSE 350 sample having 32,341 ballot votes compared to 39,648 ballots votes for the 964 firms in the control sample (see Table III panel A).

## 4. RESEARCH DESIGN

There are many empirical challenges associated with connecting the level of investor engagement to firm outputs. Because private engagements between institutions and their portfolio firms, by definition, are unobservable, it is difficult to measure the quality (or even quantity) of institutional investor engagement. Engagement channels include in-person closed-door discussions with management or the board, private letters, emails, and phone calls (Grewal and Serafeim 2020). Further, the relative efficacy in improving firm performances 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.

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 and No Tier investors on contested proposals, i.e., proposals in which firm management and the ISS disagree. We look at all proposals, not just those related to ESG endeavors. We choose this setting for several reasons. First, McCahery et al. (2016) report 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. 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). 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. 2021), allowing us to compare our findings with other papers on institutional investor engagement.

Hypothesis 2 examines if institutional investor engagement quality is associated with ESG performance measures over time. Specifically, we estimate the following regressions:

$$ESG_{i,t} = \beta_0 + \beta_1 \%IO_{i,t} + Controls_{i,t} + Year\_FE + Firm\_FE + \varepsilon_{i,t} \quad (1)$$

We initially use three separate ESG variables to estimate equation (1): *Carbon Intensity*$_{i,t}$ relates to the greenhouse gas emissions for firm *i* in year *t; Board Independence*$_{i,t}$ is the percentage of independent directors for firm *i* in year *t*; and *Board Diversity*$_{i,t}$ is the percentage of women directors for firm *i* in year *t*. *%IO*$_{i,t}$ is the percentage of total institutional investor ownership by investor-type in firm *i* in year *t*; we estimate equation (1) separately for high quality investor engagement ownership (*TIER1_%IO)* and for low quality investor engagement ownership (*NoTier_%IO)*. The choice of the control variables (*Controls*) are based on Dyck et al. (2019), and they are *Mktcap*, the logarithm of the market capitalization, *ROA,* the ratio between net income and total assets, *Leverage*, the ratio between the asset minus equity over total assets, and *BTM*, book value of shareholders' equity divided by market capitalization of equity. We further control for year (*Year_ FE*) and firm (*Firm_ FE*) fixed effects to mitigate any confounding factors and to absorb any omitted variables. All standard errors are clustered two-ways at firm and year level. See the Appendix for definitions and data sources for all variables.

Hypotheses 3a-3c exploit 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 high-quality institutional engagement on ESG performances for UK listed firms. Hypothesis 3a examines overall engagement quality, as represented by votes against management in ISS contested ballots. Specifically, we estimate:

$$\%AGAINST_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post \times TIER1\_\%IO_{i,t}) + \beta_3 Post + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t} \quad (2a)$$

where *%AGAINST*$_{i,t,}$ is the average percentage of shares voted against contested proposals for firm *i* in year *t.* The control variables are the same as in equation (1). Equation (2a) is estimated around the introduction 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. Thus, *Post* is one for the observations in 2017-2018 and zero for those in 2014-2015. All the standard errors are clustered at the firm-level. The main variable of interest is (*Post x TIER1_%IO*$_{i,}$*),* which measures the change in voting behavior for firms held by Tier 1 investors after the initiation of the tiering classification.

Hypothesis 3b tests whether, after the initiation of the 2016 FRC classification system, ESG performance increased more for UK firms with high engagement investors (Tier 1) than for UK firms with low quality engagement investors (No Tier). For this hypothesis, we estimate:

$$ESG_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 Post\ x\ TIER1\_\%IO_{i,t} + \beta_3 Post_t + Control_{i,t} + \\ + Firm\_FE + \varepsilon_{i,t} \quad (2b)$$

where *ESG* is one of the three ESG variables defined above, and the other variables are defined as before. The control variables in equations (2a) and (2b) are the same as those in equation (1).

The treatment group for equations (2a) and (2b) is comprised of FTSE 350 companies with at least one Tier 1 investor. The control group for these analyses contains UK companies with no Tier 1 investors, but also with at least one No Tier investor. To obtain this sample, we expand the population of portfolio firms to include all firms listed on the London Stock Exchange due to all FTSE-350 firms having at least one Tier 1 investor. However, as Table II panel A shows, firms not in the FTSE-350, almost by definition, are different than those in the FTSE-350. Specifically, treatment firms are significantly larger (*Mktcap*), have more leverage (*Leverage*), but are less risky (*BTM*) than the control firms. In contrast, we find no difference in *ROA* between the two groups. To account for these differences, and consistent with the literature, we employ three methods to deal with these different firm characteristics: unmatched samples with control variables, entropy balancing, and propensity score matching.

Entropy balancing is a quasi-matching approach which re-weights each control observation so that post-weighting distributional properties of matched variables of treatment and control observations are virtually identical, thereby ensuring covariate balance (Hainmueller 2012; McMullin and Schonberger 2015). The advantages of using this matching methodology is that it allows us to use all of the data in the treatment and control samples in our tests, and it matches firms on multiple dimensions (mean and variance).[10] Following Ferri, Zheng, and Zou (2018), we

[10] The algorithm proceeds by first assigning possible weights (above or below one) to control observations, and then tests whether the 'balance' conditions have been met, i.e., whether the chosen distributional properties of treatment and post-weighted control observations for the matched variables are identical. The algorithm repeats this process over multiple iterations until a set of weights for control observations are found such that the balance conditions are met. The weights assigned to each control observation at the end of this procedure are then used in the regression analysis. See Table II Panel B for the post-entropy means and variances of the four control variables. After retaining the required data for the regression analyses, we have 245 treatment firms and 964 control firms.

select the distributional properties of interest (we focus on mean and variance) and our matching variables. We match at the beginning of 2014 (first year of analysis), choosing the following variables *Mktcap*, *ROA*, *Leverage*, *BTM* and industry indicators. Table II panel A has summary statistics on the treatment and control firms. Prior to entropy balancing, we see significant differences in firm size (*Mktcap*), *Leverage*, and the book-to-market ratio (*BTM*). After entropy matching, these differences fade away. Additionally, we use a propensity score matching (PSM) approach on the same set of matching variables to create a sample of control firms. Under PSM, we use only a subset of firms in the potential sample to achieve a 1-on-1 match between treatment and control firms (untabulated).[11]

In hypothesis 3c, we use the same treatment group as before, but replace the control sample of No Tier UK-listed firms with a sample of German firms listed on the Frankfurt Stock Exchange that also have at least one institutional investor in Tier 1. Thus, we keep the identities of the investor the same, but change the setting of the investee to include those in a country that does not have a stewardship code, i.e., Germany. We maintain the same research design approach as reported above, but now we introduce a country variable *UK*, equal to 1 for the matched panel sample of UK firms with shareholders in Tier 1 listed in the FTSE350 continually during the years 2009-2018, zero otherwise. Specifically, we estimate:

$$ESG_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_{i,t}) + \beta_2\, Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t} \qquad (2c).$$

The main variable of interest in the regression models is the interaction term, (*Post x UK),* which captures the DiD effect. As before, we run the regression 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 (2b) and firm fixed effects.[12] 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,

[11] 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.

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

particularly in the presence of a controlling shareholder (Dharmapala and Khanna 2021; Puchniak 2021). Thus, differences in findings could be attributed to fundamental differences in institutional ownership between the London and Frankfurt Stock Exchange firms, and not necessarily to the introduction of the 2016 classification system in the UK. Therefore, to account for differences in ownership structures between UK and German firms, we also match on *Tier1_%IO.* Table II panel B presents summary statistics for the treatment and sample firms' matching variables.[13] Prior to entropy balancing, we find that the UK firms (treatment), on average, are larger (*Mktcap*), more profitable (*ROA*), and have more Tier1 institutional investor ownership than the German firms (control); treatment firms also, on average, have lower growth opportunities (*BTM*) than the control firms.[14]

## 5. RESULTS

### *5.1 Tier 1 Ownership and Voting Patterns*

Hypothesis 1 tests for differences in engagement quality between firms with Tier 1 and No Tier investors. Our metric of institutional investor engagement quality is %Against, the percentage of "Against" votes in contested management proposals (Appel et al. 2016; Nguyen and Wang 2019; Corum, Malenko and Mallenko 2020; Griffin 2020; Heath et al. 2021).

Table III panel B presents a year-by-year breakdown of *%Against* for treatment (Tier 1) and control firms (No Tier) groups over the five-year period surrounding the introduction of the tiering system. For the time-pooled samples, the average *%Against* vote for the UK firms with Tier1 investors (treatment) is 9.66%; for the UK firms without Tier 1 investors (NoTier; control) the average *%Against* is 3.82%. Testing for a difference in means produces a t-statistic of 17.83, 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: 5.63) for the treatment sample when compared to the control group (untabulated).

[13] 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 those firm where the first shareholder has equal to or more than 30% ownership.

[14] In addition, for the year 2014, the UK firms begin at higher levels than the German firms in board independence and board diversity, suggesting that the UK firms would not be more "ripe" for increases in these board characteristics over time.

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 temporal rise in ISS opposition to management proposals. In total, the evidence in Table III is consistent with the Code being an accurate reflection of the engagement quality for Tier 1 and No Tier investors (Hypothesis 1).

We next use the voting behavior of institutional investors to examine if Tier 1 investors are more likely to vote against management in contested ballots after 2016. This is our first test on the reputation effect that the FRC 2016 classification system may have had on institutional investors (Hypothesis 3a). Table IV presents summary statistics for our regression estimations; 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 0.177 (t-value = 4.54), indicating a significant increase in votes against management for firms in the post-2016 period. In contrast, the coefficient on *Post* is insignificantly different from zero, indicating no increase in *%Against* votes for the group of firms without Tier 1 ownership. Entropy balancing produces similar finding. Thus, we present evidence consistent with the introduction of the FRC tiering system eliciting an increase in stewardship for highly ranked institutional investors.

*5.2 Tier 1 Ownership and ESG Performance*

Having provided evidence consistent with the 2016 FRC tiering classification being a faithful representation of engagement quality between Tier 1 and No Tier institutional investors, we turn to our next question, which is whether the ESG performances of portfolio firms are equally important for institutional investors with high (Tier 1) and low (No Tier) quality engagement activity. We examine this question by sequentially regressing our three measures of ESG (carbon emissions, board independence, and board diversity) on the percentage of equity ownership held by Tier 1 and No Tier investors in the FTSE350 over the years 2014-2018, inclusively (equation 2). We re-emphasize that this analysis is not a test of causality between engagement quality and

ESG performances. That is, at this juncture, we cannot differentiate between funds investing in high ESG performers and funds influencing their portfolio firms' future ESG performance. Instead, we are exploring the question as to whether different investors-types have differential preferences towards their firms' ESG performances.

Table V presents summary statistics for equation (2). In columns (1)-(3), we regress the three ESG performance metrics on *Tier1_%IO*, the percentage of firm equity owned by Tier 1 firms; in columns (4)-(6), we repeat the same three regressions but substitute *NoTier_%IO*, the percentage of firm equity owned by No Tier firms. 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. Specifically, carbon emissions (*Carbon Intensity*) are negatively related to the percentage of equity collectively owned by Tier 1 firms, whereas board independence and board diversity, respectively, is positively associated with the percentage of equity owned by Tier 1 firms. These findings are consistent with Tier 1 (high quality engagement) investors displaying a preference for investments in companies with better carbon emission rates and more independent, or more diverse boards of directors.

