13, allée François Mitterrand
BP 13633
49100 ANGERS Cedex 01
Tél. : +33 (0) 2 41 96 21 06

Web : http://www.univ-angers.fr/granem

Granem
Groupe de Recherche ANgevin
en Économie et Management

The shareholder base of green bond issuers at the dawn of anti-ESG movement

Diana Pop
GRANEM, Université d'Angers

mars 2025

Document de travail du GRANEM n° 2025-02-067

The shareholder base of green bond issuers at the dawn of anti-ESG movement

Diana Pop

Document de travail du GRANEM n° 2025-02-067
mars 2025
Classification JEL : G12, G14, G28, G32, G38

Mots-clés : base actionnariale ; obligations vertes ; durabilité ; anti-ESG ; volume de transactions.
Keywords: shareholder base; green bonds; sustainability; anti-ESG; trading volume.

Résumé : La transparence concernant l'inclination des investisseurs institutionnels en matière de durabilité devient une arme à double tranchant. Cette étude fournit des preuves empiriques montrant que les entreprises non financières qui divulguent l'identité des investisseurs ayant souscrit à leurs émissions d'obligations vertes et ESG peuvent attirer, en moyenne, davantage d'actionnaires que celles dont les détentions obligataires sont opaques. Dans le même temps, l'étude démontre que la publication d'une liste restreinte de grands investisseurs soumis à des sanctions politiques influence les décisions de trading des petits investisseurs institutionnels et des investisseurs particuliers. J'utilise l'annonce faite par le gouverneur de Floride le 27 juillet 2022 concernant son intention d'interdire BlackRock, ainsi que les événements anti-ESG qui ont suivi, pour identifier quels gestionnaires d'actifs et institutions financières ont été bloqués en raison de leurs engagements environnementaux. Grâce à des données couvrant la période de septembre 2015 à fin 2022, les résultats empiriques révèlent une reconfiguration de la base actionnariale des émetteurs d'obligations vertes aux premiers stades du mouvement anti-ESG.

Abstract: The transparency regarding institutional investors' sustainability inclination is becoming a double-edge sword. This study provides empirical evidence that non-financial corporations disclosing the identity of investors who subscribed to their green and ESG bond issues can attract more shareholders, on average, than those with opaque bond holdings. At the same time, the study shows that awareness of a short list of large investors facing political sanctions influences the trading decisions of small-size institutional and retail investors. I use the announcement by the governor of Florida on July 27, 2022 regarding its intention to ban BlackRock, and subsequent anti-ESG events to identify which asset managers and financial institutions were blocked due to their environmental engagements. With data coverage spanning from September 2015 to the end of 2022, the empirical results reveal a reshaping of the shareholder base of green issuers in the early stages of the anti-ESG movement.

Diana Popo
GRANEM, Université d'Angers
diana.pop@univ-angers.fr

Introduction

The recent surge of research on sustainable asset classes reveals that non-financial performance has become a relevant factor explaining investment and financing decisions. The gradual development of specific bank and debt market instruments (e.g., green, ESG, sustainability-linked bonds, loans and derivatives) has broadened the scope of available financing opportunities for companies engaged on a sustainable path of development from a large specter of economic sectors and countries. However, there is still scope to enhance our understanding of the channels through which the environmental and social performance, as well as any combination of these new metrics, affect investors choices.

Flammer (2021) and Thang and Zhang (2020), among others, emphasize that issuing green bonds has a powerful signaling effect, which leads to a shift in the investors' focus towards the stocks of green issuers. According to Levels, Lambert, and Wedow (2023), choosing to invest in particular securities does not depend only on the investors' desire to green their portfolio, but also on the overall supply of those assets. The firm's and investors' investment opportunity sets reflect the diversity of green transition strategies, conceptual differences, as well as the regulatory instruments employed by policymakers in support of stated goals.

The aim of this article is to examine how the shareholder' base of non-financial public corporations, which issued green or ESG bonds (GESG bonds hereafter) after the UN summit on sustainable development (September 25th, 2015), had evolved till the end of 2022. The divergent perspectives across regions on energy transition enable me to identify a framework that broadens the analyses of Seltzer, Starks and Zhou (2022), Ramelli, Wagner, Zeckhauser and Ziegler (2021), as well as Garett and Ivanov (2022) on the implications of political views defying the apparent worldwide consensus about sustainability.

The climate skepticism exacerbated during Donald Trump's presidency has materialized, despite the recent decision of United States to rejoin officially the Paris Climate Agreement. From 2021 on, several U.S. Republican-controlled states have been passing dozens of laws targeting the companies and investors which have taken stances on climate change, diversity or progressive corporate policies.[1] They are deemed to restrict the ability of investors with an ESG agenda to conduct state businesses, underwrite municipal bonds, take part in the banking contracts with the state's treasury funds, forbid state banks to use ESG scores in loans, or manage state funds, on the ground that their pro-environmental strategy deprives traditional businesses from capital. According to the narratives of ESG opponents, the conventional fossil fuel companies would not

[1] See Stvenson (2022) for a review of such anti-boycott laws.

be "brown" but "reliable energy" producers. On July 27, 2022, the governor of Florida announced that the world largest asset manager, BlackRock, will be banned from employing Florida state or pension funds in ESG-involved investments. On August 4, 2022, a group of 19 general attorneys[2] trying to insulate their states from the ESG policies wrote a common letter to BlackRock to object against what they call "woke ideology", or "quixotic climate agenda" instead of "responsible investment" and threatened that they will remove the state's funds from any asset manager following non-pecuniary goals. They prone a policy focused more on "voices" reflecting the individual instructions from the ultimate clients[3] rather than one single voice anchored in the principles of the asset manager[4] or a unilateral "exit" decision from highly carbonated industries by climate-conscious institutional investors. The anti-ESG investment movement came with a cost for investors embracing ESG values: arguing why fighting climate change is an investment opportunity coherent with long term returns, precautious communication about their climate record[5], delaying plans or retreating from coalitions and initiatives addressing the climate change,[6] downgrading,[7] loss of business relationships with other money managers from contesting states, and outflows from the managed funds.[8] On August 24, 2022 the Texas comptroller office released a block-list of 10 companies, that are BlackRock, BNP Paribas, Credit Suisse, Danske Bank, Jupiter Fund Management Plc, Nordea Bank ABP, Schroders Plc, Svenska Handelsbanken AB, Swedbank AB, UBS Group AG, BlackRock Tactical Opportunities Fund. During the second half of 2022, other states banned dozens of companies, including the Goldman Sachs Group Inc., J.P. Morgan Chase & Co., Morgan Stanley, Wells Fargo & Co., and hundreds of funds from doing business in those states, claiming that they "boycott energy companies."

Threatening directly the asset managers with global exposure instead of the corporations with ESG focused policies discourages any regulatory arbitrage strategies, which have been pushed the corporations to register in friendly states. The alienation of some investors reduces the

[2] The signatories' states are: Alabama, Arizona, Arkansas, Idaho, Indiana, Georgia, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Montana, Nebraska, Ohio, Oklahoma, South Carolina, Texas, Utah, and West Virginia.
[3] BlackRock, Vanguard, and Charles Schwab announced that they will let their customers vote their shares at annual meetings.
[4] The main criticism addressed to BlackRock was that behind the claimed neutrality regarding the allocation of the managed funds among diversified investment vehicles, its investment strategy reflects the personal engagement of its CEO in dealing with the climate change.
[5] In the 2022 letter addressed by BlackRock to its investors, the acronym ESG is missing for the first time since 2012 and "sustainable investments" is employed only once.
[6] In December 2022, Vanguard, the world's biggest mutual fund manager, withdrew from the "Net Zero Asset Managers" initiative, which included 450 leading financial enterprises committed to accelerate the decarbonisation of the global economy. A similar movement touched the "Net Zero Insurance Alliance", which lost 9 members in the first half of 2023, namely Axa, Score, Alianz, QBE, Swiss Re, Munich Re, Hannover Re Zurich Insurance Group, and Sompo (the first insurer outside of Europe to quit the alliance on May 26th, 2023).
[7] MSCI Inc. envisages to downgrade about 31,000 ESG funds in order to address the concentration risk and imposes more stringent conditions for the AAA and AA ratings.
[8] On December 2022, the State of Florida decided to divest USD 2 bn. worth assets from BlackRock. However, according to Bloomberg, Florida had a low stake in the ESG investments (less than 1%). Its pension portfolio, which was managed by 13 BlackRock labe!led funds was composed mostly by broad stock and bond indexes.

potential investor base of green issuers and causes an inflection in the stock holdings of stable ownership. In the last case, even a zero variation of asset holdings from one period to another may hide in reality a shift among the ESG focused and non-focused funds of the same asset manager. There is anecdotal evidence showing that such rebalancing strategies are plausible.[9] Such an effect should be much stronger on companies where money managers and financial institutions included on the block-list have a higher exposure, regardless the location of the investee corporations.

The viewpoints about the sustainability mandate of financial investors are sometimes contrasting. Unlike the climate deniers, the advocacy group Consumer Research decried the investments of BlackRock into the Chinese market. Investing in Chinese companies, beyond any green consideration, would render the US investors "accomplice to human rights abuses". Obviously, the polemical debate around the relevance of ESG criteria in investment is creating new risks for the high quality companies, which have been sliding from regulatory (regulatory inspections) to litigation risks (accusation of breaching the antitrust law) and political risks (loss of funds mandates). Those risks affect the valuation and pricing of climate risk, making investors reassess the firms ESG profile and the desirability to invest in their financial instruments.

In order to determine whether a causal relationship between the transparency around the inclination towards sustainability of some investors and the ability of companies to enhance the investor base exists, I distinguish between the companies that disclose the holdings information for at least one of their GESG issues from those that do not have bond holdings data available. My conjecture is that, *ceteris paribus*, the corporations that disclose the identity of bondholders are able to attract more investors than those with opaque bondholder structure. In order to better apprehend whether among the shareholders there are investors with sustainability preferences, I replicate the analysis by excluding all the funds with index investment style. Indeed, the inclusion of a GESG issuer in one of the benchmark indices explains *de facto* equity stake of the index fund, irrespective of the green policy of the issuer. An additional filter is imposed to leave out the controlling shareholders, regardless their type.

One of the key results reported in the literature is that stock-level institutional ownership (Thang and Zhang, 2020) or of some sub-categories, especially those with long-term investment horizon (Flammer, 2022) is higher in green corporate issuers than in comparable companies. The implicit assumption behind this interpretation is that a positive difference is equivalent to an enlargement of the investor base of the green bond issuers. Yet, it ignores the cases where the change within

[9] According to Bloomberg, on March 2023 there was an outflow of about USD 4 bn. from the BlackRock fund "iShares ESG Aware MSCI USA ETF" and a similar inflow of the same size in BlackRock's "iShares MSCI USA Quality Factor ETF", which is not an ESG-focused fund.

the pair is triggered by the decision of some shareholders to leave the conventional issuers without redirecting their investment to green purposes. My first aim is to find out whether a change in the ownership of green issuers exists in the first place.

To address the micro market structure in terms of ownership concentration, I explore granular data about investors' identity. Tracking the investor-by-investor positions over time allows me to disentangle within the investors base of each green issuer who are the *leavers*, the *joiners*, and the *stable* shareholders after each GESG issue date. A standard disclosure about ownership usually covers only the substantial shareholdings, higher than 5%. However, the summary reports about ownership used for this empirical analysis include, besides this mandatory information, the stakes of all strategic entities (either corporations or insider individuals) and investment managers, regardless their size. In order to exploit the advantage of having detailed shareholdings reports, I account for the exposure of each shareholder by using Herfindahl-Hirschman Index (HHI hereafter) instead of an index aggregating the holdings by investor class. While the HHI addresses better the disparity in sizes among individual shareholdings, I still have to deal with the ambiguity of its expected change. A positive variation is likely when new entrances, following purchasing from retail shareholders, simply add up to the existing institutional shareholders. By contrast, splitting up the holdings of a selling shareholder to several buying green investors lowers the HHI, even if the investor base becomes larger. I address the shortcoming inherent to the HHI by controlling for the stake of shareholders leaving and joining the investor base.

I also test the implications of the increasing pressure of the anti-woke movement on the large asset managers to tilt their portfolio towards value stocks or conventional securities. In this respect, I identify all shareholders within the ownership structure that are involved with the financial and institutional investors blocked by the ESG dissident American states. This event is an exogenous shock likely to make large index funds engage in exit instead of voice strategy[10], whatever the quality of governance in investee companies.[11] This time, I expect that companies with information about the bond holdings of their GESG issues experience larger variation in ownership with respect to their peers.

The empirical results are consistent with these predictions. I find that, on average, there is no significant variation in the ownership distribution after GESG bond issues, neither on the overall level, nor by investor classes. However, the direction of the change, when it exists, is indicative

[10] Di Giulli. Garel, Michaely, and Petit-Romec(2022) shows that the political ideology influences the support provided by mutual funds to shareholder proposals related to environmental issues.
[11] Edmans and Holderness (2017) posit that the very construction of index funds render them unable to govern through exit and give them an incentive or catalyze other investors to engage through voice.

of an increase of the investors interest in the company shares after a GESG bond issue. The joiners' size is positive and statistically significant in all specifications, showing that the new institutional shareholders buy from retail investors stocks beyond the stakes sold by the leavers and stable shareholders. Conversely, the shareholders who exit the ownership base split their block among many investors. Particularly, such negative effect is statically significant, in the case of the first GESG issue. However, the higher the size of the stakes of block-list joiners, the lower the overall ownership change till 2022. The results are sensitive to the type of institutional shareholders used to quantify the ownership base. The difference comes from the fact that GESG issuers that disclose the identity of the bondholders have always had more concentrated ownership that their opaque peers. The findings about the effect of joiners and leavers hold also in the longitudinal study. Besides, the very existence of block-list shareholders explains the difference in the ownership distribution at the end of 2022. More precisely, the block-list joiners decrease the ownership concentration, while the block-list leavers increase it, with respect to the reference pair, where such targeted shareholders do not invest in any matched firm. Finally, I find that, after the announcement made by Florida's governor, the stock trading volume is systematically higher for the firms that have disclosed the information about the GESG bondholders.

