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Firm Commitments

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Patrick Bolton
Columbia University, Imperial College London, CEPR, NBER and ECGI

Marcin Kacperczyk
Imperial College London, CEPR and ECGI

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Abstract

A growing fraction of companies globally have made commitments to reduce their carbon emissions by a certain date. While the companies that make commitments subsequently reduce their emissions, the effect on overall emissions of companies (including those that do not commit) has been small; the companies that commit, and those that make the most ambitious commitments, tend to have lower emissions; firm commitments are less prevalent in countries where governments have made national commitments. Overall, the commitment movements have been successful in drawing the willing but have found greater resistance from the companies that most need to reduce their emissions.

Keywords: Carbon Emissions, Science Based and CDP Targets, Nationally Determined Contributions

JEL Classifications: G12, G23, G30, D62, D83

Patrick Bolton*
Barbara and David Zalaznick Professor of Business
Columbia University
804 Uris Hall
New York NY 10027 , United States
phone: +1 212 854 9245
e-mail: pb2208@columbia.edu

Marcin Kacperczyk
Professor of Finance
Imperial College London
Tanaka Building, South Kensington Campus
London SW7 2AZ, United Kingdom
phone: +44 20 7594 2635
e-mail: m.kacperczyk@imperial.ac.uk

*Corresponding Author

Firm Commitments[1]

Patrick Bolton*

pb2208@columbia.edu

Marcin Kacperczyk[Ω]

mkacperc@ic.ac.uk

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Abstract

A growing fraction of companies globally have made commitments to reduce their carbon emissions by a certain date. While the companies that make commitments subsequently reduce their emissions, the effect on overall emissions of companies (including those that do not commit) has been small; the companies that commit, and those that make the most ambitious commitments, tend to have lower emissions; firm commitments are less prevalent in countries where governments have made national commitments. Overall, the commitment movements have been successful in drawing the willing but have found greater resistance from the companies that most need to reduce their emissions.

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* Columbia University, Imperial College, and CEPR

Ω Imperial College and CEPR

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More and more companies — and it will be a tsunami by Glasgow — will have net zero emissions plans[1]. Mark Carney (2020)

1. Introduction

The landmark climate agreement reached in Paris in 2015 has set in motion a dynamic across countries in making decarbonization commitments for their economies. By now, over 140 countries have made net-zero commitments[2]. The brunt of the decarbonization effort, however, will be borne by the private sector. Indeed, the 500 largest global corporations (the Global 500) together produce around one third of world GDP, and consequently also a similar share of global greenhouse gas emissions. It is not entirely surprising, therefore, that several net-zero target initiatives have also sprung up in the corporate sector, most notably the *carbon disclosure project initiative* (CDP) and the *science-based target initiative* (SBTi) to encourage companies to commit to a carbon emissions reduction pathway.[3] In this paper we explore what motivates companies to join a voluntary commitment movement, and what the effects have been so far of these commitment drives. This is a largely unexplored topic in economics and finance.

The firm commitment drives of SBTi and CDP are a form of private provision of public goods through coalition building. The companies that join are incurring costs by curbing their emissions in the hope that their example will emulate sufficiently many other companies to follow suit, so that there will be a significantly greater chance of achieving the desired net zero targets. Either these other companies will be under greater pressure from their investors to commit, or their managers will be better able to justify their commitment choices, on the grounds that they are joining a winning coalition. In addition, companies can expect that market reforms, carbon pricing, or GHG emissions regulations will be easier to introduce if they have the support of a growing fraction of firms. Moreover, those who join first will be better adapted to the new market rules. At least, that is the optimistic scenario.[4] The more pessimistic scenario is that SBTi and CDP are merely attracting companies with low emissions that have no difficulty in committing to a net zero target. They are building a coalition of "best in class" companies; those that would have reduced their emissions anyway, with little impact on corporate carbon emissions globally.