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*. Further, the coefficient on *Carbon Intensity*, while insignificantly different from zero, is in the opposite direction of the coefficient in column (1). These findings support the view that institutions with low quality engagement, on average, do not take their firms' ESG performances into consideration when making their investment decisions.

In sum, the findings in Table V are consistent with high and low engagement quality institutional investors placing different weights on the importance of their portfolio firms' ESG performances.

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

#### *5.3.1 UK Setting: Tier 1 vs. No Tier 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 institutional investors in Tier 1. In this subsection,

our control group consists of UK listed firms without Tier 1 ownership (hypothesis 3b). 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 (No Tier) firms. When we include all firms, those with positive and negative income, we get similar results and implications (untabulated).

One underlying assumption behind a DiD methodology is that the output variables for the treatment and control groups exhibit parallel trends prior to the transition year, 2016. To validate this assumption, we estimate regressions for equation (2b) separately over the years 2014 through 2018, with the year 2015 being our baseline year as it is one year prior to our "shock" year (2016). For these estimations, the treatment firms are UK firms with Tier 1 owners and the control firms are UK Firms with No Tier owners only. Figures 1a through 1c present the coefficients on *Tier1_%IO* for the regressions on *Carbon Intensity*, *Board Independence*, and *Board Diversity*, respectively. The figures show no discernible patterns nor significant coefficients on the coefficients for Tier1_%IO for the pre-2016 period, thus validating the parallel trends assumption.

Table VI presents summary statistics for the DiD regressions. Columns (1)-(3) do not employ any matching mechanism, but instead control for the covariates between *TIER1* and *NoTIER* firms. Columns (4)-(6) use entropy balancing weights on the control firms.[15] 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.

[15] 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 (2b). Our results with this new specification yield stronger coefficients on *Post x TIER1_%IO* than those shown in columns 1-6.

The results in Table VI are consistent with the introduction of the FRC classification system in 2016 bringing forth a reputation effect for more effective investor engagement. Specifically, we find evidence of significant improvements in carbon emissions and board of director characteristics after 2016 for UK firms with higher percentages of high quality engagement investors (Tier 1), but no trend in the same ESG metrics for UK firms with higher percentages of low quality engagement investors (No Tier). 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 Figures 1a-1c illustrate, the pre-period trends are (1) parallel for the treatment and control groups and (2) generally not improving over that time period. These two observations dampen down considerably 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 emission (Board Independence and Board Diversity) for 2013 and 2014 are lower (higher) for treated UK firms versus UK control firm (Table I, Panel E).

*5.3.2 International Setting: Control sample are firms on the Frankfurt Stock Exchange held by Tier 1 investors*

Our results are consistent 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 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 Frankfurt Stock Exchange that are held by at least one Tier 1 firm. 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 3c).

The London (LSE) and Frankfurt (FSE) Stock Exchanges have many similarities. Both are among the oldest exchanges in the work, each establishing its roots in the late 16$^{th}$ 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 single country stock exchange, with a market capitalization of approximately$1.75 trillion for its listed

stocks. 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, the 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 FSE firms.[16]

We estimate equation (3c) in which the treatment firms are UK FTSE350 firms with Tier 1 investors, and the control group are FSE 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 534 (primarily German) firms listed on the Frankfurt Stock Exchange. Thus, we keep the identities of the investor the same, but change the setting of the investee to include those in a country that does not have a stewardship code, i.e., Germany. One of the underlying assumptions of a DiD estimation is that the output variable exhibits parallel trends prior to the "shock" year. Figures 2a through 2c present the coefficients on *Tier1_%IO* for the samples of matched UK and German firms from 2014 through 2018. As before, we use the year 2015 as our baseline regression year. The coefficients on *Tier1_%IO* are insignificantly different from zero in the pre-period (2014) for all three output variables, consistent with the parallel trends assumption.

Table VII contain summary statistics on the DiD regressions using unmatched (columns 1-3) and entropy balancing matching (columns 4-6). Our variable of interest is (*Post x UK)*, the interactive term between the post-2016 period and whether the stock held by the Tier 1 firms is in the UK (vs. Germany). 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)* for the regressions on *Board Independence*[17] (columns 2 and 5) and *Board Diversity* (columns 3 and 6). Using a PSM approach

[16] The Frankfurt Stock Exchange contains a small number of firms domiciled in Luxembourg, Netherlands, Cyprus, Switzerland, Malta, and Austria.

[17] 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

yields consistent results (untabulated). We also note that the coefficients on *Post* are insignificantly different from zero for all specifications, suggesting no significant amelioration of ESG metrics after 2016 for the German firms.

The findings in Table VII are consistent with hypothesis 3c, which predicts that due to institutional investors having limited resources to invest in their engagement activities, they would focus their efforts in places where they would obtain the greatest benefit. If, as we posit, the tiering system established a reputation effect for high engagement investors, then our findings are consistent with these investors (remember, we keep the investors the same in this analysis) concentrating their ESG engagement efforts in the UK vs. in Germany to burnish this reputation. Our parallel trends results 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 emission (Board Independence and Board Diversity) for 2014 is lower (higher) for Treated UK firm versus controlled German firm (Table I, Panel E).

## 6. ADDITIONAL ANALYSES

### *6.1 DiD Around the Year 2012*

Our findings are consistent with the view that the introduction of the tiering system in 2016 spurred Tier 1 firms to increase their monitoring of ESG, thus leading to a rise in average ESG for their portfolio firms. We attribute this phenomenon to the tiering system establishing a reputation effect among a class of institutions, a reputation they strive to maintain by increasing their engagement levels. However, we also have shown that Tier 1 firms, in general, invest in higher ESG firms throughout our sample. In addition, although we do not have the data to explore this

half of the members are employee representatives, be female. 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 6.2, 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 women to its executive board.

assertion, it is highly probable that many, if not most, Tier 1 designated institutions would have been classified as Tier 1 engagers prior to 2016. Thus, 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.

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).[18] 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 Strategic Report pushed listed firms to improve their ESG performance, then we should observe those improvements over the years 2013-2014.

Table VIII contains summary statistics for equation (2b) 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. Columns 1-3 present summary statistics using the full sample without matching on firm attributes. Columns 4-6 use entropy balancing to match our firms. We achieve this balance by using the same algorithm as before, but on data beginning at 2010.

[18] The strategic report obligation was introduced by the 2013 The Companies Act 2006 (Strategic Report and Directors' Report) Regulation. Section 414A of the UK Companies Act requires the directors of all companies other than those entitled to a small companies' exemption to prepare (in addition to the directors' report and the directors' remuneration report) a strategic report in which the contents are identified in section 414C-414CB. Namely, with respect to ESG disclosures, according to sections 414C-414CB, listed companies are required to include in their strategic report 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 findings in Table VIII 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. In columns (1)-(3), the coefficients on (*Post x TIER1_%IO)* are insignificantly different from zero for all three regressions. In columns 4-6, after balancing our samples, all regressions on *Carbon Intensity* and *Board Diversity* produce statistically insignificant coefficients on (*Post x TIER1_%IO)*. The coefficient on (*Post x Tier1_%IO)* is significantly negative for the regression on *Board Independence*, suggesting a deterioration in board independence over the post-period. 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 V which showed significantly improvements in ESG over the post-2016 time period.

These insignificant results lend credence to hypothesis 3b, which states that the 2016 tiering classification system created a reputation effect to induce increased monitoring for Tier 1 institutions, and that this increased monitoring produced higher ESG scores in their investee firms.

*6.2 Alternative Specifications or Measures of ESG*

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 CO2 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 V; specifically, we find significantly negative coefficients on *Tier1%IO* for each regression but no significant coefficients on *NoTier_%IO*.

In Table IX, we present our findings for our tests of hypotheses 3b and 3c. As shown in panel A, substituting the new measures of *Carbon Intensity* into the regression using the UK NoTier firms as our control sample yields significantly nrgative coefficients on all three alternative measures of *Carbon Intensity* (hypothesis 3b). Using the sample of firms listed on the FSE as our control sample (hypothesis 3c) also produces significantly negative coefficients on *Carbon Intensity*, as shown in panel B.

Alternative Measures of "S" Variables

Our paper thus far uses gender diversity on the board as its measure of the social aspect, the "S" of ESG. 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 2014; 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 (1), and find (untabulated) evidence that high engagement investors prefer to invest in UK firms with higher social performance measures, whereas low engagement investors show no preference for these firms. We next continue on to hypotheses 3b and 3c, in which we examine if the social performances for firms with high quality engagement investors increase more after the introduction of the 2016 classification system than the social performances for firms with low quality investors. As Table X 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 high quality investors.

In summary, our findings linking increased investor engagement to better ESG performance metrics are robust to alternative measures of *Carbon Intensity* and spread beyond gender diversity within the portfolio firms' boardroom.

*6.3. 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. 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. We also create 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 is 44.37, with a quartile range of 17.88 to 76.30. Environmental mean scores, on average, are lowest (37.85), followed by Social (47.10) and Governance (45.62) scores (Table I, Panel D).

Table XI contains summary statistics for our main variables of interest. Panel A replicates equation (1), which tests our hypothesis 2 – do Tier 1 investors care more about ESG performance metrics than No Tier investors when creating their portfolios? However, instead of regressing our variables on carbon emissions or board of director attributes, we use the ESG scores, both in composite and separately, as our dependent variables. As the panel 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 No Tier investors carries over to whether we use "real" output variables for ESG scores.

Panels B and C present summary statistics for equations (2b) and (2c), in which we examine whether the introduction of the FRC classification system in 2016 created a reputation effect on ESG engagement (hypotheses 3b and 3c). As before, we substitute the ESG scores as well as their separate components for our dependent variable. Panel B present our findings with the control sample being firms without Tier 1, but with at least one NoTier, investor. 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, with the exception of the regression on "E" when we use entropy matching. Panel C presents our results using the control sample of German firms listed on the FSE. 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 did the same analysis using ESG scores from Sustainalytics (untabulated); the results are qualitatively the same using this alternative database.

## 7. CONCLUSION

This paper documents how institutional investors who implement high quality engagement practices can positively affect firm ESG performance. We use the introduction of the tiering system in the UK stewardship code to assess stewardship quality. Our findings can be broadly summarized as follows:

Overall, we find that high quality engagement investors (Tier 1) are more effective than lower quality (No Tier) investors in improving ESG performance of the companies listed in the FTSE-350. Specifically, using a DiD empirical strategy that compares FTSE 350 firms to a similarly matched control sample of UK firms (German firms), we show that the introduction of the tiering system had a real effect on future ESG performance. We further find 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 for high quality engagers. Our results are consistent with Leuz (2018), who contends that credible 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 legal scholars 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 owner 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.[19] 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.

[19] Interestingly, after having abandoned the tiering classification based on the criticisms raised by the Kingman Review (2018), the FRC stated that may in future consider introducing new mechanisms to differentiate the quality of signatories' report (FRC 2021).