Relative to the literature addressing the implications of the adoption of sustainable policies, to date, there are much fewer contributions documenting the effects of anti-ESG regulation. Garrett and Ivanov (2022) show that the exit of banned banks from the underwriting of municipal bonds in response to the anti-ESG law enforced in Texas caused an increase in the state's cost of public funds. Rajgopal, Srivastava and Zhao (2023) find no difference in the exposure to U.S. equities from energy sector between funds subject to disinvestment provisions and untargeted comparable funds. While the first study indicates that even the largest bond issuers are not immune to a change in their investor base, the second one doubts that the political initiative could alter significantly the asset managers' allocations. Conversely, this article takes the position that tenacious initiatives against financial industry are likely to change the perception of both institutional and main street shareholders, at least in the companies raising green funds.

The remainder of the paper is organized as follows. Section 2 describes the data and presents comprehensive descriptive statistics about the GESG issues made at international level. Section 3 presents the empirical methodology and discusses the results highlighting the ownership evolution and stock trading volume over the sample period. Section 4 presents the robustness checks, while the final section concludes and identify several research avenues.

2. Data and samples

In order to construct the samples, I identify all bonds that are issued by non-financial corporations and are flagged as green or ESG in the Refinitiv-Eikon database. I classify them in several groups likely to fit the sustainability objectives defined in the various taxonomies, based on the indications provided in the "use of proceeds" search criterion. Table 1 provides a breakdown by use of proceeds for green and ESG bonds, respectively. As shown, the largest amounts were raised to support clean transport (USD 211 bn.) and energy efficiency (USD 146 bn.) projects, representing together almost half of the total funding.

{Insert Table 1 about here}

The green issues are made by non-financial companies from 54 countries, both developed and emerging ones. The Chinese (386 issues), Swedish (333 issues) and Japanese (266 issues) companies taped the bond market the most frequently, but the largest amounts outstanding are recorded in United States (USD 116 bn.), China (USD 72 bn.) and France (USD 48 bn.)

{Insert Table 2 about here}

The descriptive statistics reported in Table 3 reveals that there is a relative heterogeneity in policy stances across countries on how to contribute to sustainability objectives. In the top 10 countries, according to the number of green bonds issues, the climate action was scaled up rather in promoting net-zero alignment initiatives (energy efficiency, eligible green projects, clean transport, green construction) than in addressing impact on biodiversity or sustainable water. The financing channel may translate the specificities of the goals set in the major taxonomies, and the co-dependence among the environmental objectives.[12]

{Insert Table 3 about here}

From the non-financial corporate GESG bonds universe, I further restrict the analysis to those issued by exchange listed companies after the UN summit on sustainable development, which took place in September 25th, 2015. The application of this criterion yields a total 1,444 GESG issues made by 629 distinct issuers. I split the sample in two subsamples, based on the binary indicator "Holdings", which informs whether the identity of financial institutional investors who subscribed the GESG bond issue is disclosed. When reported, the bond holdings are detailed by asset manager and by each fund under its management, both in par-amount at the end of the quarter and absolute variation with respect to the previous position.

[12] Ehlers, Gao, and Packer (2021) explains that the Chinese taxonomy does not contain a "Do Not Significantly Harm" condition, a facility that renders the alternative investments projects more easily regulatory compliant, even if performed in fossil fuel industry.

The comparison between the two groups from Table 4 shows that the capital had flowed toward economic sectors supporting the transition and enabling activities, even if some of those sectors do not yet operate at low level of GHG emissions.

{Insert Table 4 about here}

However, the EU and Chinese taxonomies recognize that the trajectory of emissions reduction, as well as the technical, science-based, standards should be tailored by each activity instead of the broad industrial sector. The implementation of taxonomies creates consistent biases towards certain activities. The unreported summary statistics which takes into account the SIC codes,[13] reveals that the detailed classification of sustainability activities has such distributional consequences at global context. Among 199 such different activities, those which were involved the most in raising green funding are Electric Services (14%) and Real Estate Investment Trusts (12%).

According to the analysis of issue details (unreported for space reasons but available upon request), the sustainability-related funds are raised within the same maturity specters, notably 5 and 10 years and using all issuing methods (notably underwriting, which count for 54.7%) for the two groups of green corporate issuers, namely with and without bond holdings data. However, the breakdown by principal and coupon currency gives an indication that the target investor base may depend on the institutional environment. Particularly, about 33% of the total observations in the subsample of companies without information about bondholders are Japanese Yen denominated issues. While the vast majority of public interventions seek to stimulate the greening of economy through disclosure-based policy instruments, the Japanese authorities aimed a limited number of growth sectors, likely to achieve future growth till 2030. To stimulate the R&D and innovation in those sectors the Japanese government's policy package includes, besides regulatory reforms, taxation and budgetary measures.

For constructing the sample of GESG issuers, I apply a last cleaning criterion and exclude the corporations that were delisted till the end of 2022, as well as the listed corporations with missing market identifier for their GESG bonds. This procedure leaves me with 578 issuers, over which 271 have bond holding information about at least one GESG issue. For each such issuer, I collect the monthly shareholder reports before each GESG issue date and at the end of 2022.

[13] The European scheme of classification of sustainable activities is based on NACE codes, while in China, the environmental beneficial activities are established with respect to the Chinese Standard Industrial Classification (CSIC).

3. Empirical Analysis of the Evolution of the Ownership for GESG Issuers

The ownership regressions include the main proxy for stock-level ownership the *HHI Total*:

$$HHI\ Total_{i,t} = \sum_{i}^{n} (stake_i)^2$$

where *stake* is the fraction of the shares of the company *i* held by each shareholder reported in Refinitiv-Eikon at time *t*, which is either the end of the month prior the GESG bond issue (*at issue*) or the end of the sample period. In order to investigate whether shifts in aggregate positions are triggered by certain categories of investors, I also examine the changes over time and the differences between subsamples for several measures of ownership and investors' features. The second proxy for the independent variable, *HHI Style*, is constructed by excluding all stakes held by institutional investors whose investment style is indexing. Finally, for the *HHI Float*, I further restrict the computation to no controlling shareholdings. The threshold for qualifying a stake as a control block is set to 30%, which triggers on the vast majority of markets of corporate control the Mandatory Bid Rule.

$$HHI\ Style_{i,t} = \sum_{i}^{n} (stake_i)^2 - \sum_{i}^{n} (stake\ index\ funds_i)^2$$

$$HHI\ Float_{i,t} = \sum_{i}^{n} (stake_i)^2 - \sum_{i}^{n} (stake\ index\ funds_i)^2 - \sum_{i}^{n} (control\ blocks)^2$$

In Table 5, I report the differences of means test on values for ownership concentration, either total (Panel A) or broken down into types (Panel B) and investment styles (Panel C). There is no time variation in ownership concentration over the sample period for neither sample (T-test reported on the row). However, the companies with available bond holding data have had, on average, a larger investment base from the very beginning, mainly due to investment management-type investors that hold in those entities a block of about 10% higher that their total exposure in the peer firms (T-test on the column). Much of this positive difference comes from an average extra block of about 4%, held by index investment-style institutional investors. Moreover, the differences between the average sizes of total stock holdings are positive and statistically significant for the majority of investment style classes, except for shareholders focused on core growth investments (7.3% vs. 9.0%).

{Insert Table 5 about here}

2.2. Ownership change after the GESG issue date

In the baseline regression addressing the ownership change, after the issue of a GESG bond, I regress the difference of the three HHI indices on various ownership, financial, ESG, and identification variables, whose definitions are provided in Appendix A:

$$HHI\_Type_{i,2022} - HHI\_Type_{i,at\ issue} = \beta_1 Green\ Holdings + \beta_2 \Delta Stable\ Ownership + \beta_3\ Joiner\ Size + \beta_4\ Leaver\ Size + \sum \beta_j Block - list\ Investors + \sum \beta_g Control\ Variables$$

The sets of estimations are run separately for the GESG issues performed at the earliest issue date recorded over the sample period (Model 1 to Model 4), the second one (Model 5 to Model 8), as well as at the subsequent GESG issue dates (Model 9 to Model 12).

As reported in Table 6 Panel A, a higher ownership concentration at the end of 2022 is due to the increase of shareholdings of stable shareholders and the entrance of new shareholders after the GESG bond issue dates. The impact is larger for the first GESG issue compared to the second one in all specifications.

{Insert Table 6 Panel A about here}

However, the issuers that tap the green market sector frequently attract more shareholders after the third GESG issue (Model 12, β_3=0.437, t=4.80), when one takes into account the financial performance and issue details. When investors mentioned in the block-list join the shareholder base, the companies with several environmental projects experience a decrease of its ownership concentration. Particularly, an increase of 1% of the size of block-listed joiners leads to a decrease of about 1.5% of the *HHI Total* (Model 6 and Model 10), regardless the financial and non-financial performance indicators and 1.6% to 2.2% (Model 8 and Model 12), when those ones are taken into account. In companies where the block-list shareholders sold out their stakes, there is a slight increase of 0.01% of the ownership concentration (Model 2 and Model 4), which is significant at 5%. I have been expected a self-explanatory negative effect instead, all the more BlackRock is recorded as an investor manager type with an index style of investing. The decision to disinvest from the companies committed to sustainable investment would cause an unequivocal decrease of *HHI Total*, at least when such stocks would be sold directly to retail investors. The positive and significant coefficient of *Leaver Block-list* can be explained by the portfolio rebalancing decisions of some existing shareholders searching to meet the requirements during the implementation phase of a more stringent disclosure regulation or the entry of new

institutional players having a low exposure to the threats of anti-woke movement. Such an interpretation is reinforced by the positive and significant effect on the size of *HHI Style* (0.01 t > 2.1) and *HHI Float* (0.33, t > 2.8) reported in Table 6 Panel B and Panel C.

For the control variables I find no consistent significant contribution to neither ownership metrics. There are several exceptions notably for the subsample of companies with several active issues at the end of 2022. When the identity of investors is ignored, the availability of data about the bondholding positions at the issue level causes a decrease of the ownership concentration with respect to the issue date (see Table 6, Panel A and B, Model 9). However, the negative effect of transparency is due mainly to the increase in the size of ownership of the block-list investors.

{Insert Table 6 Panel B about here}

The opposite results reported in Table 6 Panel C (Model 11 and Model 12) hint that the institutional shareholders with low stakes are rather interested in companies addressing the disclosure concerns, especially when those ones possess diversified sustainable investment projects, (several distinct GESG issues). The non-significant effect of *Green Holdings* dummy variable, combined with the positive effect of *Leaver Block-list* for the sample including all non-financial issuers, as reported in Panel C of Table 6 (Model 2 and Model 4), is consistent with the phenomenon of institutional herding for the financial instruments of companies with a green agenda. The model 12 shows that, compared with controlling shareholders and mutual funds, the small-sized institutional investors are nevertheless more sensible to greenwashing risk, likely to arise in companies experiencing an increase in investments (positive coefficient, statistically significant at 5%) but a decrease in revenues (negative coefficient, statistically significant at 5%).

{Insert Table 6 Panel C about here}

3.2. Analysis of the Ownership of Bond Holdings vs. No Bond Holdings GESG Issuers

In order to test whether the companies that disclose information about the GECS bond holdings have experienced a shift in the ownership distribution till the end 2022 compared to their peers, I perform a difference in difference regression on the subset of companies with similar features at the issue date of their first GESG issue. The treated group includes the companies with bond holdings data for at least one of their GESG issues (WB), while the control group is composed of GESG issuers without any information about the identity of investors who subscribed them (PEER). I keep in the two groups only the issuers which are closest in the observed characteristics at the issue date of their first GESG issue. Indeed, the summary statistics reported on the left side of Table 7 on a number of ownership, financial and ESG variables measured at the issue date, show that the WB companies have, on average, a more concentrated ownership, a better ESG

score and higher credit ratings. Including all GESG issuers in the analysis would invalidate the parallel trends assumption behind any Difference-in-Differences design, as explained in Atanasov and Black (2016), because it is likely that a significant difference between the ownership metrics at the end of 2022 be simply the consequence of a time persistent investor preferences for companies with better environmental and risk profiles, unrelated to the voluntary disclosure of bond holdings for GESG debt instruments.

In order to avoid false causal inferences of causation, I identify the peer companies by using propensity-score matching. In the first step, I run a logit equation with an outcome variable equal to 1 for the WB issuers using in different combinations the variables reported in Table 7, after censoring the size, ownership and credit quality proxies in order to remove outliers.

{Insert Table 7 about here}

In the second step, I predict the propensity score for each issuer based on the Logit Model 3 (Table 8).

{Insert Table 8 about here}

The distribution of propensity scores of issuers with and without bond holding information (Fig.1) shows that there is a reasonable overlap of firms across the range of the propensity score distribution lower than the score 0.82.

{Insert Fig.1 about here}

Finally, I perform a nearest-neighbor matching procedure with replacement and find for each WB issuer the company which is closest in observed characteristics. The matching with replacements results in only 99 companies without bondholding disclosure matched to 222 WB issuers. The differences between the means of the covariates for the two balanced groups are no longer significant after the matching procedure, as shown on the right side of Table 7. Those companies that have comparable ownership concentration at the date of the first GESG issue date displays significant differences at the end of 2022, due to a distinct evolution of the sizes of small-sized institutional shareholders, of stable owners, notably of those decreasing their stake, and of shareholders leaving the investor base (see Table 9).

{Insert Table 9 about here}

I run a multiple regression with the difference of each ownership metrics within each pair of WB-PEER issuers, computed at the end of 2022, as dependent variable. The explanatory variables have also been constructed as a difference of the values for the matched issuers. Compared to the set of variables used in the section 3.1 for explaining the time evolution of the ownership structure after GESG issue dates, I add 3 dummy variables for identifying whether

block-list investors are involved at least in one of the matched companies. The first "YES"-"NO" in the sequence corresponds to the treated firm while the second "YES-"NO" identifies the peer issuer. The group "Block-list NO-NO" was excluded from the analysis to avoid multicollinearity.

According to the estimations reported in Table 10, the effects are dependent on the types of shareholders that I take into account for computing the HHI. Without distinguishing among the shareholders, there are more investors that join the companies disclosing the bond holdings information, most likely with an index style of their investing strategy. However, the leavers' size has a significant impact only on the *HHI Float* indicating that the small investors may have a different stance about the support for companies with sustainable investments. A similar explanation could be given for justifying the significant coefficient of the *Leaver Block-list Size* in some specifications. Indeed, the main controversial investor pointed out by the anti-woke movement is BlackRock, which invests in stocks via various index funds under its management. The higher the stake divested by the blocked investors, the lower the differential between the overall ownership of the two sets of companies. However, such leavers encourage small-sized institutional investors to stay or join the green issuer base of transparent companies.