[1] The Carney quote above refers to the COP26 meetings in Glasgow in November 2021.
[2] See https://www.un.org/en/climatechange/net-zero-coalition
[3] SBTi is a joint initiative by CDP, the UN Global Compact, the WWF, and the WRI.
[4] CDP lists the following benefits on their website for companies that commit: "Science-based target setting can spur ambition and generate the innovations needed to transition to a low-carbon, sustainable economy. This type of innovation can redefine companies' bottom lines by creating new business models and sources of value, and by disrupting currently unsustainable economic systems. Setting these targets in advance of carbon-related regulations will allow companies to be well equipped to respond to regulatory and policy changes. Companies can demonstrate their robust commitments to reduce emissions and help mitigate global warming to investors and clients." https://www.cdp.net/en/campaigns/commit-to-action/science-based-targets

Are firm commitments a substitute or complement for national commitments. Are firm commitments mostly an effort to fill the gap left open by apathetic governments, or are they encouraged by ambitious net-zero national targets? When governments are committing to ambitious decarbonization pathways, aren't firm commitments redundant? Or are they seen as a critical way of strengthening the credibility of government commitments? These are other relevant questions that we explore. A first observation here is that the corporate decarbonization initiatives are independent efforts from national government decarbonization targets. There is no formal dialogue between the corporate sector and governments to attempt to coordinate their respective decarbonization targets.

We begin our analysis by exploring the impact of the firm commitments drive on *aggregate* corporate carbon emissions. We look at the annual growth in total carbon emissions of all publicly traded companies tracked by Trucost and explore how this growth rate is correlated with the rise in firm commitments since 2012. We look at the total carbon emissions of all publicly listed companies, whether they have made commitments or not, because what ultimately matters is the effect of firm commitment campaigns on the entire sector, not just on the companies that have joined the movement. Our first finding is that there is a weak negative relation between the growth in total corporate carbon emissions and the increase in the number of firms making commitments (see Figure 1). Interestingly, this negative relation is stronger in Europe, than in North America and Asia, suggesting that European companies take commitments more seriously.

The role of firm commitments in reducing carbon emissions in Europe is somewhat encouraging. Still, over our sample period, firm commitments have had little aggregate impact. It is possible, of course, that it is too soon for the commitments by over one thousand firms to have materialized into a significant reduction in emissions. However, there are other possible explanations such as selection effects, and the limited ambition of most firm commitments, in particular the choice of emission intensity targets over emission level targets. Regarding selection effects, our second main finding is that the companies that choose to make a commitment are the ones with lower carbon emissions to begin with. In other words, the companies making a commitment are the least problematic ones in terms of carbon emissions. The companies that have the biggest challenge in terms of meeting net-zero targets are also the ones least likely to commit. This result is consistently observed in the cross-section of industries, though we do observe some heterogeneity in the effect depending on the emission intensity of the industry. We also find that among the companies that commit, it is mostly those with lower levels of emissions that further strengthen their commitments, for example by switching from emission intensity targets to level targets. In other words, companies with higher emissions make half-hearted commitments. Commitments are voluntary and companies for which the pros outweigh the cons

are most likely the ones with the lowest carbon emissions. This basic finding highlights a fundamental weakness of purely voluntary initiatives driven by civil society based on goodwill and ethical motivations.

Another important selection effect derives from corporate governance. The socially responsible investment (SRI) movement (which precedes the firm commitments drive but gained further momentum after the Paris Agreement) is an increasingly powerful source of influence by institutional investors to prod companies to reduce their negative environmental and social impacts. In terms of external governance, companies that are in the public eye (have greater analyst coverage and receive more media attention) may be more inclined to show that they are doing something about the climate by making a commitment to decarbonize. Alternatively, those that face greater short-term activist shareholder pressure may be less inclined. In terms of internal governance, one would expect that the companies that are most susceptible to the pressure of SRI engagement are those with more open corporate governance processes (more independent and diverse boards, greater institutional ownership concentration). We find broad support for the view that institutional shareholder pressure relates to companies' willingness to commit. But we also find that protection against short-term activist actions matters to induce companies to focus more on their long-term climate impact. Consistent with this evidence, we further find that companies with higher return on equity and index constituents are more likely to commit. Not surprisingly, the companies that already disclose their emissions are more likely to make commitments, and companies with higher stock return volatility are also more likely to commit, presumably in an effort to reduce uncertainty for investors. Overall, the selection effects we identify paint a mixed picture on the achievements of the firm commitment campaigns. On the one hand, they indicate that SRI engagement does induce some companies to commit. But, on the other hand, it is companies that already have lower emissions that tend to commit. There is a limit to what movements based on purely voluntary contributions can achieve. The biggest emitters may simply hold out and their emissions may only be curbed if reductions are mandated.