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**APPENDIX**

**Variable Definitions**

| Variable | Definition | Source |
|---|---|---|
| ***Panel A*** | **Institutional investors** | |
| *Institutional investors* | Shareholders are categorized as institutional investor if: 1) the investors listed in Tier and/or in PRI and/or classified by Bushee as institutional investor; 2) is professional money managers, including mutual fund companies, pension funds, bank trusts, and insurance companies (as classified by Orbis Bureau van Dijk database). . | UK Stewardship Code UK FRC; PRI Code; Bushee institutional investor classification data; ORBIS Bureau Van Dijk |
| *TIER_%IO* | The percentage of ownership of the institutional investors classified in TIER1 (*TIER1_%IO*), TIER2 (*TIER2_%IO*), TIER3 (*TIER3_%IO*). Using the Financial Reporting Council (FRC) classification system, TIER1 institutions are those whose reports have high quality disclosures and who indicate their commitment to stewardship. Other tiers or the no tier delineation are considered lower in quality by the FRC. We receive the original list of TIER1, 2 and 3 directly from the FRC. | UK Stewardship Code UK FRC & ORBIS Bureau Van Dijk |
| *NoTIER_%IO* | The percentage of ownership of the institutional investors not classified in TIER1, TIER2, TIER3. | |
| *UK* | Dummy variable to identify the target firms (FTSE350 firms with institutional investors in TIER1) when we match them with a sample of German firms. | |
| *Asset under Management (AUM)* | The total value of asset holdings for an investor (in Billion) | Eikon Thomson Reuters |
| ***Panel B*** | **Institutional investors voting** | |
| *No. Meeting Agenda* | The number of proposals for each year for all the UK listed firms. | ISS Voting Analytics (Company Vote Results Global database) |
| *No. Contested Ballot* | The number of those proposals where the management is "*for*", and the ISS recommendation is "*against*". | |
| *No. Passed* | The number of the contested ballot proposals that are passed. | |
| *No. Failed* | The number of the contested ballot that are failed. | |
| *% Contested Ballot* | The percentage of number of contested ballots over the number of meeting agenda. | |
| *% Passed* | The percentage of the number of passed proposals over the number of contested ballots. | |
| *% Failed* | The percentage of the number of failed proposals over the number of contested ballots. | |
| *% Against* | The average of the percentage of votes "against" in contested ballot. | |
| ***Panel C*** | **Firm-level ESG performance** | |
| *Board Independence* | This is an item contributing to compute the Governance Score. These scores are based on the percentage of independent board members on the board. | Eikon Thomson Reuters |
| *Board Diversity* | This is an item contributing to compute the Governance Score. These scores are based on the percentage of females on the board. | |
| *Carbon Intensity* | The natural logarithm of one plus the absolute value of greenhouse gas emissions scaled by previous years' cost of goods sold. Greenhouse gas emissions data (*GHG_Scope1*) are from Trucost, a widely used source | TRUCOST WRDS |

| | | |
|---|---|---|
| | of firm carbon emission data for the corporate sector. Specifically, "Scope 1" emissions relate to direct GHG emissions from sources that are owned or controlled by the company. We follow Naaraayanan, Sachdeva, and Sharma (2021). | |
| *ESG* | ESG scores. Values range from 0 to 100, with 100 as the highest score. | |
| *E* | Environmental Score: this component covers a firm's business actions in terms of environmental responsibility. For this dimension, 57 indicators were evaluated. Among them there are the implementation of actions for pollution control, emissions reduction policies, use of renewable energy, eco-sustainable product development, environmental investment making and environmental standard establishment. This standard reflects the extent to which a company uses best management practices to avoid environmental risks and is capitalised from environmental opportunities. This composite index is generated from a weighted score of a company's strengths and weaknesses on indicators related to: (a) emissions reduction, (b) product innovation and (c) resource consumption reduction. | |
| *S* | Social Score: this component reflects a firm's commitment to the community, not only the community in which it operates but also beyond. The dimension contains 60 indicators that include information on the policies and the programmes implemented by the firms related to health, safety, workplace diversity, training and labour rights, employee and customer satisfaction, percentage of women employed, whether a firm has received distinctions or prizes for its CSR and other social issues relevant to interested internal and external parties. It reflects a company's reputation, which is a key factor in determining its ability to generate long-term value. The composite index is generated from a weighted score of a company's strengths and weakness on indicators related to: (a) product responsibility, (b) community, (c) human rights and (d) workforce. | Eikon Thomson Reuters |
| *G* | Governance Score: this component measures the degree to which a firm's systems and processes guarantee that its members and board executives act in the best interest of its shareholders in envisioning long-term operations. This dimension contains 48 indicators on levels of leadership team transparency with stakeholders; the completion of sustainability reports; minority shareholders' rights; and the remuneration of executives, independent board members and audit committees. It reflects a company's capacity (through its use of best management practices) to direct and control its rights and responsibilities through creation of incentives. The composite index is generated from a weighted score of a company's strengths and weaknesses on indicators related to: (a) management (board functions and structures) and (b) CSR strategies. | |
| ***Panel D*** | **Firm-level control variables** | ORBIS Bureau Van Dijk & Eikon Thomson Reuters |
| *Mktcap* | The logarithm of the Mktcapitalization (Eikon Thomson Reuters). | |
| *ROA* | Net income scaled by total assets (ORBIS Bureau Van Dijk). | |

| | |
|---|---|
| *Leverage* | The ratio between the asset minus equity over total assets (ORBIS Bureau Van Dijk). |
| *BTM* | Book-to-Market: book value of shareholders' equity divided by Mktcapitalization of equity (Eikon Thomson Reuters). |

**Figure 1.A - Parallel Trend Analysis in Carbon Intensity between UK Tier 1 Firms and UK NoTier Firms around Tiering Adoption.**

This figure plots yearly treatment point estimates together with 95% confidence intervals for *Carbon Intensity* as the outcome variable (based on the regression model as used in Table VI, column 4). As we omit the indicator *2015 × TIER1_%IO,* the year 2015 serves as benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre shock covers the years 2014-2015, while the post shock 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.

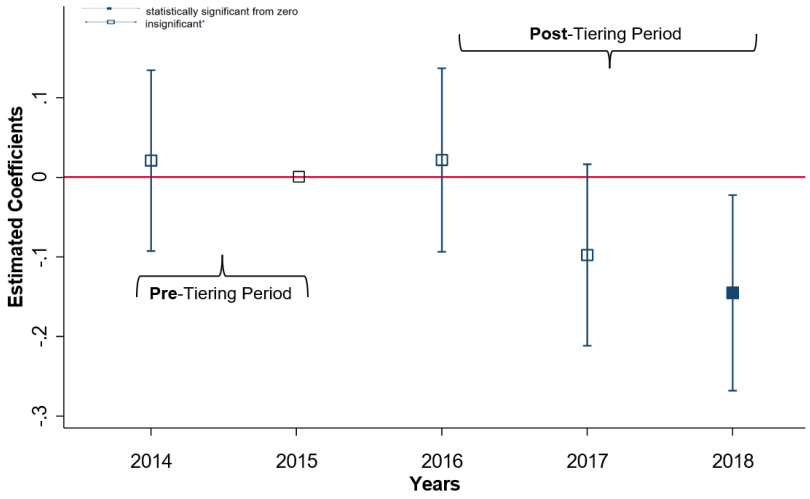


**Figure 1.B - Parallel Trend Analysis in Board Independence between UK Tier1 Firms and UK NoTier Firms around Tiering Adoption.**

This figure plots yearly treatment point estimates together with 95% confidence intervals for *Board Independence* as the outcome variable (based on the regression model as used in Table VI, column 5). As we omit the indicator *2015 × TIER1_%IO*, the year 2015 serves as benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre shock covers the years 2014-2015, while the post shock 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.

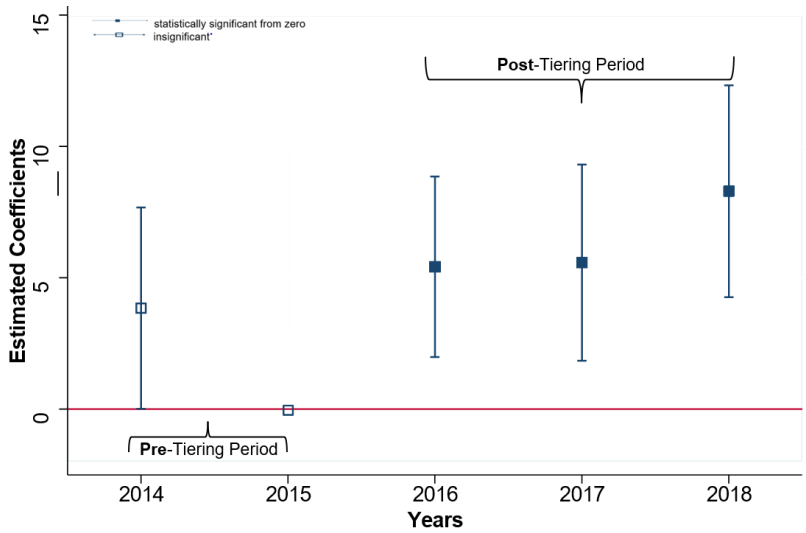

**Figure 1.C - Parallel Trend Analysis in Board Diversity between UK Tier1 Firms and UK NoTier Firms around Tiering Adoption**

Board Diversity: Treatment effects over time. This figure plots yearly treatment point estimates together with 95% confidence intervals for *Board Diversity* as the outcome variable (based on the regression model as used in Table VI column 6). As we omit the indicator *2015 × TIER1_%IO*, the year 2015 serves as benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre shock covers the years 2014-2015, while the post shock 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.

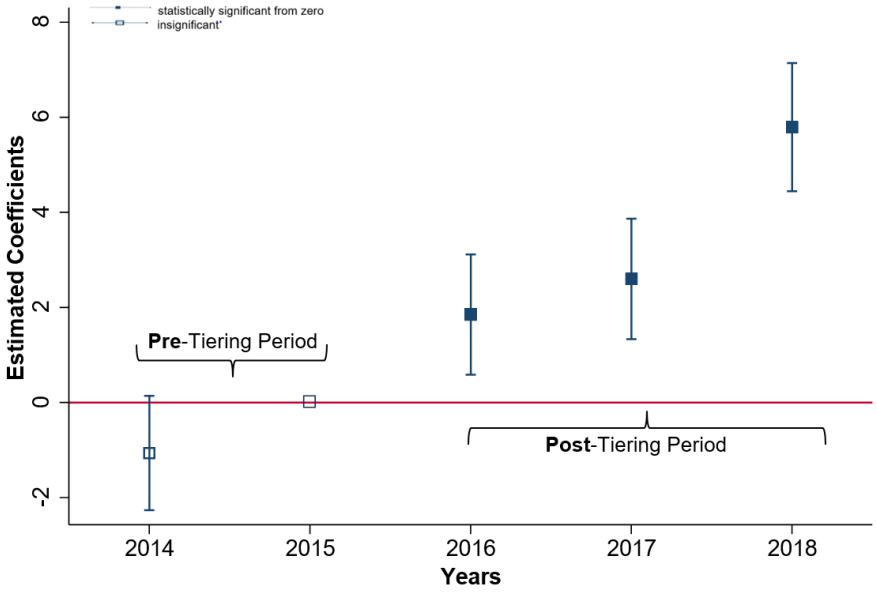

**Figure 2.A - Parallel Trend Analysis in Carbon Intensity between UK Tier1 Firms and German Tier1 Firms around Tiering Adoption**

This figure plots yearly treatment point estimates together with 95% confidence intervals for *Carbon Intensity* as the outcome variable (based on the regression model as used in Table VII, column 4). As we omit the indicator *2015* × *TIER1_%IO*, the year 2015 serves as benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre shock covers the years 2014-2015, while the post shock covers the years 2017-2018. The treatment sample is composed of UK listed firms with institutional investors classified in Tier 1, while the control sample is composed of German listed firms with institutional investors classified in Tier 1.