{Insert Table 10 about here}

Compared to the pairs of companies with no exposure to block-listed investors, in all the other cases, (when they have bought a stake in any of GESG issuers) those ones have a negative impact on the *HHI Float* differential. The highest negative impact (-8.355, t=-3.45) is found when the companies without bond holdings data have such blocked owners, while their counterparts do not. The opposite sign is found when the block-list investors leave the shareholdings base of GESG companies, in all estimations where I control for the differential in the ESG performance proxies. The significant negative signs capturing the effects of the Energy Use and CO2 Intensity differential[14] point to greenwashing fears of small shareholders. Indeed, the coefficients of the dummy variables identifying the presence of block-list investors are stronger in the second type estimation model explaining the variation of *HHI Float*.

4. Empirical Analysis of the Trading Volume for GESG Issuers

A rise in the ownership concentration when new shareholders join the investor base or a decrease of it when some of existing shareholders leave seems, at first sight, a tautological relationship. Unless those transactions are made with existing shareholders, the joiners and leavers must trade directly on the market with retail individual investors, impacting thus the level of the trading

[14] The size of the estimated coefficient is due to differences in the scale of explained variables and those two explanatory variables.

volume. Rubin (2007) finds that the market liquidity is driven mainly by institutional holdings but decreases when within this shareholder type class there are several of large size. Moreover, a stable ownership base can lead to a decrease of market liquidity, despite the small size of stakes of strategic and institutional investors that compose it.

In order to address the trading likely to involve retail investors[15], I perform the analysis at two distinct dates, that are: (1) the issue date of the first GESG bond over the sample period and (2) July 27, 2022, which is the date when the governor of Florida made an explicit threat against financial institutions involved in the ESG movement.

In the first case, the null hypothesis that the abnormal trading volume on the event day and cumulated over longer periods are different from 0 is tested by applying a standard Event Study methodology. The normal trading volume is computed as the average of a log transformation of daily trading volume over 100 days prior to the issue date, by taking into account the number of days with no market trade. The abnormal volume is the difference between the log transformation of observed trading volume and the normal trading volume.

Table 11 provides differences of means test on the average abnormal returns between the two samples. The results show that while the average abnormal trading volumes in the event day are similar for the treated and peer firms, on longer run, the liquidity decreases at a higher pace for the companies with no information about the bond holdings. According to Attig et al. (2006), the firms with poor information have also a poor stock liquidity. When I use the same standardized normal volume for computing the cumulative abnormal trading between the July 27, 2022 and the end of 2022 the trend is the same but the empirical significance of the difference between the samples drops to 10%. The block-list shareholders of the companies without bond holdings data exploit the asymmetric information which arises from their superior information about their exposure to climate risk, and reduce their trading with the stock. The adverse selection hypothesis predicts that market liquidity is negatively affected by asymmetric information (Rubin, 2007).

{Insert Table 11 about here}

In order to show how investors react to the release of a green block-list, which is an exogenous shock to asset managers investment opportunities scope, I also run the event study as a difference in difference regression. This one is run by using log transformation of daily trading volume as an outcome variable, firm fixed effects, and an interaction of treated firm and post indicators that captures the estimated differential treatment effect of the announced measure. This time, I restrict

[15] The mutual funds with index investing style must trade to restore the proportion to their benchmark index weights, while open-ended fund must address asset allocations with respect to the direction of the net fund flows from ultimate clients. Public companies often look at stimulating the market of their shares by means of liquidity contracts signed with investment services providers in compliance with market authority requirements.

the sample to companies having at least one GESG bond issued before the event date and report the estimated coefficients for 5 different windows ranging from several days till the next relevant ESG boycott event [16] to the end of 2022. On average, the stocks of transparent companies are traded more than those of peer firms, especially during the last two months of 2022 (see Table 12).

{Insert Table 12 about here}

However, the direction says nothing about the reasons behind the investors' trading decisions. In December 2022, Vanguard, one of the leaders of the passive investing industry, which even if not blamed by the anti-woke movement as a company had two funds under its management included on the banned list,[17] pulled out from the Net Zero Asset Management initiative signaling that some investors began to perceive the political pressure against ESG topic as credible.

As a robustness check, I examine whether the trading volume is triggered by a change in shares outstanding due to equity events, like follow-on offerings. The descriptive statistics reported in Table 13 shows that, there is a low stock supply over the sample period (median change in shares outstanding is 0.00%).

{Insert Table 13 about here}

While there is no significant difference between the two samples for the level or annual variation of outstanding shares (unreported test but available on request), I find a monotonic relationship between the abnormal trading volume after the block-list event and the percentage change of outstanding shares within 2022. The general form of the regression expression used to address this influence is

$$CAV = \gamma_1 \Delta\, Outstanding\ Shares + \gamma_2 WB + \gamma_3 Treasury\ Stocks + \gamma_4 Reward\ Stocks + \sum \gamma_j Block - list\ Investors$$

where CAV is the cumulative abnormal trading volume between the block-list event date (27 July 2022) and the end of 2022. In order to deal with the measurement scale of variables included in the regression, I construct the independent variable by dividing the daily abnormal volumes by 100. *Δ Outstanding Shares* is the percentage change of outstanding shares within 2022. *Treasury Stocks* is a dummy variable equal to 1 if the variation of the outstanding shares within 2022 is negative but higher than -2% while *Reward Stocks* is a dummy variable equal to 1 if this change is positive but lower than 2%. The two control variables proxy the share buyback plans

[16] There are only 6 trading days between the event date and the publication of the letter signed by the general attorneys of the 19 dissident US states.

[17] The two banned funds are Vanguard ESG U.S. Stock ETF and Vanguard FTSE Social Index Fund. Vanguard is investing mainly through index funds which make it buy and hold all stocks composing the benchmark indices.

used by issuers to cover commitments made to insiders under the performance plans, which include often the achievement of environmental KPI. More treasury stocks mean less outstanding shares, indicative for the low the 25th percentile negative percentage reported in Table 13. I remind that the various definitions of *Block-list Investors* are provided in Appendix A.

{Insert Table 13 about here}

The empirical findings about the trading volume reinforce those about the ownership trend. While both joiners and leavers mentioned in the block-list lead to a significant increase in the trading volume, the signal sent to the stock market is not the same. Their very decision to sell out their stock holdings enhances the market liquidity. However, when a banned investor joins the shareholder base, the impact on the trading volume is increasing with the size of its purchased stake. Bearing in mind that the block-list joiners size produces a decrease of the total ownership concentration, the positive coefficient of this explanatory variable significant at 1% level (see Table 14, Model 2 and Model 3) points that the formation of their stakes is likely to create a rise of the sudden stock supply over the number of shares needed to meet such a demand.

{Insert Table 14 about here}

5. Robustness Checks

I conduct a series of robustness tests. First, I exclude from the multiple analysis all GESG issues made during 2022 in order to take into account the limited time that institutional investors have to internalize the events and rebalance their portfolio till the end of the year. Except for some coefficients that become significant at 5%, this set of new regressions do not materially change the reported results.

If I drop the treated firms without any coverage, that are those with a propensity score higher than 0.819, the number of pairs decreases to 211. The covariate balance tests for the truncated sample of treated and control firms find that a weak difference in the size of Capital Expenditures/Total Assets still persists at 10% significance level (p=0.091). For the main difference in difference regression analysis of ownership, the empirical results are confirmed when the estimations are made on the truncated matched sample.

One possible limit of the study is that the distinction between transparent and opaque firms is based only on the search criterion “Holdings” constructed by Refinitiv-Eikon. One can argue that this classification is due to the limited coverage of the data provider instead of a shortage of information faced by investors. I checked whether the companies included in the peer group have bondholding data available for their conventional bonds issued during the analyzed period. There are such data for the majority of them.

Conclusion

I provide an extensive empirical analysis on the evolution of the ownership composition of the non-financial corporations that had issued green and ESG bonds after the first UN summit on the sustainable development. This feature is explored till the end of 2022 based on high-resolution data about shareholders that cover their identity, type and investing style even if those shareholders have just a tiny exposure to the company's risks. The long time span of the analysis allows to identify the shareholders who joined or left the companies, as well as those that had been keeping a stake from the beginning till the end of the analyzed period. The analysis also addresses the likely investors base reshape in the early stage of anti-ESG movement, by identifying the changes in the shareholdings of banned asset managers and financial institutions. My results provide evidence that disclosing the identity of investors who subscribe the green bond issues have an impact on the stock market. On average, the transparent companies attract more investors than the opaque ones. However, both small-sized institutional shareholders and retail investors are sensitive to the trading performed by blocked investors.

The research question tackling the investor base of green issuers should be extended to the bondholders of the GESG issues. Within such a framework, one can test whether some institutional investors are dual holders or choose to invest in several active bonds of the same issuer. A comparative analysis of holdings concentration for the bonds, both GESG and conventional ones, of a subset of issuers for which green bond holdings information are available may reveal whether and which investors have sustainability-linked preferences. Such an extension to bondholders allows to size in the analysis the effects of regulatory shocks, like the European Sustainable Finance Disclosure Regulation, which requires the asset management companies from EU or selling financial products to European clients to clarify how their products address the sustainability issue. Indeed, in the previous literature the green investors are identified based on their voluntary membership to different networks advocating climate centered policies (Flammer, 2020). Unlike those criteria, the European gradual classification of financial investors distinguishes the products that have sustainable investment as their objective (Art. 9 Funds) from investment strategies which include ESG rationales in their selection process (Art. 8 Funds) and those with no special focus on ESG (Art. 6 Funds). All else being equal, the pro-ESG regulation incentivizes the asset managers committed to accelerate the decarbonisation of the global economy to augment the number of investment vehicles, by launching new Art. 9 funds. Tracking each fund position and its change compared to the previous one would provide also a valuable insight into the likely redistribution that may arise from the political pressure. Such a rebalancing strategy is not obvious in this study which is analyzing the ownership, primarily because the

shareholdings are disclosed on the behalf of asset managers instead of the funds under management. Therefore, extending our empirical analysis from the corporation level to the GESG bond issue level is a promising research avenue.

References

Atanasov, Vladimir, and Bernard Black, (2016). Shock-Based Causal Inference in Corporate Finance and Accounting Research. Critical Finance Review, 5, 207-304.
http://dx.doi.org/10.2139/ssrn.1718555

Attig, Najah, Fong, Wai-Ming, Gadhoum, Y. and Larry H.P. Lang, (2006). Effects of large shareholding on information asymmetry and stock liquidity. Journal of Banking & Finance 30(10), 2875–2892. https://doi.org/10.1016/j.jbankfin.2005.12.002

Di Giulli, Alberta, Alexandre Garel, Rony Michaely and Arthur Petit-Romec, 2022. Climate Change and Mutual Fund Voting on Environmental Proposals. ECGI Finance Working Paper No. 815.
http://dx.doi.org/10.2139/ssrn.3997730

Drury, D. Stevenson, (2023). The Gun Industry and the New Anti-Boycott Laws. Florida Law Review, forthcoming.
http://dx.doi.org/10.2139/ssrn.4300410

Edmans, Alex and Clifford Holderness, (2016). Blockholders: A Survey of Theory and Evidence. C.E.P.R. Discussion Papers no. 11442.
https://cepr.org/publications/dp11442

Ehlers, Torsten, Diwen (Nicole) Gao, and Frank Packer, (2021). A taxonomy of sustainable finance taxonomies. BIS Papers No. 18.
http://dx.doi.org/10.2139/ssrn.3945635

Flammer, Caroline, (2021). Corporate green bonds. Journal of Financial Economics. 142(2), 499-516. https://doi.org/10.1016/j.jfineco.2021.01.010

Garrett Daniel and Ivan Ivanov, (2022). Gas, Guns, and Governments: Financial Costs of Anti-ESG Policies. Jacobs Levy Equity Management Center for Quantitative Financial Research Paper. http://dx.doi.org/10.2139/ssrn.4123366

Levels Anouk, Claudia Lambert, and Michael Wedow, (2023). Green bond home bias and the role of supply and sustainability preferences. DNB Working Paper no. 767.
http://dx.doi.org/10.2139/ssrn.4379083

Ramelli, Stefano, Alexander F. Wagner,Richard J. Zeckhauser, and Alexandre Ziegler, (2021). Investor Rewards to Climate Responsibility: Stock-Price Responses to the Opposite Shocks of the 2016 and 2020 U.S. Elections. The Review of Corporate Finance Studies, 10 (4), 748–787.
https://doi.org/10.1093/rcfs/cfab010

Rajgopal, Shivaram, Anup Srivastava, and Rong Zhao, (2023). Do Political Anti-ESG Sanctions Have Any Economic Substance? The Case of Texas Law Mandating Divestment from ESG Asset Management Companies.
http://dx.doi.org/10.2139/ssrn.4386268

Rubin, Amir (2007). Ownership level, ownership concentration and liquidity. Journal of Financial Markets 10(3), 219–248.
https://doi.org/10.1016/j.finmar.2007.04.002

Stevenson, Dru, 2023. The Gun Industry and the New Anti-Boycott Laws. Florida Law Review, forthcoming.
http://dx.doi.org/10.2139/ssrn.4300410

Tang, Dragon Yongjun and Zhang, Yupu, (2020). Do shareholders benefit from green bonds?. Journal of Corporate Finance, 61, 101427.
https://doi.org/10.1016/j.jcorpfin.2018.12.001