The effectiveness of these commitment campaigns, however, can be boosted through peer pressure. Indeed, we find that firm commitments are positively associated with proxies for peer pressure. Mainly, we find that companies operating in industries with greater commitment rates are more likely to commit themselves. Although companies in North America and Asia are less likely to commit when their direct carbon emissions are higher, we find that in Europe, where the CDP and SBTi commitment campaigns were born, there has been more sign up of companies with high emissions. Importantly, despite the absence of a formal dialogue to coordination national and corporate decarbonization commitments, we do find that companies commit in line with the commitments made by the countries in which they are based. More companies make commitments

in countries that have made an INDC around the COP21. This finding, however, is difficult to interpret given that we also find that the later country NDCs predict fewer firm commitments. We also find that companies are more likely to commit when they are located in countries with stricter domestic climate policies, but the strength of this mechanism weakens for high-emission companies.

We further explore economic mechanisms which may underlie firms' decisions to commit. Companies may care about the risk of falling short on their commitments. If there is a significant risk that the company may fall behind on its decarbonization plan, it may be tempted to make somewhat less constricting commitments. One way of increasing the likelihood of delivering on its promise is to strategically choose a base year from which emission reduction targets are measured in which the company had unusually high emissions. We find supporting evidence for this hypothesis. Companies with higher emissions are more likely to choose base years in which they had unusually high emission levels.

Alternatively, companies may see their commitments simply as a way of formalizing what they had intended to do in the first place. Such commitments would involve a low risk of failing and would simply be a low-cost way of bolstering the company's green credentials. We do not find supporting evidence for this hypothesis, as more than 60% of companies making commitments in our sample appear to be falling behind on their emission reduction plans. This suggests that companies are not simply formalizing what was already planned. They are seeking to make more ambitious decarbonization efforts through their commitments and to go beyond what they are sure to be able to deliver. Companies appear to be willing to make commitments in the face of substantial uncertainty when it comes to meeting their targets, and a substantial fraction of companies appear to have made commitments which they have found difficult to meet at least in the short term.

Finally, we explore the link between commitments and future emissions. A rich set of results emerges from this analysis. Encouragingly, firm commitments do predict that the companies that commit further reduce their emissions. When we look at emissions one year after a firm's commitment, and when we compare emissions four years before a company commits to the emissions over the following four years, we find that there is a significant reduction in emissions post commitment. Interestingly, the effect is stronger for the companies committing through CDP than through SBTi.

Overall, although our empirical design does not lend itself to a precise identification, especially given that commitments are largely voluntary and therefore endogenous, the selection mechanism we uncover strongly suggests that commitments are mostly made by best-in-class

companies, whose benefits likely outweigh costs, and their effect on emissions is mostly restricted to firms that have lower emissions to begin with.

Related Literature: Even though there is by now a growing literature on ESG-related voluntary disclosures, analyses of climate-related corporate commitments are still few and far between. Our study contributes to this literature on voluntary non-financial disclosures by looking at how these disclosure decisions may be associated with future corporate behavior, through the lens of decarbonization commitments, where the existing literature is almost exclusively focused on backward looking information. In an early study, Ioannou, Li, and Serafeim (2016) find that firms that set more difficult CDP targets or that provide monetary incentives for achieving the target are able to complete a higher percentage of their targets. Consistent with this finding, Dahlmann, Branicki, and Brammer (2019) show that future emission intensity reductions are only seen for firms which set very ambitious targets through CDP. Freiberg, Grewal, and Serafeim (2021) argue that firms with more stringent internal emission targets are more likely to commit to external science-based targets. Ramadorai and Zeni (2024) use firm carbon disclosures and commitments to CDP to estimate a structural model linking firm decisions to reduce their carbon emissions to their beliefs about future emission regulations and to the competitive pressure they face in the marketplace. Comello, Reichelstein, and Reichelstein (2021) examine net-zero commitments of seven large companies and argue that the types of commitments these companies make is related to their carbon footprint and to their ability to offset emissions. Lemma, Lulseged, and Tavakolifar (2021) study a small sample of S&P 500 companies and show that those with stronger commitments, on average, take on more long-term debt. Our findings on the effects of peer pressure are consistent with the findings on the effects of benchmarking across facilities of Tomar (2023), who shows that companies assess their relative GHG performance based on peers' disclosures and that this benchmarking induces more emissions reductions (see also Greenstone, Leuz, and Breuer, 2023). Lu (2021) also argues that green bond issuance can be treated as a form of climate commitment. Kacperczyk and Peydro (2022) study the role of commitments in the lending market and show that banks that commit to SBTi tend to reduce credit provision to firms with high levels of scope 1 emissions, relative to banks that do not make such commitments. Finally, there is a small political science literature initiated by Potoski and Prakash (2005, 2013) that looks at another type of firm commitments campaign, the ISO 14001 certification drive, and its effects on strengthening firms' environmental compliance.