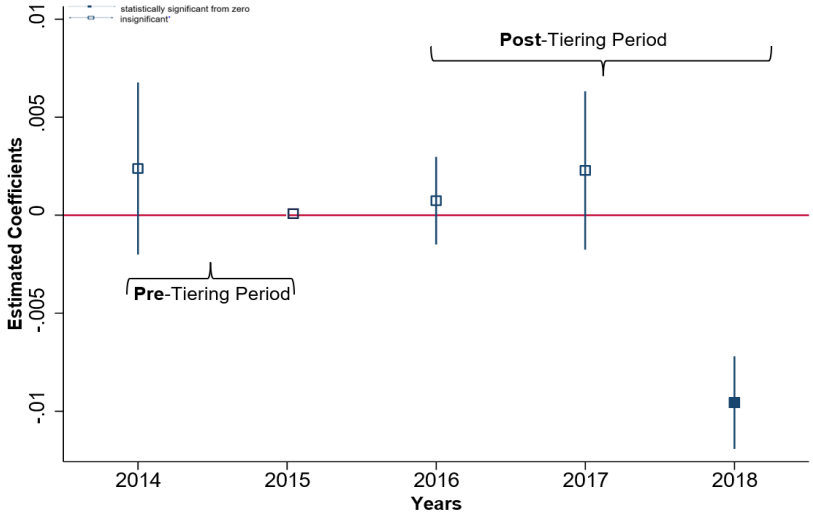


**Figure 2.B - Parallel Trend Analysis in Board Independence between UK Tier1 Firms and German Tier1 Firms around Tiering Adoption**

This figure plots yearly treatment point estimates together with 95% confidence intervals for *Board Independence* as the outcome variable (based on the regression model as used in Table VII, column 5). As we omit the indicator *2015* × *TIER1_%IO*, the year 2015 serves as benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre shock covers the years 2014-2015, while the post shock 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 by German listed firms with institutional investors classified in Tier 1.

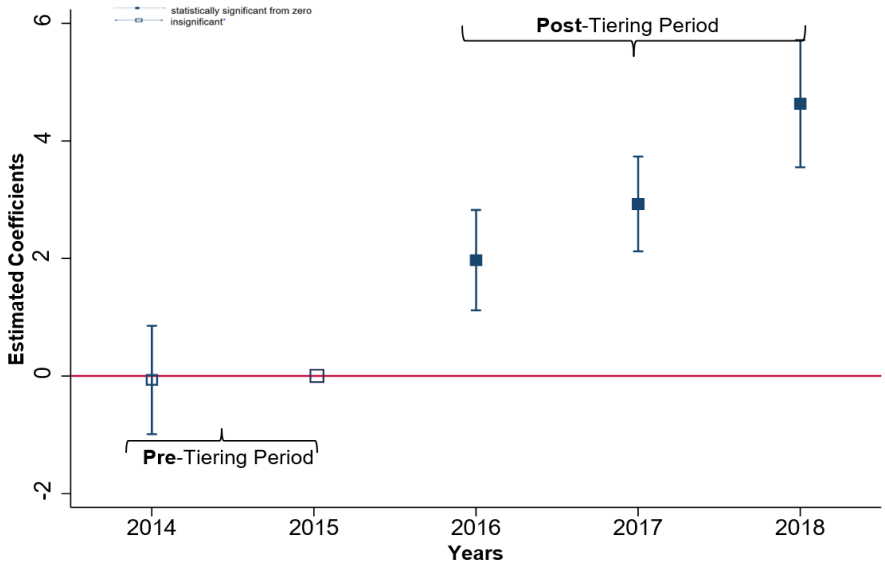

**Figure 2.C – Parallel Trend Analysis in Board Diversity between UK Tier1 Firms and German Tier1 Firms around Tiering Adoption.**

Board Diversity: Treatment effects over time. This figure plots yearly treatment point estimates together with 95% confidence intervals for *Board Diversity* as the outcome variable (based on the regression model as used in Table VII, column 6). As we omit the indicator *2015 × TIER1_%IO*, the year 2015 serves as benchmark. The passage of the Tiering regulation is identified in the year 2016 and the pre shock covers the years 2014-2015, while the post shock covers the years 2017-2018. The treatment sample is composed of UK listed firms with institutional investors classified in Tier 1, while the control sample is composed of German listed firms with institutional investors classified as Tier 1.

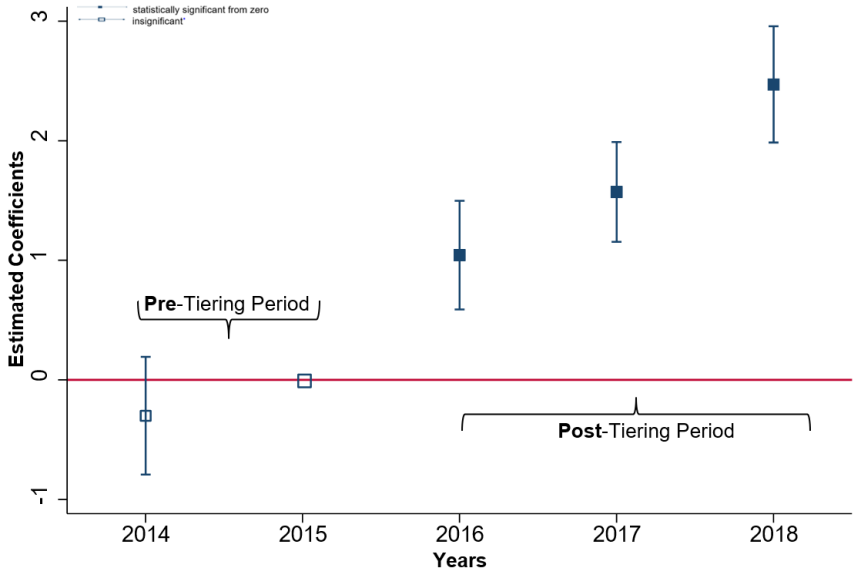

**Table I**

**Sample Composition and Summary Statistics**

**Panel A.** Sample composition – Investee Firms and Institutional Investors.
The table 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 in Tiering, while in the control group there are UK listed firms where their institutional investors are not in Tiering. The sample covers the time period **f**rom **2014 to 2018**. Shareholders are categorized as institutional investors if: 1) the investor is listed in Tiering and classified by Bushee 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 *TIER1*, *TIER2* and *TIER3* by the Financial Reporting Council.

| | ***FTSE 350 Firms (Treatment Firms)*** | | ***Non FTSE 350 Firms (Control Firms)*** |
|---|---|---|---|
| Firms | 245 | | 964 |
| | | | |
| Investment companies | ***Single entity investment company*** | ***Family investment company*** | |
| Institutional investors | 2,332 | 1,205 | 5,102 |
| *TIER1, TIER2, TIER3* | 416 | 239 | |
| *NoTIER* | 1,916 | | 5,102 |

**Panel B.** Summary statistics – number and further characteristics of the institutional investors participating in our sample of firms.
*Asset under Management (AUM)* Billions (mean): the total value of asset holdings for an investor; (data source: Eikon Refinitiv).

| | ***FTSE 350 Firms (Treatment Sample)*** | | | | ***Non FTSE 350 Firms (Control Sample)*** |
|---|---|---|---|---|---|
| Institutional investors | ***TIER1*** | ***TIER2*** | ***TIER3*** | ***NoTIER*** | ***NoTIER*** |
| Number of institutional investors | 316 | 63 | 37 | 1,916 | 5,102 |
| Asset under Management (AUM) Bln (mean) | 60.4 | 22.2 | 15.2 | 58.70 | 11.8 |
| Number Out of UK | 170 | 34 | 27 | 819 | 2,956 |

**Panel C.** Panel C. Descriptive statistics for the variable ownership in Tiering for firms in the treatment sample from **2014** to **2018**; distribution over the year of the ownership in Tiering.

| *Treatment Sample* | *No. Firm* | *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 in Tiering - Mean* | *No. Firm* | *2014* | *2015* | *2016* | *2017* | *2018* | *Tot.* |
|---|---|---|---|---|---|---|---|
| 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 for the following variables: ***Carbon Intensity*** (data source: Trucost WRDS), ***Board Independence***, ***Board Diversity***, ESG scores: ESG total scores ***(ESG)***, Environmental Pillar (***E***), Social Pillar (***S***), and Governance Pillar (***G***) (data source: Eikon Thomson Reuters) for firms in the treatment and control samples covering the time period **from 2014 to 2018**. We use these variables as dependent variables for our diff-in-diff analyses.

| ***Treatment Sample*** | ***No. Firm*** | ***Mean*** | ***Std. Dev*** | ***p25*** | ***Median*** | ***p75*** |
|---|---|---|---|---|---|---|
| Carbon Intensity Log(1+Scope1/COGS t-1) | 245 | 0.015 | 0.055 | 0.001 | 0.013 | 0.018 |
| Board Independence | 245 | 53.91 | 27.40 | 29.36 | 54.53 | 76.98 |
| Board Diversity | 245 | 54.36 | 27.91 | 32.11 | 53.77 | 77.54 |
| ESG | 245 | 54.31 | 20.45 | 42.88 | 55.08 | 70.22 |
| E | 245 | 48.06 | 26.67 | 26.33 | 48.81 | 70.78 |
| S | 245 | 55.89 | 22.52 | 42.94 | 57.23 | 73.40 |
| G | 245 | 56.72 | 23.49 | 41.22 | 59.41 | 75.18 |

| ***Control Sample*** | ***No. Firm*** | ***Mean*** | ***Std. Dev*** | ***p25*** | ***Median*** | ***p75*** |
|---|---|---|---|---|---|---|
| Carbon Intensity Log(1+Scope1/COGS t-1) | 964 | 0.037 | 0.069 | 0.005 | 0.018 | 0.041 |
| Board Independence | 964 | 42.92 | 30.18 | 14.51 | 39.79 | 67.91 |
| Board Diversity | 964 | 41.41 | 30.29 | 14.73 | 35.16 | 66.00 |
| ESG | 964 | 44.29 | 25.31 | 27.38 | 47.90 | 62.55 |
| E | 964 | 37.75 | 29.06 | 12.44 | 34.73 | 61.86 |
| S | 964 | 47.03 | 26.69 | 30.73 | 50.51 | 67.00 |
| G | 964 | 45.58 | 28.63 | 22.57 | 49.82 | 68.56 |

| ***Full Sample*** | ***No. Firm*** | ***Mean*** | ***Std. Dev*** | ***p25*** | ***Median*** | ***p75*** |
|---|---|---|---|---|---|---|
| Carbon Intensity Log(1+Scope1/COGS t-1) | 1,209 | 0.029 | 0.014 | 0.001 | 0.018 | 0.052 |
| Board Independence | 1,209 | 46.48 | 31.60 | 19.57 | 47.78 | 74.03 |
| Board Diversity | 1,209 | 46.60 | 32.02 | 17.88 | 45.44 | 76.30 |
| ESG | 1,209 | 44.37 | 25.32 | 27.52 | 47.99 | 62.56 |
| E | 1,209 | 37.85 | 29.06 | 12.83 | 35.18 | 61.97 |
| S | 1,209 | 47.10 | 26.70 | 30.85 | 50.75 | 67.21 |
| G | 1,209 | 45.62 | 28.65 | 22.57 | 49.93 | 68.57 |

**Panel E.** Descriptive statistics: distribution by year of the means for treatment and control firms for both samples (UK vs UK, and UK vs Germany) covering the time period **from 2014 to 2018**.