Appendix A

Variable Name	Variable Definition
	Ownership Variables
Joiner Size	It is the sum of the stakes of shareholders that were not recorded at the issue date but had joined the shareholder base till the end of 2022.
Leaver Size	It is the sum of the stakes of shareholders that were recorded at the issue date but that had no longer been reported in the ownership summary at the end of 2022.
Stable Ownership Change	It is the variation of the total sum of stakes of all investors belonging to the shareholder base both at the GESG issue date and at the 2022 end.
Joiner Block-list	It is a dummy variable equal to 1 if the ownership summary at the end of 2022 includes at least one shareholder that contains the following indicative names: BlackRock, BNP Paribas, Credit Suisse, Danske Bank A/S, Jupiter Fund Management, Nordea Bank ABP, Schroders Plc, Svenska Handelsbanken, Swedbank, UBS, Goldman Sachs, J.P. Morgan, Morgan Stanley, Wells Fargo.
Leaver Block-list	It is a dummy variable equal to 1 if the ownership summary at the GESG issue date includes at least one shareholder that contains the following indicative names: BlackRock, BNP Paribas, Credit Suisse, Danske Bank A/S, Jupiter Fund Management, Nordea Bank ABP, Schroders Plc, Svenska Handelsbanken, Swedbank, UBS, Goldman Sachs, J.P. Morgan, Morgan Stanley, Wells Fargo.
Joiner Block-list Size	It is computed like the Joiner Size by including only the stakes of investors containing the following indicative names: BlackRock, BNP Paribas, Credit Suisse, Danske Bank A/S, Jupiter Fund Management, Nordea Bank ABP, Schroders Plc, Svenska Handelsbanken, Swedbank, UBS, Goldman Sachs, J.P. Morgan, Morgan Stanley, Wells Fargo.
Leaver Block-list Size	It is computed like the Leaver Size by including only the stakes of investors containing the following indicative names: BlackRock, BNP Paribas, Credit Suisse, Danske Bank A/S, Jupiter Fund Management, Nordea Bank ABP, Schroders Plc, Svenska Handelsbanken, Swedbank, UBS, Goldman Sachs, J.P. Morgan, Morgan Stanley, Wells Fargo.
Stable Block-list Change	It is computed like the Stable Ownership Change by including only the stakes of investors containing the following indicative names: BlackRock, BNP Paribas, Credit Suisse, Danske Bank A/S, Jupiter Fund Management, Nordea Bank ABP, Schroders Plc, Svenska Handelsbanken, Swedbank, UBS, Goldman Sachs, J.P. Morgan, Morgan Stanley, Wells Fargo.
	Identification, Financial and ESG Data of the GESG Issuing Company
Economic Sector	It is a dummy variable equal to 1 if the company belongs to each of the 37 economic sectors represented in the sample and 0 otherwise.
Δ Total Revenue	It is the value financial ratio Total Revenue at the end of 2021 divided by its value at the end of the year before the issue date or 2020 for the issue made in 2022.
Δ Profitability	It is the value financial ratio Return on Capital at the end of 2021 divided by its value at the end of the year before the issue date or 2020 for the issue made in 2022.
Δ Investments	It is the value financial ratio Capital Expenditure/Total Assets at the end of 2021 divided by its value at the end of the year before the issue date or 2020 for the issue made in 2022.
Δ Energy Use	It is the value environmental indicator Energy Use Total at the end of 2021 divided by its value at the end of the year before the issue date or 2020 for the issue made in 2022.
Δ CO2 Intensity	It is the value environmental indicator Total CO2 Equivalent Emissions To Revenues at the end of 2021 divided by its value at the end of the year before the issue date or 2020 for the issue made in 2022.
Δ ESG Score	It is the value of ESG Score at the end of 2021 divided by its value at the end of the year before the issue date or 2020 for the issue made in 2022.
	GESG Issue Characteristics
Issue Currency	There are dummy variables equal to 1 for each principal currency of the GESG issues included in the sample, and 0 otherwise .
Issue Size	It is the logarithm of the par value of the GESG issue, expressed in USD.
Issue Tenor	There are dummy variables equal to 1 for each tenor of the GESG issues, and 0 otherwise.
Issue Type	There are dummy variables equal to 1 if the proceeds are used for the respective green objective: adaptation, alternative energy, biodiversity, circular economy, clean transport, eligible green, energy efficiency equipment upgrade, green construction, other green objective, pollution control, renewable energy, sustainable water, no particular name.
Time from Issue	It is the logarithm of the number of days between the issue's settlement date and Dec. 31st 2022.
Green Holdings	It is a dummy variable equal to 1 if there is information available of the identity of the bondholders and 0 otherwise.

Table 1. Descriptive statistics by Use of Proceeds
Each sample comprises all GESG bonds issued by non-financial corporations, for which there are market identification information available

Use of Proceeds	Number of Issues				Issue Size (mil. USD)			
	Green	ESG	Total	Weight	Green	ESG	Total	Weight
Clean Transport	587	95	682	22.57%	179,311	31,924	211,234	28.83%
Energy Efficiency	695	48	743	24.59%	134,997	11,491	146,488	19.99%
No Explicit Sustainable Use	134	228	362	11.98%	19,993	90,614	110,607	15.10%
Eligible Green Projects	280	63	343	11.35%	60,990	12,358	73,348	10.01%
Renewable Energy	207	40	247	8.17%	48,052	6,803	54,855	7.49%
Adaptation	147	34	181	5.99%	36,825	11,524	48,349	6.60%
Green Constructions	199	19	218	7.21%	36,994	993	37,987	5.18%
Circular Economy	51	21	72	2.38%	16,592	3,576	20,168	2.75%
Other Green	30	9	39	1.29%	7,407	4,820	12,228	1.67%
Alternative Energy	62	1	63	2.08%	6,868	500	7,368	1.01%
Biodiversity	12	4	16	0.53%	4,537	1,557	6,094	0.83%
Pollution Control	22	4	26	0.86%	1,669	469	2,138	0.29%
Sustainable Water	18	3	21	0.69%	1,070	146	1,216	0.17%
Equipment Upgrade	8	1	9	0.30%	483	77	560	0.08%
Total	**2,452**	**570**	**3,022**	**100%**	**555,787**	**176,852**	**732,639**	**100%**

Table 2. Descriptive Statistics of the Size of Green Bond Issues by Country
The sample comprises the green bond issues made by non-financial corporates incorporated in the respective country. The mean and total issued amounts are expressed in mil. USD.

Country	Green Bonds			Country	Green Bonds		
	N	Issued Amount			N	Issued Amount	
		Mean	Total			Mean	Total
United States	249	470	116,989	Brazil	46	59	2,709
China (Mainland)	386	187	72,309	Singapore	12	159	1,909
France	80	608	48,633	Turkey	3	627	1,880
Netherlands	66	667	43,996	Australia	8	218	1,742
South Korea	196	165	32,254	Ukraine	2	825	1,650
Germany	49	631	30,900	Peru	4	402	1,608
Japan	266	90	24,026	Marshall Islands	2	750	1,500
Sweden	333	70	23,246	Mauritius	2	750	1,500
Italy	35	501	17,546	New Zealand	13	100	1,299
United Kingdom	38	372	14,144	Argentina	18	65	1,168
Cayman Islands	37	325	12,020	British Virgin Islands	2	580	1,160
Denmark	25	427	10,667	Georgia	2	500	1,000
Norway	98	106	10,372	Malaysia	148	6	853
Spain	28	365	10,226	Poland	2	387	774
Canada	26	314	8,154	Lithuania	3	224	673
Chile	16	466	7,449	Philippines	4	162	647
Finland	20	297	5,933	Ireland	1	625	625
Portugal	10	528	5,276	Czech Republic	1	543	543
Hong Kong	15	340	5,096	Greece	1	543	543
India	20	235	4,704	Guernsey	1	434	434
Mexico	12	374	4,481	Hungary	5	68	339
Belgium	18	227	4,091	Russia	4	84	335
Taiwan	41	99	4,058	Latvia	3	91	271
Switzerland	25	158	3,958	Laos	3	86	257
Bermuda	9	396	3,560	Luxembourg	2	111	222
Austria	10	299	2,988	South Africa	3	21	64
Thailand	46	64	2,959	Iceland	2	25	49

Table 3. Descriptive Statistics by Country and Use of Proceeds
The subsample comprises the green bonds issued by non-financial corporations with the domicile in one of the Top 10 countries, according to the number of green bonds issues. The mean and total issued amounts are expressed in mil. USD.

			China	Sweden	Japan	US	South Korea	Malaysia	Norway	France	Netherlands	Germany
Clean Transport	N		56	120	56	52	75		32	26	20	26
	Issued Amount	Mean	191	82	167	708	253		98	737	668	588
		Total	10,699	9,841	9,352	36,839	18,935		3,123	19,159	13,367	15,296
Energy Efficiency	N		64	58	127	48	46	102	28	18	18	8
	Issued Amount	Mean	216	85	55	556	60	6	72	686	721	533
		Total	13,827	4,905	7,036	26,678	2,776	603	2,013	12,347	12,972	4,261
Eligible Green Projects	N		120	42	4	18	6	16	8	18	2	2
	Issued Amount	Mean	171	65	189	563	435	4	259	589	380	543
		Total	20,503	2,741	754	10,125	2,612	57	2,074	10,602	760	1,086
Green Construction	N		20	1	4	8	26		2	23	9	4
	Issued Amount	Mean	184	49	72	528	108		151	558	604	434
		Total	4,793	2,541	1,663	10,562	968		1,206	2,232	4,831	434
Renewable Energy	N		14		2	11	61		4	22	39	,
	Issued Amount	Mean	203		88	542	57		51	60	730	878
		Total	12,391		1,931	7,591	2,236		153	119	8,033	5,265
Circular Economy	N		3	7	3	6	6		4	3	3	3
	Issued Amount	Mean	39	83	205	774	182		143	724	429	507
		Total	118	583	616	4,643	1,093		573	2,171	1,286	1,520
Alternative Energy	N		3	1		35	2		1	3		
	Issued Amount	Mean	182	49		15	62		76	537		
		Total	546	49		520	124		76	1,612		
Biodiversity	N		1	1		1	5		1			
	Issued Amount	Mean	49	29		350	483		203			
		Total	49	29		350	2,414		203			
Other Green	N		13		2	3	3			3		1
	Issued Amount	Mean	118		27	1,057	92			13		1,086
		Total	1,538		54	3,171	277			38		1,086
Sustainable Water	N		3			1						
	Issued Amount	Mean	39			500						
		Total	118			500						
Pollution Control	N		6		4		2			3		
	Issued Amount	Mean	102		58		53			118		
		Total	612		232		106			353		
Equipment Upgrade	N			1	5		2					
	Issued Amount	Mean		97	54		57					
		Total		97	272		114					
Adaptation	N		10	34	11	19			11		2	2
	Issued Amount	Mean	255	49	95	512			56		760	977
		Total	2,551	1,673	1046	9735			615		1,520	1,954
No Explicit Sustainable Use	N		20	17	9	32	1	30	2		2	
	Issued Amount	Mean	228	46	119	196	600	6	168		615	
		Total	4,565	788	1,070	6,276	600	192	336		1,229	

Table 4. Descriptive Statistics by Economic Sector

The sample includes only the GESG bond issues made by public non-financial corporations. The *With Bond Holdings* subsample includes GESG issues made by the companies that have data about holdings of at least one of GESG issues. The *Without Bond Holdings* subsample includes GESG issues made by the companies that have never disclosed data about holdings for any of their GESG issues.

Sector	With Bond Holdings		Without Bond Holdings		Total	
	N	weight	N	weight	N	weight
Utility - Other	133	22.0%	128	15.2%	261	18.1%
Service - Other	98	16.2%	120	14.3%	218	15.1%
Real Estate Investment Trust	52	8.6%	129	15.4%	181	12.5%
Home Builders	76	12.6%	49	5.8%	125	8.7%
Electronics	23	3.8%	51	6.1%	74	5.1%
Transportation - Other	15	2.5%	51	6.1%	66	4.6%
Chemicals	18	3.0%	29	3.5%	47	3.3%
Oil and Gas	23	3.8%	22	2.6%	45	3.1%
Metals/Mining	13	2.2%	28	3.3%	41	2.8%
Automotive Manufacturer	22	3.6%	15	1.8%	37	2.6%
Building Products	11	1.8%	21	2.5%	32	2.2%
Railroads	5	0.8%	27	3.2%	32	2.2%
Telecommunications	13	2.2%	15	1.8%	28	1.9%
Gas Utility - Local Distribution	8	1.3%	19	2.3%	27	1.9%
Conglomerate/Diversified Mfg	16	2.7%	10	1.2%	26	1.8%
Food Processors	10	1.7%	16	1.9%	26	1.8%
Retail Stores - Other	13	2.2%	10	1.2%	23	1.6%
Leasing	4	0.7%	16	1.9%	20	1.4%
Industrials - Other	7	1.2%	13	1.6%	20	1.4%
Machinery	8	1.3%	10	1.2%	18	1.2%
Information/Data Technology	8	1.3%	10	1.2%	18	1.2%
Vehicle Parts	4	0.7%	10	1.2%	14	1.0%
Beverage/Bottling	5	0.8%	9	1.1%	14	1.0%
Retail Stores - Food/Drug	7	1.2%	3	0.4%	10	0.7%
Consumer Products	2	0.3%	5	0.6%	7	0.5%
Airline	0		6	0.7%	6	0.4%
Textiles/Apparel/Shoes	1	0.2%	5	0.6%	6	0.4%
Containers	3	0.5%	2	0.2%	5	0.3%
Publishing	2	0.3%	2	0.2%	4	0.3%
Pharmaceuticals	2	0.3%	1	0.1%	3	0.2%
Health Care Facilities	0		2	0.2%	2	0.1%
Health Care Supply	0		2	0.2%	2	0.1%
Leisure	0		2	0.2%	2	0.1%
Lodging	0		1	0.1%	1	0.1%
Restaurants	0		1	0.1%	1	0.1%
Gas Utility - Pipelines	1	0.2%	0		1	0.1%
Cable/Media	1	0.2%	0		1	0.1%

Table 5 Panel A. Comparison of Ownership Stake Metrics

The *With Bond Holdings* sample includes the non-financial corporations with holdings data about at least one GESG bond issues. The *Without Bond Holdings* sample includes the non-financial corporations without holdings data about any of the GESG bond issues. Table shows (1) by row, the t-test for differences in the mean values of six ownership metrics compounded at the date of the 1st GESG issue and the end of 2022 for each sample and (2) by column, the t-test for differences in the mean values of six ownership metrics between the two samples. *HHI Total* is the sum of squared stakes of the shareholders recorded in the shareholder report at the respective date. *HHI Style* is the sum of squared stakes but those of institutional investors with index fund investment style recorded in the shareholders report at the respective date. *HHI Float* is the sum of squared stakes but those of controlling shareholders and institutional investors with index fund investment style recorded in the shareholders report at the respective date. *Concentration Index* is the sum of stakes of all shareholders recorded in the shareholder report at the end of the respective date. The *Stable Owners* is the sum of the stakes of all shareholders that are reported both at issue date and at the end of 2022. *Leavers* is the sum of stakes of shareholders that are reported at issue date but are no longer reported at the end of 2022. *Joiners* is the sum of stakes of the shareholders that are not reported at the issue date but are reported at the end of 2022. T-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant differences (at 5% or better) are in boldface**.**

ESG Issuer	HHI Total				HHI Style			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean Leavers	Mean Joiners	Norm. Diff	T-Test Value
With Bond Holdings	1,254	1,197	5	(1.344)	1,214	1,151	0.64%	(1.495)
Without Bond Holding Data	1,134	1,121	13	(0.472)	1,124	1,109	15	(0.510)
Norm. Diff	120	76			10	0.51%		
T-Test Value	(0.929)	(0.592)			(0.696)	(0.399)		
GESG Issuer	HHI Float				Concentration Index			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	255	240	15	(1.489)	69.38%	69.01%	0.37%	(0.558)
Without Bond Holding Data	255	251	4	(0.667)	60.96%	61.08%	-0.12%	(-0.290)
Norm. Diff	0	-11			**8.42%*****	**7.93%*****		
T-Test Value	(0.010)	(0.448)			(5.836)	(5.526)		
GESG Issuer	Stable Owners				Unstable Owners			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	61.98%	61.43%	0.05%	(1.046)	7.39%	7.57%	0.28%	(-0,289)
Without Bond Holding Data	56.82%	56.50%	0.32%	(1.107)	4.14%	4.57%	0.43%	(-1,102)
Norm. Diff	**5.16%*****	**4.93%*****			**3.25%*****	**3.00%*****		
T-Test Value	(3.451)	(3.214)			(4.194)	(3.693)		

Table 5 Panel B. Comparison of Ownership Concentration Index by Shareholder's Type

The *With Bond Holdings* sample includes the non-financial corporations with holdings data about at least one GESG bond issues. The *Without Bond Holdings* sample includes the non-financial corporations without holdings data about any of the GESG bond issues. Table shows (1) by row, the unpaired T-test for differences in the mean values of ownership concentration index by shareholder's type at the date of the 1st GESG issue and the end of 2022 for each sample and (2) by column, the T-test for differences in the mean values of the ownership concentration index by shareholder's type between the two samples. The ownership concentration index by shareholders' type is the sum of stakes of all shareholders of the respective type T-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant differences (at 5% or better) are in boldface.