Our study also contributes to the rapidly growing literature on climate change and finance. Looking at the broader context of socially responsible investment around the world, Dyck, Lins, Roth, and Wagner (2019) and Gibson, Glossner, Krueger, Matos, and Steffen (2022) explore how

environmental, social, and governance (ESG) motivated investing varies across countries. Krueger, Sautner, and Starks (2020) survey institutional investors and find that investors believe that carbon emissions represent a material risk. Recent critical and less critical reviews of the social responsibility and corporate stewardship literatures can be found in Schoenmaker and Schramade (2018), Bebchuk and Tallarita (2020), and Edmans (2020).

The remainder of the paper is organized as follows. Section 2 provides some background on the two main corporate decarbonization initiatives which coordinate firms' approaches to making decarbonization pledges. Section 3 describes the data and provides summary statistics. Section 4 discusses the main results and their possible explanations. Section 5 concludes.

2. Corporate Decarbonization Coalitions

Before proceeding with the data description and the empirical analyses we briefly provide some relevant background information on the two main corporate decarbonization drives, CDP and SBTi. CDP, previously known as *The Carbon Disclosure Project*, is a non-profit organization that was set up in 2000, along with other initiatives such as the Green House Gas Protocol (which was launched in 1998), with the purpose of jump-starting voluntary corporate carbon emissions disclosure and engaging with companies to induce them to manage the decarbonization of their operations.[5] Paul Dickinson, the co-founder of CDP, explained in an interview what had motivated him to launch this initiative[6]: "In 1999 I had become profoundly concerned at the scale of the risk presented to human society by greenhouse gas emissions. I had also identified that the 1,000 largest global corporations had become the most powerful geopolitical force in the world. This led Tessa Tennant and I to conceive a plan whereby investors would use their authority over corporations to encourage disclosure, leading to insight and action on climate change." By 2024, over 23,000 companies have made carbon and environmental disclosures to CDP. Although increasingly carbon (and other environmental impact) disclosure is mandated, CDP remains the go to place for institutional investors. CDP is also increasingly engaging with regulators in various jurisdictions to develop and refine carbon and environmental disclosures.

CDP along with the UN Global Compact, the Worldwide Fund for Nature (WWF), and the World Resources Institute (WRI) is also a co-founder of the Science Based Targets initiative, which was launched in 2015. As its name indicates, the purpose of SBTi is not only to get companies to make decarbonization pledges, something that CDP had already been doing, but also to ensure that the decarbonization targets set by companies are consistent with the IPCC's long-term temperature pathways of well-below 2°C and 1.5°C. Accordingly, SBTi has established

[5] See https://www.cdp.net/en
[6] https://www.cdp.net/en/articles/climate/cdpat20-a-qa-with-paul-dickinson

sector by sector scope 1, 2, and 3 emission reduction criteria that all company targets must meet to be validated as science-based targets. The SBTi commitments are tailored to the idiosyncrasies of each company within a sector. They vary both in the choice of base year for emissions, and the horizon of interim targets. There is thus both extensive and intensive margin variation in commitments across companies. To join the SBTi, a company must first sign a commitment letter stating that it will work to set a science-based emission reduction target. It then has 24 months to develop and submit a target for validation. Once the target has been validated it is disclosed. The process of SBTi certification is therefore more onerous than the simple reporting of pledges through CDP. SBTi certified targets are also more ambitious and likely involve greater costs for companies. Since its launch the number of companies that have sought to obtain the SBTi's certification of their targets has been rising steadily and now comprises over 5,500 companies.[7] We turn next to the description of the data we use to test our empirical predictions.