**UK vs UK**

| | ***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 |
| **tot** | **0.018** | **0.040** | **-0.022*****| **2.003** | **53.50** | **42.22** | **11.28***** | **2.967** | **55.06** | **44.68** | **10.38***** | **4.015** |

**UK vs Germany**

| | ***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 | 0.027 | -0.003 | 0.141 | 37.83 | 35.21 | 2.62*** | 2.110 | 36.61 | 28.41 | 8.20*** | 2.401 |
| 2015 | 0.026 | 0.037 | -0.011*** | 4.002 | 48.75 | 39.79 | 8.96*** | 2.442 | 48.88 | 31.22 | 17.66*** | 3.106 |
| 2016 | 0.022 | 0.036 | -0.014** | 1.945 | 57.36 | 40.78 | 16.58*** | 2.394 | 55.01 | 35.33 | 19.68*** | 3.245 |
| 2017 | 0.010 | 0.049 | -0.039** | 2.011 | 59.87 | 41.42 | 18.45*** | 2.406 | 66.28 | 38.34 | 27.94*** | 3.508 |
| 2018 | 0.009 | 0.050 | -0.041** | 1.998 | 63.70 | 44.52 | 19.18*** | 2.218 | 68.56 | 42.87 | 25.69*** | 3.619 |
| **tot** | **0.018** | **0.039** | **-0.021*****| **2.568** | **53.50** | **40.34** | **13.15***** | **5.099** | **55.06** | **35.23** | **19.83***** | **6.937** |

* p < 0.10, ** p < 0.05, *** p < 0.01

**Table II**
**Entropy matching: Pre-and post-weighting distributional properties**

The table shows the distributional properties (mean and variance) of treatment (UK treatment firms) and control firms (Panel A: UK firm; Panel B German firm) before and after entropy balancing. The weights assigned to each control observation at the end of this procedure are used in the Diff-in-Diff regression. Entropy balancing requires to select the distributional properties of interest (mean and variance) and the 'matching' variables (in the year 2014: Mktcap, ROA, Leverage, BTM, and industry indicators). In our case, we employ entropy balancing to match to each FTSE350 firm with a control sample of UK listed firm with the shareholder classified in NoTIER.

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

Pre entropy

| Variable | *Treatment (N=245)* | | *Control (N=964)* | | | |
|---|---|---|---|---|---|---|
| | Mean | Variance | Mean | Variance | T-stat | p-value |
| Mktcap | 6.335 | 11.73 | 1.491 | 5.308 | -4.653 | 0.000 |
| ROA | 0.077 | 0.028 | 0.071 | 0.147 | -0.003 | 0.694 |
| Leverage | 0.524 | 0.095 | 0.496 | 0.269 | -0.053 | 0.002 |
| BTM | 0.369 | 0.143 | 0.201 | 0.154 | -0.176 | 0.000 |

Post entropy balancing

| Variable | *Treatment (N=245)* | | *Control (N=964)* | |
|---|---|---|---|---|
| | Mean | Variance | Mean | Variance |
| Mktcap | 6.335 | 11.73 | 6.335 | 0.983 |
| ROA | 0.077 | 0.028 | 0.077 | 0.007 |
| Leverage | 0.524 | 0.095 | 0.524 | 0.127 |
| BTM | 0.369 | 0.143 | 0.369 | 0.088 |

**Panel B**. Pre- and post-weighting distributional properties of UK treatment firms and German control firms.

Pre entropy

| Variable | *Treatment (N=245)* | | *Control (N=534)* | | | |
|---|---|---|---|---|---|---|
| | Mean | Variance | Mean | Variance | T-stat | p-value |
| Mktcap | 6.335 | 11.73 | 4.979 | 36.86 | 5.285 | 0.000 |
| ROA | 0.077 | 0.028 | 0.025 | 0.005 | 16.25 | 0.000 |
| Leverage | 0.524 | 0.095 | 0.658 | 0.136 | 8.673 | 0.000 |
| BTM | 0.369 | 0.143 | 0.280 | 0.034 | 5.213 | 0.000 |
| TIER1_%IO | 29.830 | 381.9 | 6.291 | 384.5 | 33.24 | 0.000 |

Post entropy balancing

| Variable | *Treatment (N=245)* | | *Control (N=534)* | |
|---|---|---|---|---|
| | Mean | Variance | Mean | Variance |
| Mktcap | 6.335 | 11.73 | 6.335 | 36.31 |
| ROA | 0.077 | 0.028 | 0.077 | 0.248 |
| Leverage | 0.524 | 0.095 | 0.523 | 0.132 |
| BTM | 0.369 | 0.143 | 0.368 | 0.532 |
| TIER1_%IO | 29.830 | 381.9 | 29.830 | 230.0 |

**Table III (H1)**

**ISS voting – UK firms' descriptive statistics**

These tables present the summary statistics of the ISS voting proposals for firms in both treatment and control samples covering the time period 2014-2018. Panel A reports: ***#Meeting Agenda*** is the number of proposals for each year for all the UK listed firms; ***#Contested Ballot*** is the number of those proposals where the management is "*for*" and the ISS recommendation is "*against*"; ***#Passed*** is the number of the contested ballot proposals that are passed; ***#Failed*** is the number of the contested ballot that are failed (the difference between Nr. Contested ballot and the sum of Nr. of Pass + Nr. Fail are the withdrawn, pending and not disclosed proposals, not tabulated). Panel B reports: ***% Contested Ballot*** is the percentage of number of contested ballots over the number of meeting agenda; ***% Passed*** is the percentage of the number of passed proposals over the number of contested ballots; ***% Failed*** is the percentage of the number of failed proposals over the number of contested ballots; ***% Against*** is the average of the percentage of votes "against" in contested ballot.

**Panel A.** The number of ISS voting proposals for firms in both treatment and UK control samples.

| ***ISS Voting Proposals*** | ***Year*** | ***Treatment Sample (N=245)*** | ***Control Sample (N=964)*** |
|---|---|---|---|
| *#Meeting Agenda* | 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 |
| | **Tot.** | 32,341 | 39,648 |
| *#Contested Ballot* | 2014 | 231 | 678 |
| | 2015 | 205 | 737 |
| | 2016 | 214 | 623 |
| | 2017 | 289 | 939 |
| | 2018 | 260 | 1,035 |
| | **Tot.** | 1,199 | 4,012 |
| *#Passed* | 2014 | 222 | 649 |
| | 2015 | 203 | 684 |
| | 2016 | 207 | 589 |
| | 2017 | 271 | 877 |
| | 2018 | 247 | 985 |
| | **Tot.** | 1,150 | 3,784 |
| *#Failed* | 2014 | 2 | 3 |
| | 2015 | 1 | 1 |
| | 2016 | 3 | 8 |
| | 2017 | 4 | 10 |
| | 2018 | 4 | 12 |
| | **Tot.** | 34 | 14 |

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

| ***ISS Voting Proposals*** | ***Year*** | ***Treatment Sample (N=245)*** | ***Control Sample (N=964)*** | ***Diff. Between Treatment and Control Samples*** |
|---|---|---|---|---|
| *% Contested Ballot* | 2014 | 3.73% | 8.55% | -3.82%*** |
| | 2015 | 3.38% | 9.27% | -5.89% |
| | 2016 | 3.35% | 8.85% | -5.50%** |
| | 2017 | 4.08% | 11.82% | -7.74%*** |
| | 2018 | 3.92% | 11.78% | -7.86%** |
| | **Tot.** | 3.71% | 10.12% | -6.41%*** |
| *% Passed* | 2014 | 96.10% | 95.72% | 0.38%** |
| | 2015 | 99.02% | 92.81% | 6.21% |
| | 2016 | 96.73% | 94.54% | 2.19%** |
| | 2017 | 93.77% | 93.40% | 0.37%*** |
| | 2018 | 95.00% | 95.17% | -0.17%*** |
| | **Tot.** | 95.91% | 94.32% | 1.59%*** |
| *% Failed* | 2014 | 0.87% | 0.44% | 0.43%* |
| | 2015 | 0.49% | 0.14% | 0.35%* |
| | 2016 | 1.40% | 1.28% | 0.12%** |
| | 2017 | 1.38% | 1.06% | 0.32%** |
| | 2018 | 1.54% | 1.16% | 0.38%** |
| | **Tot.** | 1.17% | 0.85% | 0.32%** |
| *% Against* | 2014 | 9.28% | 4.56% | 4.72%*** |
| | 2015 | 8.87% | 3.01% | 5.86%*** |
| | 2016 | 9.03% | 3.43% | 5.60%*** |
| | 2017 | 8.86% | 4.36% | 4.50%*** |
| | 2018 | 12.26% | 3.78% | 8.48%*** |
| | **Tot.** | 9.66% | 3.82% | 5.84%*** |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

**Table IV (H3a)**

**Voting Against by UK Firms around Tiering Adoption**

This table presents results from the estimation of Eq.(2) in order to test H3a. The shock event corresponds to the Tiering adoption proposed 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 the management is "*for*" and the ISS vote is "*against*" - source: ISS Voting Analytics (i.e., its Company Vote Results Global database). The independent variables are: ***TIER1_%IO***, percentage of the ownership in TIER1 institutional investors for the FTSE350 companies, ***Post*** identifies the years **2017-2018** after the shock. The main variable of interest in the regression models is the interaction term ***Post x TIER1_%IO*** capturing the difference-in-difference effect. The first column (Column 1) presents the results without employing the entropy balancing, while the second column (Column 2) presents the results employing the entropy balancing. After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including: 1) controls (***Mktcap, ROA, Leverage*** and ***BTM***), 2) firm fixed effects (***Firm_FE***), and 3) two-way cluster-robust standard errors at firm and year level. Reported values: coefficient (p-value) *** (**) (*) indicate significance levels at 1%, (5%) (10%), two tailed; t-statistics in brackets. All the variables are defined in detail in the Appendix.