GESG Issuer	Brokerage Firms				Investment Managers			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	2.27%	2.32%	-0.05%	(-0.210)	40.23%	40.00%	0.23%	(0.104)
Without Bond Holdings	1.49%	1.62%	-0.13%	(-0.630)	30.61%	30.36%	0.25%	(0.154)
Norm. Diff	**0.8%*****	**0.70%*****			**9.63%*****	**9.64%*****		
T-Test Value	(3.369)	(3.426)			(4.887)	(4.672)		

GESG Issuer	Strategic Entities				Funds
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	
With Bond Holdings	29.15%	28.92%	0.23%	(0.923)	
Without Bond Holdings	30.43%	30.54%	-0.11%	(-0.051)	NA
Norm. Diff	1.28%	-1.62%			
T-Test Value	(0.559)	(-0.713)			

Table 5 Panel C. Comparison of Ownership Concentration Index by Shareholder's Investment Style

The *With Bond Holdings* sample includes the non-financial corporations with holdings data about at least one GESG bond issues. The *Without Bond Holdings* sample includes the non-financial corporations without holdings data about any of the GESG bond issues. Table shows (1) by row, the unpaired T-test for differences in the mean values of ownership concentration index by shareholder's investment style at the date of the 1st GESG issue and the end of 2022 for each sample and (2) by column, the T-test for differences in the mean values of the ownership concentration index by shareholder's investment style between the two samples. The ownership concentration index by shareholders' subtype is the sum of stakes of all shareholders of the respective subtype T-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant differences (at 5% or better) are in boldface.

GESG Issuer	Aggressive Growth				Broker-Dealer				Core Growth			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	0.32%	0.35%	-0.02%	(-0.359)	2.78%	2.83%	-0.04%	(-0.163)	7.28%	7.50%	-0.22%	(-0.396)
Without Bond Holding Data	0.08%	0.07%	0.01%	(0.189)	1.52%	1.67%	-0.15%	(-0.671)	9.03%	8.75%	0.28%	(0.400)
Norm. Diff	**0.24%*****	**0.28%*****			**1.26%*****	**1.16%*****			**-1.75%*****	**-1.25%****		
T-Test Value	(5.348)	(4.170)			(4.494)	(4.415)			(2.794)	(2.034)		
GESG Issuer	Core Value				Deep Value				Emerging Markets			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	5.61%	5.31%	0.30%	(0.732)	1.57%	1.43%	0.14%	(0.740)	0.17%	0.12%	0.05%	(0.527)
Without Bond Holding Data	3.70%	3.64%	0.06%	(0.226)	1.06%	1.11%	-0.05%	(-0.351)	0.48%	0.47%	0.01%	(0.049)
Norm. Diff	**1.19%*****	**1.67%*****			**0.51%*****	**0.32%****			-0.31%	-0.34%		
T-Test Value	(5.543)	(4.931)			(2.953)	(2.067)			(-1.006)	(1.328)		
GESG Issuer	GARP				Growth				Hedge Fund			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	5.35%	5.22%	0.13%	(0.267)	2.32%	2.11%	0.21%	(0.743)	2.04%	1.66%	0.38%	(0.991]
Without Bond Holding Data	4.04%	4.08%	-0.04%	(-0.110)	2.21%	2.03%	0.18%	(0.730)	0.38%	0.25%	0.13%	(1.254)
Norm. Diff	**1.31%*****	**1.14%*****			0.11%	0.08%			**1.66%*****	**1.41%*****		
T-Test Value	(3.107)	(2.753)			(0.424)	(0.291)			(4.992)	(6.487)		
GESG Issuer	Income Value				Index				Long/Short			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	0.40%	0.39%	0.01%	(0.162)	9.60%	10.51%	-0.09%	(-1.011)	0.07%	0.08%	-0.01%	(-0.296)
Without Bond Holding Data	0.15%	0.14%	0.01%	(0.472)	5.33%	5.72%	-0.39%	(-1.120)	0.47%	0.41%	0.06%	(0.143)
Norm. Diff	**0.25%*****	**0.25%*****			**4.27%*****	**4.79%*****			-0.40%	-0.33%		
T-Test Value	(4.786)	(5.712)			(6.449)	(6.774)			(1.201)	(1.152)		

GESG Issuer	Mixed Style				Momentum				Sector Specific			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	0.10%	0.03%	**0.07%****	(2.080)	0.01%	0.01%	0.00%	(0.541)	1.03%	1.13%	-0.10%	(-0.679)
Without Bond Holding Data	0.01%	0.01%	0.00%	(0.269)	0.01%	0.00%	0.01%	(0.785)	0.62%	0.92%	**0.30%***	(-1.716)
Norm. Diff	**0.09%****	**0.02%****			0.00%	0.00%			0.41%	0.38%		
T-Test Value	(2.480)	(2.432)			(0.171)	(0.699)			(1.376)	(1.205)		

GESG Issuer	Specialty				VC/Private Equity				Yield			
	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value	Mean At Issue	Mean 2022	Norm. Diff	T-Test Value
With Bond Holdings	0.45%	0.34%	0.12%	(0.982)	1.70%	1.91%	-0.21%	(-0.198)	0.95%	0.73%	0.22%	(0.515)
Without Bond Holding Data	0.19%	0.18%	0.01%	(0.053)	2.27%	2.65%	-0.38%	(-0.299)	0.50%	0.45%	0.05%	(0.449)
Norm. Diff	0.26%	0.16%			-0.57%	-0.74%			0.45%	0.28%		
T-Test Value	(1.491)	(1.081)			(0.542)	(0.597)			(1.331)	(0.970)		

Table 6 Panel A. Change of HHI Total: Firm-GESG Issue Level Analysis

This table reports the results of regressions of the *Δ HHI Total* from issue date of each GESG to 2022 on the ownership metrics and control variables. *HHI Total* is the sum of squared stakes of all reported shareholders. The independent variable, ownership, is decomposed into subgroups based on the transient status of shareholders, that is stable, leavers and joiners, with respect to each GESG issue date. *Block-list* identifies the shareholders whose name indicates that they are included on the list of dissident US states. The definitions of variables are provided in Appendix A. Standard errors are clustered at issuer level in all three sets of estimations. T-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant differences (at 5% or better) are in boldface.

	1st GESG Issue Date				2nd GESG Issue Date				3rd and following GESG Issues Dates			
	1	2	3	4	5	6	7	8	9	10	11	12
Green Holdings	-0.009	-0.000	-0.010	-0.001	-0.024*	-0.017	-0.034*	-0.028	**-0.067****	-0.017	-0.081*	-0.021
	(-1.10)	(-0.00)	(-1.18)	(-0.12)	(-1.82)	(-1.45)	(-1.73)	(-1.52)	(-2.52)	(-1.15)	(-1.84)	(-0.91)
Δ Stable Ownership	**0.389*****	**0.508*****	**0.387*****	**0.514*****	**0.174****	**0.305*****	**0.188****	**0.326*****	0.064	**0.416*****	-0.039	**0.716*****
	(3.37)	(4.82)	(3.45)	(5.01)	(1.98)	(2.93)	(2.01)	(3.64)	(0.43)	(2.86)	(-0.19)	(2.89)
Joiner Size	**0.391****	**0.388*****	**0.431****	**0.417*****	**0.233*****	**0.346*****	**0.238*****	**0.362*****	**0.251*****	**0.421*****	**0.307*****	**0.437*****
	(2.10)	(2.73)	(2.16)	(2.84)	(3.68)	(4.05)	(3.69)	(4.00)	(3.64)	(5.01)	(3.11)	(4.80)
Leaver Size	**-0.329*****	**-0.336*****	**-0.358*****	**-0.362*****	-0.166*	-0.092	-0.153	-0.132	0.045	-0.069	0.037	0.015
	(-2.83)	(-3.28)	(-2.89)	(-3.38)	(-1.86)	(-1.09)	(-0.86)	(-0.88)	(0.29)	(-0.66)	(0.21)	(0.14)
Δ Stable Block-list		**-1.378*****		**-1.463*****		-0.560		-0.430		-0.118		-0.436
		(-2.64)		(-2.76)		(-1.60)		(-0.98)		(-0.23)		(-0.40)
Joiner Block-list		-0.006		-0.005		0.010		0.015		-0.006		0.013
		(-0.64)		(-0.49)		(0.96)		(0.91)		(-0.29)		(0.45)
Joiner Block-list Size		-0.590		-0.746*		**-1.492*****		**-1.561*****		**-1.588*****		**-2.148*****
		(-1.48)		(-1.70)		(-2.75)		(-2.69)		(-4.51)		(-4.57)
Leaver Block-list		**0.013****		**0.013****		0.003		0.012		0.005		-0.012
		(2.38)		(2.09)		(0.41)		(1.07)		(0.47)		(-0.63)
Leaver Block-list Size		0.735		0.744		-0.411		-0.803		-0.717*		-0.947
		(1.50)		(1.32)		(-0.84)		(-1.03)		(-1.79)		(-1.26)
Δ Total Revenue			0.007	0.018			0.046	0.064*			0.019	**0.090***
			(0.63)	(1.43)			(1.34)	(1.94)			(0.29)	(1.89)
Δ Profitability			-0.001	-0.001			-0.002	-0.000			-0.004	0.004
			(-0.72)	(-0.85)			(-1.40)	(-0.26)			(-1.02)	(1.00)
Δ Investments			-0.002	-0.001			-0.001	-0.001			0.002	**-0.006*****
			(-1.08)	(-0.91)			(-0.54)	(-0.81)			(0.81)	(-2.79)
Δ Energy Use			-0.000	-0.000*			-0.023	-0.023			-0.004	-0.016
			(-0.88)	(-1.73)			(-1.44)	(-1.50)			(-0.07)	(-0.46)
Δ CO2 Intensity			0.000*	-0.000			0.026	0.027			0.008	0.017
			(1.89)	(-0.49)			(1.40)	(1.46)			(0.11)	(0.38)
Δ ESG Score			0.009	0.012*			-0.033	-0.014			-0.054	-0.027
			(1.44)	(1.85)			(-1.08)	(-0.52)			(-1.27)	(-0.94)
Issue Size	0.005	0.002	0.005	0.002	0.011	0.011*	0.018	0.015	0.016	0.011	0.016	0.017*
	(1.45)	(0.93)	(1.29)	(0.56)	(1.57)	(1.80)	(1.61)	(1.64)	(1.52)	(1.36)	(1.08)	(1.69)
Time from Issue	-0.001	-0.001	-0.002	-0.000	0.001	-0.001	-0.004	-0.006	0.003	-0.003	-0.004	-0.009
	(-0.45)	(-0.28)	(-1.20)	(-1.36)	(0.34)	(-0.14)	(0.30)	(-0.39)	(0.46)	(-0.55)	(0.10)	(-1.80)
Economic Sector	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Currency	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Tenor	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Type	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Intercept	-0.111*	-0.071	-0.126	-0.091	-0.187	-0.210*	-0.330*	-0.306*	-0.436*	-0.309*	-0.317	**-0.525****
	(-1.80)	(-1.22)	(-1.43)	(-1.12)	(-1.47)	(-1.73)	(-1.66)	(-1.74)	(-1.77)	(-1.80)	(-1.20)	(-2.25)
N	685	685	605	605	191	191	159	159	160	160	118	118
R2	0.26	0.40	0.30	0.43	0.47	0.60	0.52	0.64	0.55	0.77	0.59	0.82
R2_adj	0.24	0.37	0.26	0.40	0.40	0.54	0.42	0.55	0.49	0.73	0.48	0.76

Table 6 Panel B. Change of HHI Style: Firm-GESG Issue Level Analysis

This table reports the results of regressions of the *Δ HHI Style* from issue date of each GESG to 2022 on the ownership metrics and control variables. *HHI Style* is the sum of squared stakes of all reported shareholders but the investment managers having an Index style of investment. The independent variable, ownership, is decomposed into subgroups based on the transient status of shareholders, that is stable, leavers and joiners, with respect to each GESG issue date. *Block-list* identifies the shareholders whose name indicates that they are included on the list of dissident US states. The definitions of variables are provided in Appendix A. Standard errors are clustered at issuer level in all three sets of estimations. T-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant differences (at 5% or better) are in boldface.