3. Data and Sample

Our global data set covers the 2005-2019 period and combines several sources. We combine data on firm decarbonization commitments with the S&P Global Trucost (Trucost) database on firm-level carbon and other greenhouse gas emissions, and with the FactSet database on corporate balance sheets. The institutional ownership and governance data come from Thomson Reuters. The equity-analysts data come from I/B/E/S. The global media sentiment data come from Ravenspack. Finally, we use world index constituents from MSCI. We use the ISIN identifier and company names to match these datasets. For reference, in the Appendix, we provide summary information of all the empirical variables we use throughout our study.

Our sample of SBTi signatories comprises a first small group of over 50 companies that have joined SBTi by the end of 2015 (mostly European and North American). In both 2019 and 2020, over 300 new companies joined, with a substantially larger share of companies based in Asia than in the 2015 cohort.[8] Some companies can enter the data more than once, for example, if they first agree to make a commitment and second when they state their formal targets. In total, our sample includes 455 unique companies that either committed or stated a target for emission reductions.

Take for example Pfizer Inc. that joined SBTi in 2015. It had two targets approved, both in 2015. In the first target, the company committed to reduce 20% of absolute scope 1 and scope 2 emissions over the 2012-2020 period. The second target was a 60% reduction in scope 1 and

[7] See https://www.csofutures.com/news/number-of-companies-with-sbti-targets-reaches-5-500/
[8] In 2021, the year outside our sample period, the number of companies that either committed or set the target has doubled relative to 2020.

scope 2 total emissions over the 2000-2050 period. The starting year in both cases is what we define as the base year for the target.

We supplement the SBTi commitments data with other data about corporate decarbonization plans from CDP, which, among other things, asks its member companies to report their emission reduction targets if they have any. CDP does not require emission reduction targets to be in line with a 1.5°C objective. Its data begins earlier, in 2011, and because it involves looser criteria for targets, CDP has broader coverage than SBTi. Company targets can take the form of carbon intensity improvements (with or without absolute emission reduction equivalents) or straight emission reduction targets. A priori, commitments to absolute emission reductions are thought to be more constraining[9]. Overall, our sample includes 1,957 unique companies that have declared a commitment to CDP. An example of a company making a CDP commitment is Abbott Laboratories. It set a target of 40% reduction in scope 1 and scope 2 emission *intensities* over the 2010-2020 period. By 2018, it had already achieved a 42% reduction.

The Trucost data reports yearly firm-level carbon and greenhouse gas emissions data for scope 1, 2, and 3 emissions in units of tons of CO2 equivalent. Scope 1 emissions are direct emissions from operations of affiliates that are owned or controlled by the company. Scope 2 emissions are those that come from the generation of purchased heat, steam, and electricity used by the company. Scope 3 emissions are indirect emissions caused by the company's operations and the use of its products. These include emissions from the production of purchased materials, product use, waste disposal, and outsourced activities. Establishing the scope 3 emissions of a company requires a detailed analysis of the share of emissions of producers in the supply chain that is attributable to the company's input purchases. This involves estimating an input-output model with sector-level emission factors.

The combined data set contains 17,385 unique companies over the period 2011-2019. These companies represent roughly 99% of total market capitalization of firms covered by Trucost and approximately 80% of total market capitalization of firms covered by Factset. They cover 66 countries based on their country of incorporation. The highest number of companies come from the United States (3338), China (2500), and Japan (2467). In general, Trucost tends to cover larger companies, but the coverage is relatively uniform across different sectors and countries.

Table 1 provides a first set of summary statistics on the companies that have made commitments. The data are sampled at firm and year frequency. Panel A shows the distribution of commitments by country. Column 2 reports the number of observations for each country. Column 3 reports the number of firm commitments (either to CDP or SBT) each year. The countries with

[9] See Myles McCormick, Justin Jacobs, and Gregory Meyer "Why no one is impressed with Exxon's emissions pledge", *Financial Times* 16 December 2020.