$$\%AGAINST_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post \times TIER1\_\%IO_{i,t}) + \beta_3 Post + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | ***%AGAINST*** | |
|---|---|---|
| | Full Sample | Entropy balancing |
| | (1) | (2) |
| *TIER1_%IO* | -0.044 | -0.016 |
| | [-1.01] | [-1.01] |
| ***Post x TIER1_%IO*** | **0.177**$^{***}$ | **0.014**$^{**}$ |
| | [4.54] | [2.18] |
| *Post* | 0.002 | 0.028 |
| | [0.88] | [0.30] |
| *Mktcap* | -0.039 | -0.011 |
| | [-0.43] | [-1.36] |
| *ROA* | 0.286 | 0.113 |
| | [0.45] | [1.31] |
| *Leverage* | 0.008 | 0.002 |
| | [0.27] | [0.89] |
| *BTM* | 0.453 | 0.676$^{**}$ |
| | [0.39] | [2.09] |
| *_cons* | 0.940 | 0.184 |
| | [1.06] | [0.28] |
| *Firm_FE* | Yes | Yes |
| *Adj. $R^2$* | 0.218 | 0.320 |
| *N* | 4,836 | 4,836 |

**Table V (H2)**

**Cross-sectional analyses on *Carbon Intensity*, *Board Independence*, and *Board Diversity***

This table presents results from the estimation of Eq. (1) to test H2 for the treatment of companies continually part of the FTSE350 **in the years 2014-2018** on Carbon Intensity, Board Independence and Board Diversity. The dependent variable is referred to ESG real effects (***ESG)***: in columns 1 and 4 it is ***Carbon Intensity*** (data source: Trucost WRDS). Then we replace it with ***Board Independence*** (Column 2, 5), and ***Board Diversity*** (Column 3, 6) (data source: Eikon Thomson Reuters). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress the dependent variable on different type of institutional investors ownership (***%IO***), control variables (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), year fixed effect (***Year_FE***), and firm fixed effect (***Firm_FE***). Institutional investors ownership is defined alternatively as: TIER1 asset owners and asset managers (***TIER1_%IO*)**, and institutional investors are not classified as TIER1, TIER2, TIER3 (***NoTIER_%IO***). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in details in the Appendix. The coefficients for the intercept are untabulated.

$$ESG_{i,t} = \beta_0 + \beta_1 \%IO_{i,t} + Controls_{i,t} + Year\_FE + Firm\_FE + \varepsilon_{i,t}$$

| | (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] |
| *Year_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Firm_FE* | 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 VI (H3b)**

**Difference-in-Differences Regression for TIER1 vs. NoTIER UK Firms**

This table presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of listed UK firm covering the years from 2014 until 2018. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress real effects of ESG (***ESG***) for ***Carbon Intensity*** (Column 1, 4) (data source: Trucost WRDS), ***Board Independence*** (Column 2, 5) and ***Board Diversity*** (Column 3, 6) (data source: Eikon Thomson Reuters) on ***TIER1_%IO*** (percentage of the ownership by TIER1 institutional investors), ***Post*** **(**identifies the years **2017-2018** after the shock), ***Post x TIER1_%IO*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for treated firms in the post-treatment period of 2017-2018 and 0 otherwise). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first three columns (Column 1, 2, 3) report the results without employing the entropy balancing, while the remaining three columns (Column 4, 5, 6) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in details in the Appendix.

$$ESG_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + \beta_3\, Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | Entropy balancing | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | ***Carbon Intensity*** | ***Board Indepen-dence*** | ***Board Diversity*** | ***Carbon Intensity*** | ***Board Indepen-dence*** | ***Board Diversity*** |
| *TIER1_%IO* | -0.042 | 0.174*** | 0.151*** | -0.003 | 0.194*** | 0.122* |
| | [-0.91] | [5.07] | [4.22] | [-0.02] | [3.10] | [1.91] |
| ***PostxTIER1_%IO*** | **-0.041**** | **0.129***** | **0.148***** | **-0.048**** | **0.034*** | **0.051***** |
| | [-2.08] | [5.61] | [6.57] | [-2.10] | [1.78] | [2.73] |
| *Post* | 0.018 | 0.056 | 0.061 | 0.025 | 0.095 | 0.153 |
| | [1.07] | [0.48] | [0.58] | [1.50] | [0.26] | [0.45] |
| *Mktcap* | 0.031 | 0.072*** | 0.088*** | 0.022 | 0.095*** | 0.105*** |
| | [1.13] | [20.77] | [23.79] | [0.03] | [5.93] | [6.10] |
| *ROA* | 0.160 | 0.082*** | 0.096*** | 0.083 | 0.072 | 0.093 |
| | [1.41] | [6.37] | [6.89] | [0.60] | [0.60] | [0.68] |
| *Leverage* | 0.053 | 0.046*** | 0.035*** | 0.046 | 0.029** | 0.028** |
| | [0.70] | [7.48] | [6.04] | [0.46] | [2.08] | [2.14] |
| *BTM* | 0.013 | 0.104 | 0.096 | 0.015 | 0.087 | 0.018 |
| | [0.03] | [0.89] | [0.75] | [0.92] | [0.05] | [0.93] |
| *_cons* | 0.087*** | 0.284*** | 0.343*** | 0.416** | 0.339*** | 0.315*** |
| | [12.84] | [20.48] | [22.87] | [2.37] | [3.00] | [2.71] |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.583 | 0.528 | 0.567 | 0.467 | 0.364 | 0.391 |
| *N* | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 |

**Table VII (H3c)**

**Difference-in-Differences Regressions for UK Firms and German Firms**

This table presents results from the estimation of Eq. (2c) to test H3c using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of German listed firms (no. 534 firms) covering the years from 2014 until 2018 dropping firms that have shareholders' ownership equal to or more than 30%. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress real effects of ESG (***ESG***) splitted in ***Carbon Intensity*** (Column 1, 4) (data source: Trucost WRDS), ***Board Independence*** (Column 2, 5) and ***Board Diversity*** (Column 3, 6) (data source: Eikon Thomson Reuters) on ***Post x UK*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for the sample of UK firms with shareholders in TIER1 in the post-treatment period of 2017-2018, and 0 otherwise), ***Post*** (identifies the years **2017-2018** after the shock). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first three columns (Column 1, 2, 3) report the results without employing the entropy balancing, while the remaining three columns (Column 4, 5, 6) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in detail in the Appendix.

$$ESG_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_{i,t}) + \beta_2\, Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | Entropy balancing | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | ***Carbon Intensity*** | ***Board Indepen-dence*** | ***Board Diversity*** | ***Carbon Intensity*** | ***Board Independence*** | ***Board Diversity*** |
| ***Post x UK*** | **-0.129**$^{***}$ | **0.388**$^{*}$ | **0.553**$^{**}$ | **-0.126**$^{***}$ | **0.299**$^{**}$ | **0.515**$^{***}$ |
| | [-8.94] | [1.94] | [2.52] | [-9.98] | [2.35] | [3.47] |
| *Post* | 0.004 | 0.161 | 0.092 | 0.007 | 0.041 | 0.094 |
| | [0.53] | [0.29] | [0.46] | [0.11] | [0.24] | [0.31] |
| *Mktcap* | 0.098$^{***}$ | 0.745$^{***}$ | 0.685$^{***}$ | 0.094$^{***}$ | 0.626$^{***}$ | 0.670$^{***}$ |
| | [6.15] | [16.74] | [19.38] | [3.44] | [10.99] | [14.33] |
| *ROA* | -0.011 | 0.690$^{***}$ | 0.543$^{***}$ | -0.017 | 0.189$^{***}$ | 0.209$^{***}$ |
| | [-0.26] | [7.08] | [4.68] | [-0.40] | [3.07] | [4.94] |
| *Leverage* | 0.003 | 0.134$^{**}$ | 0.057$^{***}$ | 0.006 | 0.031$^{**}$ | 0.089$^{***}$ |
| | [0.44] | [2.39] | [6.83] | [0.51] | [2.00] | [3.89] |
| *BTM* | 0.001 | 0.023$^{***}$ | 0.035$^{*}$ | 0.001 | 0.044$^{**}$ | 0.069$^{***}$ |
| | [0.02] | [10.78] | [1.96] | [0.67] | [2.28] | [3.61] |
| *_cons* | 0.101$^{***}$ | 0.610 | 0.565$^{***}$ | 0.106$^{***}$ | 0.147 | 0.148 |
| | [2.91] | [1.30] | [12.07] | [5.51] | [1.09] | [0.70] |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.115 | 0.353 | 0.579 | 0.092 | 0.306 | 0.482 |
| *N* | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 |

**Table VIII**

**Using the year 2012 as alternative shock**

This table presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of listed UK firm covering the years from 2010 until 2014. The shock event corresponds to the year **2012**. We regress real effects of ESG (***ESG***) splitted in ***Carbon Intensity*** (Column 1, 4) (data source: Trucost WRDS), ***Board Independence*** (Column 2, 5) and ***Board Diversity*** (Column 3, 6) (data source: Eikon Thomson Reuters) on ***TIER1_%IO*** (percentage of the ownership by TIER1 institutional investors), ***Post*** **(**identifies the years **2017-2018** after the shock), ***Post x TIER1_%IO*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for treated firms in the post-treatment period of 2017-2018 and 0 otherwise). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first three columns (Column 1, 2, 3) report the results without employing the entropy balancing, while the remaining three columns (Column 4, 5, 6) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in details in the Appendix

$$ESG_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + \beta_3\, Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | Entropy balancing | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | ***Carbon Intensity*** | ***Board Independence*** | ***Board Diversity*** | ***Carbon Intensity*** | ***Board Independence*** | ***Board Diversity*** |
| *TIER1_%IO* | 0.005 | 0.031 | 0.011 | 0.008 | 0.019 | 0.015 |
| | [0.07] | [0.44] | [0.22] | [0.63] | [1.30] | [1.47] |
| ***PostxTIER1_%IO*** | -0.128 | 0.214 | 0.280 | -0.010 | 0.204 | 0.268 |
| | [-0.80] | [0.94] | [-0.15] | [-0.53] | [1.22] | [1.13] |
| *Post* | 0.007 | 0.123 | -0.550 | 0.001 | 0.266 | -0.297 |
| | [0.77] | [1.18] | [-0.78] | [0.18] | [1.47] | [-1.60] |
| *Mktcap* | 0.916 | 0.336 | 0.165* | 0.182 | 0.751 | 0.887*** |
| | [0.82] | [0.29] | [1.75] | [1.17] | [1.12] | [3.84] |
| *ROA* | -0.158 | 0.374 | 0.475 | -0.094 | 0.079* | 0.089*** |
| | [-0.44] | [0.65] | [1.08] | [-1.01] | [1.97] | [9.22] |
| *Leverage* | 0.016 | 0.058* | 0.054* | 0.011 | 0.060* | 0.053*** |
| | [0.70] | [1.72] | [1.76] | [0.85] | [1.81] | [10.62] |
| *BTM* | 0.166 | 0.002 | 0.005 | 0.025 | 0.012 | 0.043 |
| | [0.84] | [0.30] | [1.01] | [0.90] | [1.53] | [0.47] |
| *_cons* | 0.137** | 0.269*** | 0.172*** | 0.087 | 0.303*** | 0.346*** |
| | [1.99] | [4.01] | [3.16] | [1.22] | [2.08] | [4.26] |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.041 | 0.797 | 0.880 | 0.010 | 0.535 | 0.552 |
| *N* | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 |