	1st GESG Issue Date				2nd GESG Issue Date				3rd and following GESG Issues Dates			
	1	2	3	4	5	6	7	8	9	10	11	12
Green Holdings	-0.009	-0.000	-0.010	-0.001	-0.024*	-0.016	-0.034*	-0.027	**-0.068****	-0.017	-0.082*	-0.022
	(-1.12)	(-0.00)	(-1.20)	(-0.12)	(-1.81)	(-1.39)	(-1.72)	(-1.49)	(-2.52)	(-1.14)	(-1.86)	(-0.92)
Δ Stable Ownership	**0.382*****	**0.504*****	**0.381*****	**0.511*****	0.168*	**0.305*****	**0.183***	**0.328*****	0.056	**0.414*****	-0.052	**0.710*****
	(3.29)	(4.77)	(3.37)	(4.96)	(1.90)	(2.92)	(1.95)	(3.67)	(0.37)	(2.84)	(-0.26)	(2.85)
Joiner Size	**0.389****	**0.386*****	**0.430****	**0.416*****	**0.227*****	**0.342*****	**0.232*****	**0.359*****	**0.249*****	**0.421*****	**0.307*****	**0.438*****
	(2.08)	(2.72)	(2.15)	(2.85)	(3.48)	(3.96)	(3.52)	(3.90)	(3.57)	(5.00)	(3.08)	(4.79)
Leaver Size	**-0.329*****	**-0.335*****	**-0.359*****	**-0.363*****	-0.162*	-0.084	-0.142	-0.117	0.047	-0.069	0.038	0.015
	(-2.82)	(-3.28)	(-2.89)	(-3.40)	(-1.74)	(-0.98)	(-0.77)	(-0.76)	(0.30)	(-0.65)	(0.21)	(0.15)
Δ Stable Block-list		**-1.411*****		**-1.497*****		-0.626*		-0.505		-0.201		-0.514
		(-2.71)		(-2.84)		(-1.77)		(-1.13)		(-0.39)		(-0.48)
Joiner Block-list		-0.006		-0.005		0.011		0.016		-0.007		0.012
		(-0.65)		(-0.50)		(1.00)		(0.93)		(-0.35)		(0.39)
Joiner Block-list Size		-0.595		-0.737*		**-1.557*****		**-1.626*****		**-1.614*****		**-2.168*****
		(-1.48)		(-1.68)		(-2.81)		(-2.73)		(-4.57)		(-4.58)
Leaver Block-list		**0.013****		**0.013****		0.002		0.011		0.005		-0.011
		(2.37)		(2.07)		(0.26)		(0.95)		(0.46)		(-0.61)
Leaver Block-list Size		0.736		0.741		-0.444		-0.871		-0.706*		-0.941
		(1.50)		(1.31)		(-0.89)		(-1.11)		(-1.75)		(-1.25)
Δ Total Revenue			0.007	0.018			0.047	0.065*			0.021	0.092*
			(0.58)	(1.41)			(1.35)	(1.93)			(0.32)	(1.91)
Δ Profitability			-0.001	-0.001			-0.002	-0.000			-0.004	0.004
			(-0.72)	(-0.85)			(-1.43)	(-0.30)			(-1.08)	(0.97)
Δ Investments			-0.002	-0.001			-0.001	-0.002			0.002	**-0.006*****
			(-1.09)	(-0.92)			(-0.57)	(-0.84)			(0.80)	(-2.79)
Δ Energy Use			-0.000	-0.000*			-0.022	-0.023			-0.005	-0.017
			(-0.88)	(-1.74)			(-1.38)	(-1.45)			(-0.09)	(-0.48)
Δ CO2 Intensity			**0.000****	-0.000			0.026	0.027			0.009	0.018
			(1.98)	(-0.47)			(1.34)	(1.41)			(0.13)	(0.40)
Δ ESG Score			0.009	0.012*			-0.033	-0.014			-0.055	-0.027
			(1.44)	(1.87)			(-1.06)	(-0.50)			(-1.28)	(-0.95)
Issue Size	0.004	0.002	0.004	0.001	0.011	0.011*	0.018	0.015	0.015	0.010	0.015	0.017
	(1.41)	(0.89)	(1.25)	(0.52)	(1.49)	(1.73)	(1.56)	(1.59)	(1.49)	(1.33)	(1.05)	(1.65)
Time from Issue	-0.001	-0.001	-0.002	-0.000	0.001	-0.000	-0.004	-0.006	0.003	-0.003	-0.005	-0.009
	(-0.50)	(-0.30)	(-0.58)	(-0.06)	(0.35)	(-0.03)	(-0.84)	(-1.03)	(0.47)	(-0.49)	(-0.41)	(-0.71)
Economic Sector	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Currency	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Tenor	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Type	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Intercept	-0.108*	-0.068	-0.123	-0.088	-0.180	-0.206*	-0.326	-0.304*	-0.433*	-0.304*	-0.316	**-0.527****
	(-1.75)	(-1.17)	(-1.38)	(-1.08)	(-1.39)	(-1.69)	(-1.63)	(-1.71)	(-1.74)	(-1.76)	(-1.19)	(-2.25)
N	685	685	605	605	191	191	159	159	160	160	118	118
R2	0.26	0.40	0.29	0.43	0.44	0.59	0.50	0.63	0.54	0.77	0.58	0.82
R2_adj	0.23	0.37	0.26	0.40	0.37	0.52	0.40	0.54	0.48	0.73	0.48	0.76

Table 6 Panel C. Change of HHI Float: Firm-GESG Issue Level Analysis

This table reports the results of regressions of the *Δ HHI Float* from issue date of each GESG to 2022 on the ownership metrics and control variables. *HHI Float* is the sum of squared stakes of all reported shareholders but the investment managers having an Index style of investment and controlling shareholders with stakes higher than 30%. The independent variable, ownership, is decomposed into subgroups based on the transient status of shareholders, that is stable, leavers and joiners, with respect to each GESG issue date. *Block-list* identifies the shareholders whose name indicates that they are included on the list of dissident US states. The definitions of variables are provided in Appendix A. Standard errors are clustered at issuer level in all three sets of estimations. T-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant differences (at 5% or better) are in boldface.

	1st GESG Issue Date				2nd GESG Issue Date				3rd and following GESG Issues Dates			
	1	2	3	4	5	6	7	8	9	10	11	12
Green Holdings	0.000	0.001	0.000	0.000	-0.001	0.000	0.002	0.003	0.011	0.014	**0.033****	**0.032****
	(0.26)	(0.46)	(0.00)	(0.23)	(-0.40)	(0.05)	(0.57)	(1.01)	(1.26)	(1.30)	(2.33)	(2.02)
Δ Stable Ownership	**0.042****	**0.041****	**0.043****	**0.043****	0.012	0.018	0.023	0.031	0.013	0.025	-0.025	-0.049
	(2.58)	(2.44)	(2.53)	(2.38)	(0.37)	(0.54)	(0.77)	(0.95)	(0.25)	(0.34)	(-0.79)	(-0.86)
Joiner Size	**0.042****	**0.045****	**0.041****	**0.041****	**0.048*****	**0.056*****	**0.045*****	**0.050*****	**0.078*****	**0.089*****	**0.082*****	**0.092*****
	(2.38)	(2.38)	(2.08)	(2.04)	(4.22)	(3.65)	(4.17)	(3.19)	(4.06)	(2.86)	(3.98)	(3.37)
Leaver Size	**-0.079*****	**-0.083*****	**-0.077*****	**-0.082*****	**-0.095*****	**-0.094*****	-0.032	-0.037	**-0.105*****	**-0.111*****	**-0.155*****	**-0.160*****
	(-3.72)	(-3.88)	(-3.39)	(-3.58)	(-3.13)	(-3.14)	(-0.81)	(-0.85)	(-3.56)	(-3.05)	(-3.85)	(-4.01)
Δ Stable Block-list		0.028		0.020		0.029		-0.029		-0.013		-0.063
		(0.47)		(0.33)		(0.30)		(-0.29)		(-0.08)		(-0.23)
Joiner Block-list		-0.001		-0.001		-0.005		-0.008		-0.004		-0.021*
		(-0.66)		(-0.48)		(-1.64)		(-1.64)		(-0.54)		(-1.77)
Joiner Block-list Size		-0.114		-0.077		-0.110		-0.093		-0.054		0.099
		(-1.35)		(-0.73)		(-1.16)		(-0.94)		(-0.39)		(0.85)
Leaver Block-list		-0.002		-0.003*		-0.001		-0.002		0.001		0.013
		(-1.18)		(-1.67)		(-0.57)		(-0.67)		(0.29)		(1.15)
Leaver Block-list Size		**0.325*****		**0.377*****		0.110		0.038		0.254		0.187
		(2.90)		(2.84)		(0.83)		(0.23)		(1.56)		(0.65)
Δ Total Revenue			0.002	0.001			0.003	0.003			-0.033*	**-0.042****
			(0.93)	(0.83)			(0.30)	(0.36)			(-1.79)	(-2.12)
Δ Profitability			-0.000	-0.000			-0.000	-0.000			0.001	0.001
			(-1.19)	(-0.91)			(-0.35)	(-0.55)			(0.67)	(0.71)
Δ Investments			**0.000*****	**0.000*****			0.001	0.001			**0.001****	**0.002****
			(2.87)	(3.51)			(1.07)	(1.14)			(2.10)	(2.27)
Δ Energy Use			0.000*	0.000			0.004	0.004			0.016	0.018*
			(1.79)	(1.30)			(0.95)	(1.03)			(1.45)	(1.74)
Δ CO2 Intensity			-0.000	-0.000			-0.004	-0.005			-0.019	-0.020
			(-0.91)	(-1.03)			(-0.80)	(-0.88)			(-1.41)	(-1.63)
Δ ESG Score			-0.001	0.000			0.001	0.002			0.007	0.011
			(-0.45)	(0.19)			(0.20)	(0.35)			(0.92)	(1.43)
Issue Size	0.000	0.000	0.000	0.000	-0.002	-0.002	-0.004	-0.004	-0.007	-0.007	**-0.012****	**-0.011****
	(0.32)	(0.73)	(0.15)	(0.45)	(-0.94)	(-0.91)	(-1.43)	(-1.46)	(-1.61)	(-1.52)	(-2.25)	(-2.19)
Time from Issue	0.001	0.001	0.001	0.002**	0.002*	0.002*	0.002	0.003*	-0.000	-0.001	-0.002	0.001
	(1.01)	(1.36)	(1.39)	(2.01)	(1.88)	(1.96)	(1.48)	(1.85)	(-0.03)	(-0.37)	(-0.56)	(0.19)
Economic Sector	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Currency	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Tenor	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Issue Type	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Intercept	-0.001	-0.004	-0.004	-0.008	0.026	0.028	0.052	0.054	0.115	0.117	0.200*	0.193*
	(-0.10)	(-0.44)	(-0.40)	(-0.63)	(0.73)	(0.77)	(1.20)	(1.18)	(1.33)	(1.30)	(1.87)	(1.82)
N.	685	685	605	605	191	191	159	159	160	160	118	118
R2	0.24	0.26	0.25	0.27	0.47	0.49	0.47	0.49	0.70	0.71	0.76	0.77
R2_adj	0.21	0.23	0.21	0.23	0.40	0.41	0.36	0.36	0.67	0.66	0.70	0.70

Table 7. Comparison of Companies with and without Bond holdings Data

Summary statistics for key ownership, financial and ESG variables for firms having at least one disclosure about bond holdings of GESG issues performed over the sample period (WB) and companies having issued GESG bonds but without disclosing any information about the bond holdings (PEER). Control firms are the nearest-neighbor propensity score match for the WB firms. Matching is done with replacement using the propensity score logit Model 3 reported in Table 8. *Leverage* is defined as the Total Debt divided by Total Equity. *Liquidity* is defined by the Cash Holdings and Cash Equivalents divided by Total Assets. *EBITDA Margin* is defined as the EBITDA divided by Sales. *ROA* is defined by the EBIT divided by Total Assets. *Credit Rating* is the average of assigned credit ratings converted to cardinal values. Table shows T-test for differences in covariates. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant results (at 5% or better) are in boldface.

Variable	Before PSM				After PSM			
	Mean PEER	Mean WB	Norm. Diff	T-Test Value	Mean PEER	Mean WB	Norm. Diff	T-Test Value
Ownership Concentration Index	60.96%	69.38%	**1.44%*****	-5.836	67.70%	69.72%	-2.03%	-1.229
HHI Total	1,134	1,254	129	-0.929	1,215	1,224	-9	-0.063
HHI Style	1,124	1,214	-90	-0.696	1,194	1,184	10	0.0692
HHI Float	254	255	-1	-0.010	296	252	44	1.3368
Total Assets (mil. USD)	28.8	39.1	-10.3	-1.064	29.0	24.4	4.6	1.455
Leverage Ratio	128.21%	135.46%	-7.24%	-0.322	127.08%	136.21%	-9.13%	-0.339
Liquidity Ratio	9.44%	11.00%	-1.08%	-1.340	10.29%	10.21%	0.09%	0.104
EBITDA Margin	26.80%	-1,142.30%	-1,169.11%	1.015	28.38%	27.94%	44.03%	0.207
ROA	4.00%	4.03%	-0.03%	-0.053	4.08%	4.14%	-0.06%	-0.142
Capex/Total Assets	5.52%	5.07%	0.45%	0.999	4.31%	4.91%	-0.60%	-1.419
ESG Combined Score Grade	3.77	5.28	**-1.52*****	-5.964	5.30	5.05	0.25	0.961
Credit Rating	12.67	10.92	**1.75*****	2.822	10.59	10.37	0.22	0.322
N	307	271			222	222		

Table 8. Propensity Score Model of the Probability to have a GESG issue with bondholding data available
Propensity score model is a logit regression, using the selected variables at the first GESG bond issue date. Treated firms are firms that report a data about at least one of the GESG issues made till the end of 2022. Control sample includes all companies that issued GESG bonds but without disclosing the bondholding structure for any of those issues. *Concentration Index* is the sum of stakes of all shareholders recorded in the shareholder report at the end of the month prior to the issue date. *HHI Total* is the sum of squared stakes of the shareholders recorded in the shareholder report at the end of the month prior to the issue date. *Issuer Size* is the value of Total Assets, expressed in logarithm. *Leverage* is defined as the Total Debt divided by Total Equity. *Liquidity* is defined by the Cash Holdings and Cash Equivalents divided by Total Assets. *EBITDA Margin* is defined as the EBITDA divided by Sales. *ROA* is defined by the EBIT divided by Total Assets. *Disclosure CO2 Emissions* is a dummy variable equal to 1 if the company disclosed the CO2 Emission Total. *Credit Rating* is the average of assigned credit ratings converted to cardinal values. *Economic Sector* dummies identify the economic sectors based on two-digits NACE codes. All the financial and ESG data are computed at the end of the year prior the first GESG bond issue date. Z-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant results (at 5% or better) are in boldface.