the highest number of firm-year observations with commitments include the US, Japan, and the UK. Notably, very few Chinese companies have made commitments. Columns 4 and 5 report the fractions of firm-year observations within our merged sample with a CDP commitment and an SBTi commitment. A large fraction of firms with CDP commitments are European, with Finland (40.85% of commitment observations), Spain (40.49%), Portugal (40.32%), and Denmark (37.46%) being the top four countries. Notably, outside Europe, Colombia (32.48%), South Africa (29.41%), and Turkey (22.63%) are the three leading nations. Similar rankings obtain for SBTi commitments, although the average values are significantly smaller. Here, Colombia leads all countries with more than 10.5% of firm-year observations with SBTi commitments. A major difference between CDP and SBTi commitments is the year of the first commitments: 2011 for CDP and 2014 for SBTi. The next three columns indicate the fraction of firm-year observations with scope 1+2 targets. The first two targets are for the level of emissions from CDP and SBTi and the third one is for emission intensity. Next, we report the fraction of SBTi signatories (*SBTSIGN*), which are the companies that either agree to commit but have not yet stated their targets or companies that have already stated their emission targets. This classification is more inclusive than the classification around a commitment measured by *SBTCOM*. We also report the fraction of firms expressing an engagement in any emission-reducing initiative, as surveyed by CDP (*CDPRED*). The last two columns show the dates at which the country of incorporation declared its intention (INDC) or committed to nationally determined contribution (NDC). Effectively, all NDC observations are from the period following Paris Agreement of 2015.

In Panel B, we describe the distribution of observations (except for NDCs) across industries, broken down by firms' six-digit global industry classification standard (GICS-6). In column 4, we report the frequency of CDP commitments. Surprisingly, the three industries with the highest fraction of commitments are multi-utilities (48.53%), household products (44.70%), and tobacco (41.06%). Notably, there are few firms making commitments in the oil & gas industry (around 10%), which is the source of much of the CO2 in the atmosphere. The industries with the lowest rates of commitments are healthcare technology (0%), mortgage REITs (0%), and distributors (0.3%). The relative rankings are similar if we look at SBTi commitments (in column 5), and scope 1+2 targets (in columns 6-8), with again a very small fraction of companies coming from the oil & gas industry. As for SBTi signatories (in column 9), or signatories of CDP emission reduction initiatives (in column 10), they are similarly represented across industries.

In Panel C, we describe the distribution of observations over time. Over the full sample of firms, we observe a steady increase in the fraction of firms reporting CDP commitments, from 16.35% in 2011 to 20.97% in 2015. The range of values for scope 1+2 targets is between 9.49%

and 14.79%. At the same time, the fraction of firms supporting CDP emission reduction initiatives varies between 22.22% and 26.71%. The rates for SBTi-based commitments are visibly smaller.

For both CDP and SBTi commitments, we observe a visible drop in the percentage numbers between 2015 and 2016. This is because Trucost expanded the universe of firms it follows after the Paris Agreement. These additions make the year-over-year comparisons more difficult. To allow for more direct comparisons, we therefore restrict our sample to firms who appear in the Trucost data before 2015. The results are reported in the bottom panel (*Legacy Sample*). Over this restricted sample, the patterns observed before 2015 extend further in time. Overall, the growth rate in CDP commitments is close to 100% between 2011 and 2019. Still, the absolute fraction of commitments at its peak in 2019 is relatively low, at 27.4%. The fraction of SBTi commitments and signatories also grows at a high rate, though at significantly lower levels.

In Panel D, we provide summary statistics on other measures of commitments, which express their intensity. Thus, *CDPTGT* is the percentage value reduction of total scope 1 emissions that the firm commits to CDP; *CDPs1YR* is the earliest year to which the CDP commitment applies; *MAXTGTYR* is the number of years to the maximum commitment date; *MAXEMRED* is the maximum percentage reduction in emissions along all the stated commitments; *ABATE* is the ratio of *MAXEMRED* and *MAXTGTYR*; *CDPTGTHOR* is the difference between *CDPs1YR* and the base year of the stated target. Our results reveal several patterns. First, we observe that over time emission targets have become stricter. While an average firm target in 2011 was an 18.5% reduction in total emissions, the same statistic for 2019 was a 30.46% emission reduction. However, against this rise in target emission reductions, we also find that the maximum number of years to the target that the companies set has also been going up, from roughly 5 years in the early part of our sample, to more than 11 years in the last two years of the sample. Overall, this translates into a reduction in the abatement rate. We also observe that, over time, companies have been setting longer time spans over which they would set their targets. While in the early sample period that horizon is about 10 years, the time span increases to over 14 years in the last two years of the sample. This pattern could indicate a trade-off between the targeted size in emission reductions and the horizon by which these targets can be attained.