**Table IX**

**Different specifications of carbon intensity**

**Panel A.** Additional Test Difference-in-Differences Regression for TIER1 vs. NoTIER UK Firms.
This table presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of listed UK firm covering the years from 2014 until 2018. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress real effects of ***Carbon Intensity*** computed as: i) ***ln(Emissions)***, the natural logarithm of yearly emissions in metric tons of CO2eq (Columns 1, 4); ii) ***ln(Emissions/COGS)***, the natural logarithm of yearly emissions scaled by COGS (Columns 2, 5); iii) ***ln(Emissions/Sales)***, the natural logarithm of yearly emissions scaled by sales (Columns 3, 6) (these variables are mutuated from Downar et al., 2021, RAST); on ***TIER1_%IO*** (percentage of the ownership by TIER1 institutional investors), ***Post*** **(**identifies the years **2017-2018** after the shock), ***Post x TIER1_%IO*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for treated firms in the post-treatment period of 2017-2018 and 0 otherwise). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first three columns (Columns 1, 2, 3) report the results without employing the entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in details in the Appendix.

$$Carbon\ Intensity_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + \beta_3 Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | 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* | 0.235*** | 0.165** | 0.029 | 0.604*** | 0.162*** | 0.519*** |
| | [2.67] | [2.49] | [0.64] | [3.02] | [6.28] | [4.80] |
| ***PostxTIER1_%IO*** | **-0.069***** | **-0.157*** | **-0.178***** | **-0.035*** | **-0.123*** | **-0.217*** |
| | [-3.03] | [-1.71] | [-3.07] | [-1.84] | [-1.83] | [-1.73] |
| *Post* | 0.178 | 0.126 | 0.054 | 0.392 | 0.122 | 0.020 |
| | [0.62] | [0.55] | [1.08] | [1.00] | [0.38] | [0.07] |
| *Mktcap* | 0.489*** | 0.295*** | 0.137*** | 0.370*** | 0.554*** | 0.159*** |
| | [6.38] | [4.37] | [4.27] | [9.06] | [8.82] | [5.65] |
| *ROA* | 0.666 | 0.592 | 0.176 | 0.095*** | 0.097*** | 0.513** |
| | [0.81] | [0.87] | [0.48] | [3.24] | [3.21] | [2.53] |
| *Leverage* | 0.594 | 0.070 | 0.094 | 0.257*** | 0.294*** | 0.134*** |
| | [1.32] | [0.20] | [0.51] | [4.50] | [4.05] | [3.30] |
| *BTM* | 0.347** | 0.056 | 0.001 | 0.621* | 0.225*** | 0.008*** |
| | [2.02] | [0.40] | [0.01] | [1.85] | [3.37] | [2.94] |
| *_cons* | 0.487 | 0.770* | 0.274 | 0.538*** | 0.588 | 0.187 |
| | [1.02] | [1.93] | [1.38] | [9.15] | [0.92] | [0.53] |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.938 | 0.937 | 0.886 | 0.213 | 0.277 | 0.166 |
| *N* | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 |

**Panel B.** Difference-in-Differences Regressions for UK Firms and German Firms.
This table presents results from the estimation of Eq. (2c) to test H3c using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of German listed firms (no. 534 firms) covering the years from 2014 until 2018 dropping firms that have shareholders' ownership equal to or more than 30%. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress real effects of ***Carbon Intensity*** computed as: i) ***ln(Emissions)***, the natural logarithm of yearly emissions in metric tons of CO2eq (Columns 1, 4); ii) ***ln(Emissions/COGS)***, the natural logarithm of yearly emissions scaled by COGS (Columns 2, 5); iii) ***ln(Emissions/Sales)***, the natural logarithm of yearly emissions scaled by sales (Columns 3, 6) (these variables are mutuated from Downar et al., 2021, RAST); on ***Post x UK*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for the sample of UK firms with shareholders in TIER1 in the post-treatment period of 2017-2018, and 0 otherwise), ***Post*** (identifies the years **2017-2018** after the shock). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first three columns (Columns 1, 2, 3) report the results without employing the entropy balancing, while the remaining three columns (Columns 4, 5, 6) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in details in the Appendix.

$$Carbon\ Intensity_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_{i,t}) + \beta_2\ Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | Entropy balancing | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | ***ln (Emission)*** | ***ln (Emissions /COGS)*** | ***ln (Emissions /Sales)*** | ***ln (Emission)*** | ***ln (Emissions /COGS)*** | ***ln (Emissions /Sales)*** |
| ***Post x UK*** | **-0.562**$^{***}$ | **-0.068**$^{*}$ | **-0.147**$^{***}$ | **-0.153**$^{***}$ | **-0.027**$^{***}$ | **-0.101**$^{***}$ |
| | [-3.39] | [-1.65] | [-5.21] | [-2.97] | [-14.88] | [-11.97] |
| *Post* | 0.606 | 0.001 | 0.003 | 0.113 | 0.043 | 0.007 |
| | [0.80] | [0.05] | [0.19] | [0.48] | [0.98] | [0.33] |
| *Mktcap* | 0.037$^{***}$ | 0.021$^{***}$ | 0.092$^{***}$ | 0.191$^{***}$ | 0.346$^{***}$ | 0.108$^{***}$ |
| | [5.16] | [11.12] | [7.45] | [4.88] | [8.65] | [6.00] |
| *ROA* | -0.018$^{**}$ | -0.086 | -0.043$^{***}$ | -0.083 | -0.611 | -0.087$^{**}$ |
| | [-2.07] | [-0.38] | [-2.79] | [-0.23] | [-0.98] | [-2.46] |
| *Leverage* | 0.695$^{**}$ | 0.073 | 0.072 | 0.351$^{***}$ | 0.076$^{***}$ | 0.026$^{***}$ |
| | [2.12] | [0.89] | [1.29] | [7.47] | [3.77] | [2.92] |
| *BTM* | 0.031 | 0.006 | 0.007 | 0.064 | 0.013$^{**}$ | 0.003$^{**}$ |
| | [0.31] | [0.25] | [0.41] | [-0.97] | [2.45] | [2.52] |
| *_cons* | 0.349$^{***}$ | 0.936$^{***}$ | 0.353$^{***}$ | 0.161$^{***}$ | 0.702$^{***}$ | 0.176$^{***}$ |
| | [13.95] | [14.96] | [8.30] | [4.63] | [6.30] | [3.62] |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.882 | 0.982 | 0.953 | 0.294 | 0.540 | 0.351 |
| *N* | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 |

**Table X**

**Other measures of the "S" in ESG: *Women Employees*, *Women Managers*, and *Workforce Scores***

**Panel A.** Additional Test Difference-in-Differences Regression for TIER1 vs. NoTIER UK Firms.
This table presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of listed UK firm covering the years from 2014 until 2018. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress the dependent variable ***Y*** as ***Women Employees*** scores (Column 1, 4) on the base of the percentage of women among the employees, ***Women Managers*** scores (Column 2, 5) on the base of the percentage of women among the managers, and ***Workforce*** scores (Column 3, 6) measuring a company's capability of ensuring workforce diversity, opportunity, safety, and job satisfaction (data source: Eikon Thomson Reuters) on ***TIER1_%IO*** (percentage of the ownership by TIER1 institutional investors), ***Post x TIER1_%IO*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for treated firms in the post-treatment period of 2017-2018 and 0 otherwise), and ***Post*** **(**identifies the years **2017-2018** after the shock). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including: controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first three columns (Column 1, 2, 3) report the results without employing the entropy balancing, while the remaining three columns (Column 4, 5, 6) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in details in the Appendix.

$$Y_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + \beta_3\ Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | Entropy balancing | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | ***Women Employees*** | ***Women Managers*** | ***Workforce*** | ***Women Employees*** | ***Women Managers*** | ***Workforce*** |
| *TIER1_%IO* | 0.030 | 0.042 | 0.067 | 0.083 | 0.012** | 0.019** |
| | [0.74] | [0.98] | [1.40] | [1.25] | [2.06] | [2.19] |
| ***PostxTIER1_%IO*** | **0.046*** | **0.065*** | **0.075***** | **0.035***** | **0.026***** | **0.045***** |
| | [1.95] | [1.85] | [2.62] | [5.14] | [4.37] | [6.15] |
| *Post* | 0.686 | 0.161 | 0.929 | 0.800 | 0.136 | 0.236 |
| | [1.18] | [0.24] | [1.36] | [0.41] | [0.42] | [1.15] |
| *Mktcap* | 0.141 | 0.421** | 0.146 | 0.113*** | 0.595*** | 0.179*** |
| | [1.56] | [1.98] | [0.09] | [11.74] | [8.65] | [14.42] |
| *ROA* | 0.203 | 0.245*** | 0.702 | 0.226*** | 0.131*** | 0.330*** |
| | [0.46] | [2.59] | [0.90] | [4.89] | [4.32] | [5.17] |
| *Leverage* | 0.001*** | 0.000 | 0.000 | 0.075*** | 0.055*** | 0.114*** |
| | [2.92] | [1.08] | [0.52] | [8.65] | [8.56] | [10.33] |
| *BTM* | 0.164** | 0.211 | 0.483*** | 0.136*** | 0.116*** | 0.235*** |
| | [2.16] | [0.95] | [4.54] | [3.45] | [3.94] | [4.83] |
| *_cons* | 0.674*** | 0.780*** | 0.645*** | 0.784*** | 0.448*** | 0.128*** |
| | [9.33] | [4.73] | [5.20] | [11.28] | [9.09] | [14.20] |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.896 | 0.761 | 0.914 | 0.338 | 0.308 | 0.348 |
| *N* | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 |

**Panel B.** Difference-in-Differences Regressions for UK Firms and German Firms.
This table presents results from the estimation of Eq. (2c) to test H3c using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of German listed firms (no. 534 firms) covering the years from 2014 until 2018 dropping firms that have shareholders' ownership equal to or more than 30%. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress the dependent variable ***Y*** as ***Women Employees*** scores (Column 1, 4) on the base of the percentage of women employees at industry level, ***Women Managers*** scores (Column 2, 5) on the base of the percentage of women managers at industry level, and ***Workforce*** scores (Column 3, 6) measuring a company's capability of ensuring workforce diversity, opportunity, safety, and job satisfaction (data source: Eikon Thomson Reuters) on ***Post x UK*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for the sample of UK firms with shareholders in TIER1 in the post-treatment period of 2017-2018, and 0 otherwise), ***Post*** (identifies the years **2017-2018** after the shock). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including: controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first three columns (Column 1, 2, 3) report the results without employing the entropy balancing, while the remaining three columns (Column 4, 5, 6) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in detail in the Appendix.