Dependent Variable = 1 if Bondholding Data Available			
Variable	Model 1	Model 2	Model 3
Concentration Index	**3.829*****		**3.998*****
	(5.88)		(5.30)
HHI Total		**2.011*****	-0.392
		(2.75)	(-0.45)
Issuer Size	**0.253*****	**0.240*****	**0.250*****
	(-2.87)	(2.80)	(2.83)
Leverage	-0.007	0.011	-0.007
	(-0.2)	(0.33)	(-0.19)
Liquidity	1.125	1.340	1.166
	(0.87)	(1.10)	(0.90)
EBITDA Margin	0.008	0.010	0.008
	(1.5)	(2.08)	(1.47)
ROA	-0.017	-0.002	-0.018
	(-0.75)	(-0.09)	(-0.79)
Capital Expenditure/Total Assets	-0.003	-0.003	-0.004
	(-0.17)	(-0.16)	(-0.18)
Disclosure CO2 Emissions	**0.780*****	**0.836*****	**0.769*****
	(2.79)	(3.07)	(2.73)
ESG Combined Score Grade	0.052	0.037	0.053
	(1.25)	(0.91)	(1.26)
Credit Rating	**-0.030****	**-0.035****	**-0.031****
	(-1.95)	(-2.32)	(-2.00)
Economic Sector	-0.001	-0.002	-0.001
	(-0.71)	(-0.91)	(-0.67)
Intercept	**-8.895*****	**-6.387*****	**-8.877*****
	(-4.26)	(-3.25)	(-4.25)
N	476	476	476
Number of treated firms	222	222	222
Number of control firms	254	254	254

Table 9. Comparison of Companies with and without Bond Holdings Data at the end of 2022
Summary statistics for key ownership metrics at the end of 2022 for firms having at least one disclosure about bond holdings of GESG issues performed over the sample period (WB) and companies having issued GESG bonds but without disclosing any information about the bondholding (PEER). Control firms are the nearest-neighbor propensity score match for the "With Bond holdings" firms. Matching is done with replacement using the propensity score logit Model 3 reported in Table 8. Table shows T-test for differences in covariates. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant results (at 5% or better) are in boldface.

Variable	Nb. of Firms		Value at the end of 2022			
	PEER	WB	Mean PEER	Mean WB	Norm. Diff	T-Test Value
HHI Total	222	222	1,399	1,154	245	1.545
HHI Style	222	222	1,378	1,107	**272***	1.699
HHI Float	222	222	294	235	**59***	1.806
Δ Stable Ownership	222	222	-0.92%	-0.30%	-0.62%	-0.805
Positive Change	*100*	*106*	*2.68%*	*5.80%*	***-3.11%****	*-4.480*
Negative Change	*121*	*116*	*-3.87%*	*-5.88%*	***2.01%****	*2.049*
Joiner Size	222	222	7.38%	7.87%	-0.48%	-0.371
Leaver Size	222	222	5.75%	7.77%	**-2.02%****	-2.019
Δ Stable Block-list	222	222	-0.43%	0.62%	**-1.05%*****	-4.747
Positive Change	*120*	*132*	*0.59%*	*1.53%*	***-0.94%*****	*-5.234*
Negative Change	*75*	*66*	*-2.23%*	*-0.98%*	***-1.25%*****	*-2.652*
Joiner Block-list Size	222	222	0.21%	0.33%	-0.12%	-1.572
Leaver Block-list Size	222	222	0.34%	0.19%	**0.15%*****	2.879

Table 10. Shareholder Base at the end of 2022: Difference in Difference Estimation

The table presents results from multiple regressions on the differential of three distinct ownership metrics, namely *HHI Total*, *HHI Style* and *HHI Float* between treated and control firms. *HHI Total* is the sum of squared stakes of the shareholders recorded in the shareholder report at the end of 2022. *HHI Style* is the sum of squared stakes but those of institutional investors with index fund investment style recorded in the shareholders report at the end of 2022. *HHI Float* is the sum of squared stakes but those of controlling shareholders and institutional investors with index fund investment style recorded in the shareholders report at the end of 2022. The treatment sample includes the non-financial corporations having at least one disclosure about bond holdings of their GESG issues performed over the sample period (WB). The control sample includes the non-financial companies having issued GESG bonds but without disclosing any information about the bond holdings (PEER). Control firms are the nearest-neighbor propensity score match for the WB firms. Matching is done with replacement using the propensity score logit Model 3 reported in Table 8. All regressions are performed using the differential between the values of explanatory and control variables for treated and control firms, respectively. The definitions of explanatory variables are provided in Appendix A. T-stats are in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant results (at 5% or better) are in boldface.

	DiD HHI Total		DiD HHI Style		DiD HHI Float	
	1	2	3	4	5	6
DiD Stable Ownership Change	0.299*	0.298	0.286*	0.289	0.034	0.075*
	(1.78)	(1.33)	(1.69)	(1.27)	(0.95)	(1.75)
DiD Joiner Size	**0.593*****	**0.833*****	**0.586*****	**0.834*****	0.048*	0.020
	(4.78)	(5.06)	(4.67)	(5.01)	(1.82)	(0.65)
DiD Leaver Size	-0.212	-0.318	-0.208	-0.325	**-0.073****	**-0.100*****
	(-1.48)	(-1.63)	(-1.43)	(-1.64)	(-2.38)	(-2.68)
DiD Δ Stable Block-list	-1.060*	0.017	**-1.106****	-0.011	0.042	-0.101
	(-1.96)	(0.02)	(-2.02)	(-0.02)	(0.37)	(-0.74)
DiD Joiner Block-list Size	-1.676	0.043	-1.468	0.447	-0.458	0.947
	(-1.01)	(0.01)	(-0.87)	(0.13)	(-1.29)	(1.49)
DiD Leaver Block-list Size	**-5.267*****	-2.375	**-5.287*****	-2.396	**0.908****	0.772
	(-2.62)	(-0.78)	(-2.60)	(-0.78)	(2.13)	(1.34)
Joiner Block-list Yes-Yes	1.705	-2.424	1.403	-2.706	**-4.057*****	**-5.867*****
	(0.24)	(-0.23)	(0.20)	(-0.25)	(-2.70)	(-2.92)
Joiner Block-list Yes-No	-7.166	-17.860	-7.313	-18.227	-2.193	**-5.100****
	(-0.92)	(-1.55)	(-0.93)	(-1.56)	(-1.33)	(-2.32)
Joiner Block-list No-Yes	4.461	10.601	4.499	10.699	**-6.520*****	**-8.483*****
	(0.54)	(0.82)	(0.54)	(0.82)	(-3.74)	(-3.44)
Leaver Block-list Yes-Yes	-11.817	**-33.121****	-12.120	**-33.682****	**4.587*****	**11.475*****
	(-1.51)	(-2.34)	(-1.53)	(-2.36)	(2.75)	(4.27)
Leaver Block-list Yes-No	-15.405*	**-41.518*****	-15.786*	**-42.233*****	-0.477	**8.525*****
	(-1.76)	(-2.80)	(-1.79)	(-2.81)	(-0.26)	(3.02)
Leaver Block-list No-Yes	-4.324	-30.899*	-4.405	-30.967*	**5.859*****	**12.393*****
	(-0.48)	(-1.82)	(-0.48)	(-1.80)	(3.05)	(3.84)
DiD Issue Size	-30.998	-30.370	-32.857	-31.004	-6.799	0.850
	(-1.50)	(-1.09)	(-1.58)	(-1.10)	(-1.55)	(0.16)
DiD Total Revenue	0.008	0.017	0.008	0.018	-0.003	**-0.005****
	(0.69)	(1.60)	(0.71)	(1.62)	(-1.45)	(-2.39)
DiD Return on Capital	0.211	-0.054	0.217	-0.060	-0.106	-0.115
	(0.62)	(-0.14)	(0.63)	(-0.16)	(-1.46)	(-1.58)
DiD Capital Expenditures/Total Assets	0.018	0.012	0.017	0.009	-0.004	-0.003
	(0.82)	(0.51)	(0.74)	(0.39)	(-0.94)	(-0.63)
DiD Energy Use		0.000		0.000		**-0.000*****
		(0.50)		(0.54)		(-2.91)
DiD CO2 Intensity		0.000		0.000		**-0.000****
		(0.61)		(0.60)		(-2.33)
Intercept	40.155*	64.182*	42.363*	65.492*	7.047	-5.603
	(1.82)	(1.90)	(1.90)	(1.92)	(1.50)	(-0.87)
N Obs.	219	124	219	124	219	124
R2	0.29	0.42	0.29	0.42	0.28	0.45
R2_adj	0.23	0.32	0.23	0.32	0.22	0.35
F-stat	5.17	4.23	5.15	4.22	4.91	4.69

Table 11. Abnormal Trading Volume after the first GESG issue date

The table reports the T-test for differences in average abnormal trading volume between the treated and control sample. The Average Abnormal Volume is defined as the difference between the log transformations of daily abnormal trading volume and the daily average trading volume during the estimation period. The estimation period spans 100 days prior to the issue date the first GESG bond recorded over the sample period. *Block-list Date* is 27 July 2022, when governor of Arizona threatened BlackRock because of its ESG engagement. The treated firms the non-financial corporations having at least one disclosure about bond holdings of their GESG issues. Control firms are the non-financial companies having issued GESG bonds but without disclosing any information about the bond holdings (PEER). Matching is done using the propensity score model in Table 8. T-stats are in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant results (at 5% or better) are in boldface.

	Average Abnormal Volume day=0	Cumulative Average Abnormal Volume	
		(0; 30)	Block-list Date - Dec. 2022
WB Firms	-0.200	-4.817	-19.457
PEER Firms	-0.181	-7.739	-37.339
Difference	-0.019	**2.922****	17.882*
T-stat	(0.286)	(-1.997)	(1.724)

Table 12. Event Study Analysis of the Statement of Florida Governor against BlackRock on July 27, 2022
The table presents results from of panel regressions on a log transformation of trading volume with firm fixed effects using six different event windows starting with the event date, 27 July 2022 and ending at the indicated date. *19 Governors Date* is 4 August 2022, when the letter signed by the general attorneys of the 19 dissident US states was released to the public. The other 5 windows span till the end of the indicated month of 2022. The reported coefficients capture the DiD effect, which is the interaction of the treated firm and post-event indicators. Given the outcome variable of log(trading volume), the DiD effect can be interpreted as the differential percentage change for treated firms after the event relative to control firms. The treated firms the non-financial corporations having at least one disclosure about bond holdings of their GESG issues made till the event date (WB). Control firms are the non-financial companies having issued GESG bonds before the event date but without disclosing any information about the bond holdings (PEER). Matching is done using the propensity score model in Table 8. T-stats calculated using errors clustered on firm are in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant results (at 5% or better) are in boldface.

	19 Governors Date	Aug. 2022	Sep. 2022	Oct. 2022	Nov. 2022	Dec. 2022
DiD Coefficient	1.462	**1.245****	0.958*	0.733*	**0.938****	**1.070*****
	(1.30)	(1.98)	(1.57)	(1.67)	(2.49)	(3.09)
N Observations	2,842	10,556	19,488	28,014	36,946	45,878
N WB Firms	203	203	203	203	203	203
N PEER Firms	89	89	89	89	89	89

Table 13. Outstanding Share Change Percentage in 2022

The table presents the summary statistics of the percentage change of outstanding shares till 2022. *The WB Firms* are the non-financial corporations having at least one disclosure about bond holdings of their GESG issues made till the event date. *PEER Firms* are the non-financial companies having issued GESG bonds before the event date but without disclosing any information about the bond holdings. The event date is 27 July 2022, the date of the inception of anti-ESG initiative. Matching is done using the propensity score model in Table 8.

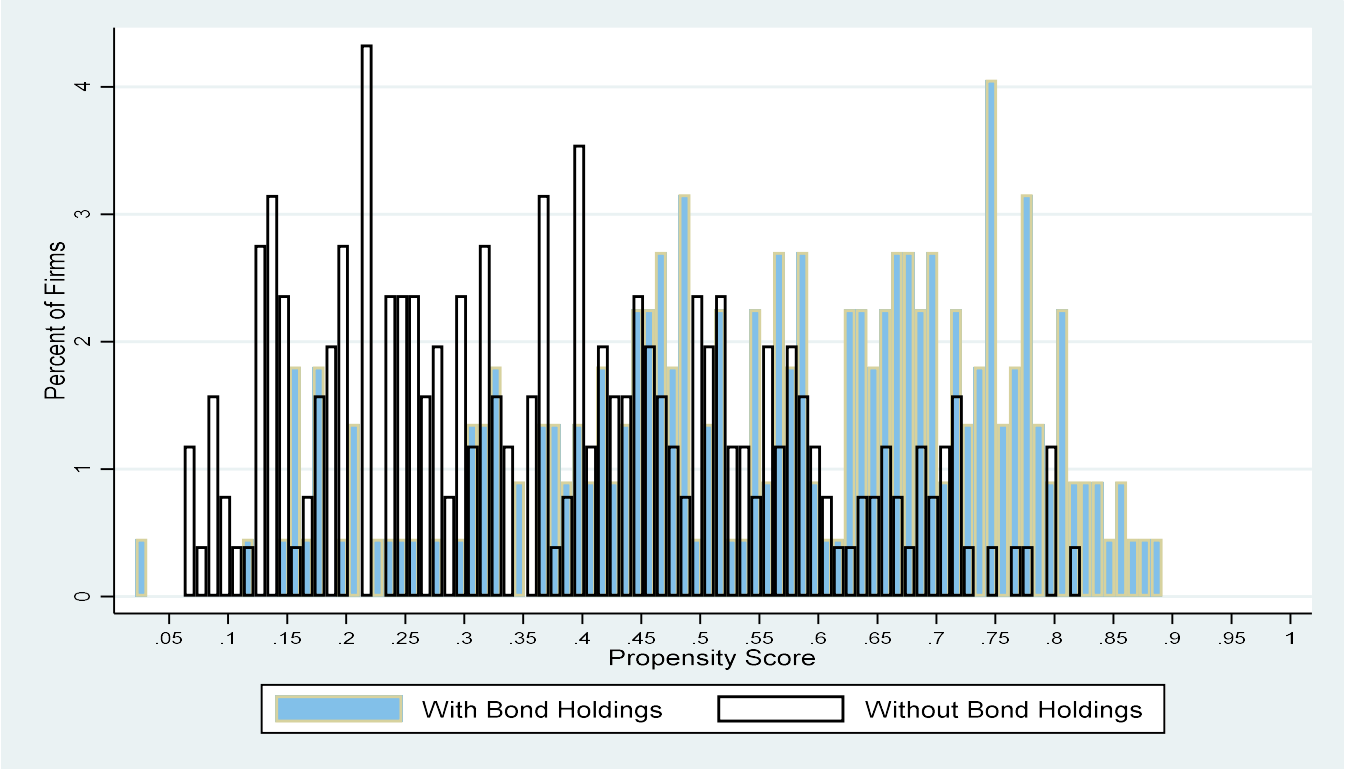
	Mean	Std. Dev.	Min	p25%	Median	p75%	Max	N
2015-2022								
WB Firms	0.00%	12.63%	-71.76%	-1.85%	0.00%	0.66%	61.21%	192
PEER Firms	-2.80%	11.58%	-67.27%	-2.97%	-0.00%	0.06%	25.53%	85
All Firms	-0.86%	12.36%	-71.76%	-2.60%	0.00%	0.39%	61.21%	277
2021-2022								
WB Firms	0.97%	6.61%	-29.23%	-0.32%	0.00%	0.17%	37.91%	202
PEER Firms	-0.17%	2.83%	-7.12%	-0.49%	0.00%	0.02%	15.96%	89
All Firms	0.62	5.74%	-29.23%	-0.44%	0.00%	0.12%	37.92%	291

Table 14. Cumulative Abnormal Volume: Anti-ESG Period Analysis
This table reports the results of regressions of the cumulative abnormal trading volume between the Block-list event date (27 July 2022) and the end of 2022 for a subsample including only the company which have been issued at least one GESG bond before the event date. The daily abnormal value is the log transformation of the difference between the observed trading volume and the average of the daily trading volume over a 100-day period prior to the first GESG date, scaled by 100. *Δ Outstanding Shares* is the percentage change of outstanding shares within 2022. *WB* identifies the treated firms, which are the non-financial corporations having at least one disclosure about bond holdings of their GESG issues made till the event date. The independent variable, ownership, is decomposed into subgroups based on the transient status of shareholders, that is leavers and joiners, with respect the date of the first GESG issue date. *Block-list* identifies the shareholders whose name indicates that they are included on the list of dissident US states. The definitions of those variables are provided in Appendix A. *Treasury Stocks* is a dummy variable equal to 1 if the *Δ Outstanding Shares* is negative but higher than -2%. *Reward Stocks* is a dummy variable equal to 1 if the *Δ Outstanding Shares* is positive but lower than 2%.T-stats in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% levels. Significant differences (at 5% or better) are in boldface.