$$Y_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_{i,t}) + \beta_2\, Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | Entropy balancing | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | ***Women Employees*** | ***Women Managers*** | ***Workforce*** | ***Women Employees*** | ***Women Managers*** | ***Workforce*** |
| ***Post x UK*** | **0.637**$^{**}$ | **0.833**$^{***}$ | **0.227**$^{**}$ | **0.163**$^{*}$ | **0.148**$^{**}$ | **0.196**$^{***}$ |
| | [2.10] | [4.75] | [2.12] | [1.88] | [1.99] | [3.96] |
| *Post* | 0.426 | 0.087 | 0.174 | 0.047 | 0.301 | 0.050 |
| | [1.09] | [0.43] | [1.25] | [0.03] | [0.22] | [0.03] |
| *Mktcap* | 0.254$^{***}$ | 0.130$^{***}$ | 0.188 | 0.210$^{***}$ | 0.161$^{***}$ | 0.110$^{***}$ |
| | [2.37] | [7.76] | [0.10] | [7.40] | [9.22] | [9.82] |
| *ROA* | 0.341$^{***}$ | 0.210$^{***}$ | 0.776 | 0.369$^{*}$ | 0.157 | 0.603$^{**}$ |
| | [3.72] | [3.21] | [0.42] | [1.75] | [1.09] | [1.97] |
| *Leverage* | 0.160$^{***}$ | 0.144$^{***}$ | 0.172 | 0.002$^{***}$ | 0.001$^{***}$ | 0.001$^{***}$ |
| | [2.17] | [11.33] | [1.58] | [4.24] | [3.76] | [8.35] |
| *BTM* | 0.277$^{***}$ | 0.154$^{***}$ | 0.098$^{**}$ | 0.096$^{***}$ | 0.714$^{***}$ | 0.376 |
| | [2.92] | [9.89] | [2.40] | [3.94] | [4.00] | [0.90] |
| *_cons* | 0.798 | 0.193 | 0.225 | 0.327$^{*}$ | 0.297$^{**}$ | 0.794$^{***}$ |
| | [1.00] | [0.47] | [0.91] | [1.86] | [1.98] | [3.94] |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.716 | 0.653 | 0.885 | 0.023 | 0.022 | 0.039 |
| *N* | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 |

**Table XI**

**Additional tests with ESG scores**

**Panel A.** Cross-sectional analyses on ESG Performance TIER1 and NoTIER Institutional Investors.
This table presents results from the estimation of Eq. (1) to test H2 for the treatment of companies continually part of the FTSE350 **in the years 2014-2018** on ESG scores (***ESG_Scores)***: in column 1 the ESG total scores (***ESG)*** (data source: Eikon Thomson Reuters ). Then we replace it with Environmental Pillar (***E***) (Column 2), Social Pillar (***S***) (Column 3) and Governance Pillar (***G***) (Column 4) (data source: Eikon Thomson Reuters). We regress the dependent variable on different type of institutional investors ownership (***%IO***): TIER1 asset owners and asset managers (***TIER1_%IO***); and institutional investors are not classified as TIER1, TIER2, TIER3 (***NoTIER_%IO***). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including control variables (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), year fixed effect (***Year_FE***), and firm fixed effect (***Firm_FE***). T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in details in the Appendix. The coefficients for the intercept as well as for the controls are untabulated.

$$ESG\_Scores_{i,t} = \beta_0 + \beta_1 \%IO_{i,t} + Controls_{i,t} + Year\_FE + Firm\_FE + \varepsilon_{i,t}$$

| | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|---|---|---|
| | ***ESG*** | ***E*** | ***S*** | ***G*** | ***ESG*** | ***E*** | ***S*** | ***G*** |
| ***TIER1_%IO*** | **0.283**$^{***}$ | **0.226**$^{**}$ | **0.243**$^{**}$ | **0.351**$^{**}$ | | | | |
| | [2.90] | [2.31] | [2.25] | [2.42] | | | | |
| ***NoTIER_%IO*** | | | | | 0.123 | 0.114 | 0.062 | 0.178 |
| | | | | | [0.50] | [1.14] | [1.20] | [0.22] |
| *Controls* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Year_FE* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.877 | 0.915 | 0.837 | 0.673 | 0.875 | 0.915 | 0.834 | 0.672 |
| *N* | 1,225 | 1,225 | 1,225 | 1,225 | 1,225 | 1,225 | 1,225 | 1,225 |

**Panel B.** Difference-in-Differences Regression for TIER1 vs. NoTIER UK Firms.
This table presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of listed UK firm covering the years from 2014 until 2018. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress ESG scores (***ESG_Scores***) splitted in ESG total scores ***(ESG)*** (Column 1, 5), Environmental Pillar (***E***) (Column 2, 6), Social Pillar (***S***) (Column 3, 7) and Governance Pillar (***G***) (Column 4, 8) (data source: Eikon Thomson Reuters) on ***TIER1_%IO*** (percentage of the ownership by TIER1 institutional investors), ***Post*** **(**identifies the years **2017-2018** after the shock), ***Post x TIER1_%IO*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for treated firms in the post-treatment period of 2017-2018 and 0 otherwise). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first four columns (Column 1, 2, 3, and 4) report the results without employing the entropy balancing, while the remaining four columns (Column 5, 6, 7, and 8) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in detail in the Appendix. The coefficients for the intercept as well as for the controls are untabulated.

$$ESG\_Scores_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + \beta_3 Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | | Entropy Balancing | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | ***ESG*** | ***E*** | ***S*** | ***G*** | ***ESG*** | ***E*** | ***S*** | ***G*** |
| *TIER1_%IO* | 0.192*** | 0.157*** | 0.185*** | 0.193** | 0.345*** | 0.226*** | 0.246** | 0.471*** |
| | [3.29] | [2.92] | [2.94] | [2.10] | [4.23] | [3.37] | [2.37] | [5.04] |
| ***Post x TIER1_%IO*** | **1.521***** | **0.593*** | **1.965***** | **1.848***** | **0.288**** | **0.824*** | **0.324**** | **0.425***** |
| | [4.43] | [1.86] | [4.58] | [2.77] | [2.57] | [1.74] | [2.15] | [2.63] |
| *Post* | 0.162 | 0.209 | 0.105 | 0.194 | 0.519 | 1.124 | 1.966 | 0.753 |
| | [1.27] | [0.96] | [1.32] | [1.47] | [0.53] | [0.97] | [1.48] | [0.54] |
| *Controls* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Adj. $R^2$* | 0.892 | 0.920 | 0.857 | 0.707 | 0.867 | 0.885 | 0.827 | 0.840 |
| *N* | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 |

**Panel C.** Difference-in-Differences Regressions for UK Firms and German Firms.
This table presents results from the estimation of Eq. (2c) to test H3c using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of German listed firms (no. 534 firms) covering the years from 2014 until 2018 **dropping firms that have shareholders' ownership equal to or more than 30%**. The shock event corresponds to the adoption of Tiering classification proposed by the Financial Reporting Council on the UK Stewardship Code in the year **2016**. We regress ESG scores (***ESG_Scores***) splitted in in ESG total scores ***(ESG)*** (Column 1, 5), Environmental Pillar (***E***) (Column 2, 6), Social Pillar (***S***) (Column 3, 7), and Governance Pillar (***G***) (Column 4, 8) (data source: Eikon Thomson Reuters) on ***Post x UK*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for the sample of UK firms with shareholders in TIER1 in the post-treatment period of 2017-2018, and 0 otherwise), ***Post*** (identifies the years **2017-2018** after the shock). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first four columns (Column 1, 2, 3, 4) report the results without employing the entropy balancing, while the remaining four columns (Column 5, 6, 7, 8) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in detail in the Appendix. The coefficients for the intercept as well as for the controls are untabulated.

$$ESG\_Scores_{i,t} = \beta_0 + \beta_1(Post\ x\ UK_{i,t}) + \beta_2 Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | | Entropy Balancing | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | ***ESG*** | ***E*** | ***S*** | ***G*** | ***ESG*** | ***E*** | ***S*** | ***G*** |
| ***Post x UK*** | **1.766**** | **2.928***** | **5.730***** | **6.053***** | **1.946**** | **1.317*** | **3.352***** | **3.955***** |
| | [2.47] | [3.03] | [6.13] | [6.41] | [2.52] | [1.85] | [4.24] | [3.82] |
| *Post* | 0.381 | 0.461 | 0.687 | 0.215 | 0.567 | 0.552 | 0.383 | 1.501 |
| | [0.30] | [0.27] | [0.41] | [1.28] | [0.41] | [0.32] | [0.26] | [0.82] |
| *Controls* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.245 | 0.178 | 0.203 | 0.178 | 0.330 | 0.206 | 0.271 | 0.247 |
| *N* | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 | 3,116 |

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

This table presents results from the estimation of Eq. (2b) to test H3b using the treatment sample of the 245 companies continually part of the FTSE350 and the control sample of listed UK firm covering the years from 2010 until 2014. The shock event corresponds to the year **2012**. We regress ESG scores (***ESG_Scores***) splitted in in ESG total scores ***(ESG)*** (Column 1, 5), Environmental Pillar (***E***) (Column 2, 6), Social Pillar (***S***) (Column 3, 7), and Governance Pillar (***G***) (Column 4, 8) (data source: Eikon Thomson Reuters) on ***TIER1_%IO*** (percentage of the ownership by TIER1 institutional investors), ***Post*** **(**identifies the years **2013-2014** after the shock), ***Post x TIER1_%IO*** (the interaction term capturing the difference-in-difference effect, which becomes 1 for treated firms in the post-treatment period of 2013-2014, and 0 otherwise). After winsorizing firm-level estimates within each year at the 1% and 95% levels, we regress our analyses including: controls (***Mktcap***, ***ROA***, ***Leverage*** and ***BTM***), and firm fixed effect (***Firm_FE***). The first four columns (Column 1, 2, 3, 4) report the results without employing the entropy balancing, while the remaining four columns (Column 5, 6, 7, 8) report the results employing the entropy balancing. T-statistics, based on two-way cluster-robust standard errors at firm and year level, are presented below the coefficient estimates. Reported values: coefficient (p-value) (***) (**) (*) indicate significance levels at 1%, (5%) (10%). All the variables are defined in detail in the Appendix. The coefficients for the intercept as well as for the controls are untabulated.

$$ESG\_Scores_{i,t} = \beta_0 + \beta_1 TIER1\_\%IO_{i,t} + \beta_2 (Post\ x\ TIER1\_\%IO_{i,t}) + \beta_3 Post_t + Controls_{i,t} + Firm\_FE + \varepsilon_{i,t}$$

| | Full Sample | | | | Entropy Balancing | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | ***ESG*** | ***E*** | ***S*** | ***G*** | ***ESG*** | ***E*** | ***S*** | ***G*** |
| *TIER1_%IO* | 0.094** | 0.030 | 0.090* | 0.033 | 0.173*** | 0.067 | 0.163** | 0.058 |
| | [2.17] | [0.81] | [1.86] | [0.56] | [3.00] | [1.28] | [2.25] | [0.83] |
| ***Post x TIER1_%IO*** | 0.074 | 0.037 | 0.098 | 0.112 | 0.128 | 0.067 | 0.129 | 0.019 |
| | [1.58] | [0.84] | [1.19] | [0.15] | [1.10] | [0.09] | [1.62] | [0.02] |
| *Post* | 0.008 | 0.048 | 0.100 | 0.024 | 0.086 | 0.024 | 0.132 | 0.015 |
| | [0.18] | [0.63] | [1.10] | [0.20] | [0.17] | [0.40] | [0.21] | [0.14] |
| *Controls* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Firm_FE* | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. $R^2$ | 0.969 | 0.965 | 0.961 | 0.923 | 0.953 | 0.948 | 0.916 | 0.888 |
| *N* | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 | 4,836 |