	1	2	3
Δ Outstanding Shares	**0.032*****	**0.022****	**0.023****
	(3.17)	(2.20)	(2.35)
WB	0.139	0.074	0.076
	(1.24)	(0.67)	(0.70)
Joiner Block-list		0.150	0.134
		(1.02)	(0.91)
Joiner Block-list Size		**26.556******	**26.151*****
		(4.92)	(4.85)
Leaver Block-list		**0.444*****	**0.403****
		(2.74)	(2.47)
Leaver Block-list Size		-9.366	-8.788
		(-0.92)	(-0.86)
Treasury Stock			0.177
			(1.44)
Reward Stock			0.203*
			(1.71)
Intercept	**-0.339*****	**-0.867*****	**-0.914*****
	(-3.65)	(-5.13)	(-5.37)
N	274	274	274
R2	0.04	0.15	0.16
R2_adj	0.04	0.13	0.14
F-stat	6.02	7.98	6.49

Figure 1. Propensity Score Histogram of Treated and Control Firms

Treated firms are non-financial corporations with holdings data about at least one of their GESG bond issues. Control firms the non-financial corporations without holdings data about any of their GESG bond issues. The propensity score is calculated using a logistic regression based on the following covariates: company size, leverage, liquidity, profitability, the average ESG score, the availability of the reporting about the level of CO2 total emission, the mean credit rating, the economic sectors and the ownership concentration at the issue date.



Les autres documents de travail du GRANEM accessibles sur le site Web du laboratoire à l'adresse suivante : http://granem.univ-angers.fr/fr/actualites/cahiers-du-granem.html :

Numéro	Titre	Auteur(s)	Discipline	Date
2008-01-001	The Cognitive consistency, the endowment effect and the preference reversal phenomenon	Serge Blondel, Louis Lévy-Garboua	Théorie du risque	octobre 2008
2008-02-002	Volatility transmission and volatility impulse response functions in European electricity forward markets	Yannick Le Pen, Benoît Sévi	Econométrie appliquée	octobre 2008
2008-03-003	Anomalies et paradoxes dans le cas des choix alimentaires : et si les carottes n'étaient pas oranges ?	Serge Blondel, Christophe Daniel, Mahsa Javaheri	Economie expérimentale	octobre 2008
2008-04-004	The effects of spatial spillovers on the provision of urban environmental amenities	Johanna Choumert, Walid Oueslati, Julien Salanié	Economie du paysage	octobre 2008
2008-05-005	Why do rational people vote in large elections with costs to vote?	Serge Blondel, Louis Lévy-Garboua	Théorie du risque	novembre 2008
2008-06-006	Salaires, conditions et satisfaction au travail	Christophe Daniel	Economie du travail	novembre 2008
2008-07-007	Construction communicationnelle du stock de connaissances de la compétence collective – Contribution à partir d'une conversation.	Nicolas Arnaud	Gestion des ressources humaines	décembre 2008
2008-08-008	On the non-convergence of energy intensities: evidence from a pair-wise econometric approach	Yannick Le Pen, Benoît Sévi	Econométrie appliquée	décembre 2008
2008-09-009	Production of Business Ethics	Guido Hülsmann	Economie politique	décembre 2008
2008-10-010	Time preference and investment expenditure	Guido Hülsmann	Economie politique	décembre 2008
2008-11-011	Le marché de la photographie contemporaine est-il soluble dans celui de l'art contemporain ?	Dominique Sagot-Duvauroux	Economie de la culture	décembre 2008
2008-12-012	The newsvendor problem under multiplicative background risk	Benoît Sévi	Microéconomie de l'incertain	décembre 2008
2009-01-013	Complémentarité de la collaboration électronique et de l'investissement relationnel : étude de cas exploratoire d'un SIIO dans le secteur du meuble	Redouane Elamrani, Nicolas Arnaud	Organisation	avril 2009
2009-02-014	On the realized volatility of the ECX CO_2 emissions 2008 futures contract: distribution, dynamics and forecasting	Julien Chevallier, Benoît Sévi	Finance	mai 2009
2009-03-015	The communicational making of a relation-specific skill: contributions based on the analysis of a conversation to strategy-as-practice and resource-based view perspectives	Nicolas Arnaud	Stratégie	juin 2009
2009-04-016	Le droit d'auteur, incitation à la création ou frein à la diffusion ? Une analyse empirique du cas de la création télévisuelle	Françoise Benhamou, Stéphanie Peltier	Economie de la culture	septembre 2009
2009-05-017	Diversity analysis in cultural economics: theoretical and empirical considerations	Françoise Benhamou, Renato G. Flôres Jr., Stéphanie Peltier	Economie de la culture	septembre 2009
2009-06-018	L'épargne retraite en entreprise : un état des lieux au regard de l'expérience américaine	Fabrice Pansard, Bruno Séjourné	Finance	septembre 2009
2009-07-019	Options introduction and volatility in the EU ETS	Julien Chevallier, Yannick Le Pen, Benoît Sévi	Econométrie appliquée	septembre 2009
2009-08-020	Modeling strategic interactions between firms and local authorities – The case of a biotechnology cluster	Alain Berro, Isabelle Leroux	Economie des réseaux	septembre 2009
2009-09-021	The strategy adopted by non-profit care services organizations in dealing with the new French regulatory system: strategic coalitions and reterritorialisation of activities	Isabelle Leroux, Laurent Pujol, Eric Rigamonti	Economie sociale	novembre 2009
2009-10-022	Une nouvelle lecture du territoire par la limite	Jean-Claude Taddei	Territoire	novembre 2009
2010-01-023	Adoption of new identity-based services: Proposition of a conceptual model based on TAM, DOI and perceived risks	Caroline Lancelot Miltgen	e-marketing	juillet 2010
2010-02-024	Young Europeans' motivations, perceived risks and requirements regarding electronic identification : Some comparative results from focus groups in four EU27 countries	Caroline Lancelot Miltgen	e-marketing	décembre 2010
2010-03-025	Analyse du risque de non-exécution des ordres à la bourse de Paris	Angélique Aubier Piron	Finance	décembre 2010
2011-01-026	Who cares? Europeans' attitudes towards the disclosure of personal identity data	Caroline Lancelot Miltgen, Margherita Bacigalupo, Wainer Lusoli	Systèmes d'information et e-marketing	janvier 2011
2011-02-027	Le rôle des Business Angels dans le financement de l'innovation radicale.	Catherine Deffains-Crapsky	Finance entrepreneuriale	avril 2011
2011-03-028	The EU Financial Reform facing the Global Context	Dominique Perrut	Economie financière	mai 2011
2011-04-029	A simple test of the sustainable development hypothesis	Serge Blondel	Economie expérimentale	septembre 2011
2011-05-030	Evaluation d'un nouveau produit alimentaire : le rôle de la congruence et du packaging	Gaëlle Pantin-Sohier et Caroline Lancelot Miltgen	Comportement du consommateur	octobre 2011

2011-06-031	Une mesure de risque extrême agrégée : risque de marché et risque de liquidité	Angélique Aubier-Piron	Finance	octobre 2011
2011-07-032	When should a French Investor use a Dollar-Cost Averaging Strategy?	Philippe Compaire et Bruno Séjourné	Finance	octobre 2011
2011-08-033	Conformisme à la norme et performance : la franchise dans le mix organisationnel	Christophe Daniel, Regis Dumoulin et Claire Gauzente	Stratégie et organisation	octobre 2011
2011-09-034	The structure of production reconsidered	Guido Hülsmann	Economie politique	décembre 2011
2012-01-035	The quality of private monitoring in European banking: completing the picture	Adrian Pop et Diana Pop	Economie financière	février 2012
2012-02-036	Urban sprawl occurrence under spatially varying agricultural bid-rent and amenities	Thomas Coisnon, Walid Oueslat et Julien Salanié	Economie urbaine	septembre 2012
2012-01-037	Le renouveau du paiement du dividende en actions	Caroline Marie-Jeanne	Finance	mars 2012
2013-01-038	Spatial targeting of agri-environmental policy and urban development	Thomas Coisnon, Walid Oueslat et Julien Salanié	Economie urbaine	février 2013
2013-02-039	Fiat money and the distribution of incomes and wealth	Jörg Guido Hülsmann	Economie politique	novembre 2013
2014-01-040	Determinants of urban sprawl in European cities	Walid Oueslati, Seraphim Alvanides et Guy Garrodc	Economie urbaine	janvier 2014
2014-02-041	Financial markets and the production of law	Jörg Guido Hülsmann	Economie politique	juin 2014
2014-03-042	Organisation des filières bananes ivoiriennes : Une étude de terrain expérimentale	Serge Blondel, Rodrigue Brin et Camille Koffi	Economie expérimentale	septembre 2014
2014-04-043	How fair are the fair price standards in blockholder regimes?	Adrian Pop et Diana Pop	Finance	septembre 2014
2015-01-044	The nature and impacts of environmental spillovers on housing prices: A spatial hedonic analysis	Masha Maslianskaia-Pautrel et Catherine Baumont	Economie de l'environnement	février 2015
2015-02-045	The old economics of science, the nonlinear model of innovation, and the economics of patents	Matthieu Ballandonne	Histoire de la pensée économique	mai 2015
2015-03-046	How private happiness involves greater economic and social efficiency? A New paradigm adapted to the world knowledge economy	Camille Baulant	Intelligence économique	novembre 2015
2016-01-047	Les déterminants de la syndication avec les Business Angels dans les opérations d'Equity Crowdfunding : Le cas français	Catherine Deffains-Crapsky, Thibault Cuenoud et Pascal Glemain	Finance	mai 2016
2016-02-048	A matter of trust and time: Back to the adoption of embeddedness in economic geography (1985-2015)	Florian Fougy et Sylvain Amisse	Histoire de la pensée économique	mai 2016
2016-03-049	Cultural consequences of monetary interventions	Jörg Guido Hülsmann	Economie politique	septembre 2016
2016-04-050	In the long run we are all unemployed	Karl-Friedrich Israel	Economie politique	septembre 2016
2016-05-051	Les critiques libérales du service public	Jörg Guido Hülsmann	Economie politique	septembre 2016
2016-06-052	Pawel Ciompa and the meaning of econometrics: A comparison of two concepts	Karl-Friedrich Israel	Economie politique	septembre 2016
2016-07-053	Mode de régulation et performance bancaire des pays en transition: une illustration par le cas jordanien	Marc Kouzez et Bruno Séjourné	Finance	septembre 2016
2016-08-054	Que valent les engagements des régimes de retraite envers les retraités en France ?	Christophe Daniel, Anne Lavigne, Stéphane Mottet, Jesus-Herell Nze Obame, Bruno Séjourné et Christian Tagne	Finance	septembre 2016
2016-09-055	L'analyse économique et éthique du taux d'intérêt	Jörg Guido Hülsmann	Finance	septembre 2016
2017-01-056	The myth of the risk premium	Jörg Guido Hülsmann	Finance	avril 2017
2018-01-057	Adoption of environmentally-friendly agricultural practices under background risk: experimental evidence	Marianne Lefebvre et Estelle Midler	Economie de l'agriculture	avril 2018
2020-01-058	Portfolio optimization of euro-denominated funds in French life insurance	Runsheng Gu, Liuodmila Vostrikova et Bruno Séjourné	Finance	décembre 2020

2021-01-059	Japanese monetary policy and household saving	Karl-Friedrich Israel, Tim Florian Sepp et Nils Sonnenberg	Economie financière	septembre 2021
2022-01-060	On the renaissance of socialism	Jörg Guido Hülsmann	Economie politique	février 2022
2022-02-061	The monetary theories of Carl Menger and Friedrich von Wieser: a comparative study	Karl-Friedrich Israel	Economie politique	avril 2022
2023-01-062	The effects of unconventional monetary policy on stock markets and household incomes in Japan	Karl-Friedrich Israel, Tim Florian Sepp et Nils Sonnenberg	Economie financière	june 2023
2024-01-063	Free trade versus interventionism	Jörg Guido Hülsmann et Karl-Friedrich Israel	Economie politique	avril 2024
2024-02-064	Gratuitousness in ordinary economic activity	Jörg Guido Hülsmann	Economie politique	décembre 2024
2024-03-065	Self-paralysis of democracy	Jörg Guido Hülsmann	Economie politique	décembre 2024
2025-01-066	Reassessing the future of the CFA France: Implications of financial integration and institutional challenges	Beringer Gloglo	Economie monétaire	mars 2025
2025-02-067	The shareholder base of green bond issuers at the dawn of anti-ESG movement	Diana Pop	Finance	Mars 2025