In Table 2, Panel A we report summary statistics on several control variables we use in our subsequent tests. To establish comparability across the two initiatives, we consider two different sample periods. The 2011-2019 is consistent with the starting date of CDP commitments. The 2014-2019 period is when SBTi has been in existence. First, we report summary statistics on per-firm carbon emissions in units of tons of CO2 emitted in a year, normalized using the natural log scale. For the longer sample period, the log of total scope 1 emissions of the average firm in our sample (*LOGS1TOT*) is 5.29, with a standard deviation of 2.92. The respective numbers for the

shorter sub-period are very similar. Note that the median number is the largest for scope 3 emissions (*LOGS3TOT*), indicating that most companies in our sample are significantly exposed to indirect emissions. We also report the same statistics for the annual percentage growth rate and the emission intensity. To mitigate the impact of outliers we have winsorized all growth and intensity measures at the 2.5% level.

We further use the following other control variables in our cross-sectional regressions: $LOGSIZE_{i,t}$, is given by the natural logarithm of firm *i*'s market capitalization (price times shares outstanding) at the end of year *t*; $LOGPPE_{i,t}$, is given by the natural logarithm, of the firm's property, plant, and equipment; $LEVERAGE_{i,t}$, is the ratio of debt to book value of assets; $ROE_{i,t}$, is given by the ratio of firm i's net yearly income divided by the value of its equity; $M/B_{i,t}$, is firm *i*'s market cap at the end of year *t* divided by its book value; $BETA_{i,t}$, is the market beta of individual companies calculated over the preceding 12-month period; $VOLAT_{i,t}$, is the standard deviation of returns based on the past 12 monthly returns; momentum, $MOM_{i,t}$, is given by the average of the most recent 12 months' returns on stock *i*, leading up to and including month *t*-1; short-term reversal, $RET_{i,t}$, is the past year's December return on stock *i*; capital expenditure *INVEST/A*, is the firm's capital expenditures divided by the book value of its assets; and, $MSCI_{i,t}$, is an indicator variable equal to one if a stock *i* is part of the MSCI ACWI index in year *t*, and zero otherwise. To mitigate the impact of outliers we winsorize *M/B, LEVERAGE, INVEST/A*, and *ROE* at the 2.5% level, and *MOM* and *VOLAT* at the 0.5% level. The choice of the cut-off value is largely dictated by the degree of excess kurtosis we observe after the adjustment.

The average firm over the longer sample period has a market capitalization of $1.67 billion. The average market-to-book ratio is 1.41, and average book leverage is 23.5%. The average return on equity equals 8.66%, slightly less than the median of 9.61%. The average stock beta is 0.67 which is significantly less than 1. About 24% of the sample are companies whose stock is part of the global MSCI equity index. When we restrict our sample period, we observe that the average firm-level emissions drop slightly, consistent with the view that companies added to the sample are on average smaller and produce less emissions. At the same time, the sample averages are much closer to each other along other firm controls, which suggests that the results from our analysis will not be biased by systematic differences along firm-level fundamentals.

In Panel B, we further split our Trucost-based sample into observations with CDP commitments and those without such commitments. We observe several interesting patterns. First, the firms with commitments tend to have higher levels of emissions across all three scopes. This could indicate that CDP has been successfully targeting the companies with the highest emissions. However, it is important to note that this result is based on a simple univariate specification. We show in the next section that the direction of the correlation between emissions

and commitments flips once we control for company characteristics *and* industry. Another notable observation is that companies with commitments are on average larger and more profitable. They have also higher market-to-book ratios and earn greater momentum returns. Finally, they are more likely to be part of the MSCI global index. However, the two groups of firms are not significantly different in terms of their real investment levels.

4. Results

We obtain two broad sets of results. First, we identify what general company characteristics are associated with firm commitments and specifically how the level of a company's carbon emissions affects its decision to make a decarbonization commitment. Second, we determine the effects of commitments on companies' future emissions.

4.1 *What drives a company to commit?*

The decision to commit is based on a cost-benefit calculus that depends on different firm, industry, and country-level characteristics. In this section, we explore several such characteristics to explain two types of choices: the extensive-margin choice, which is a binary decision whether to commit or not, and the intensive-margin choice that reflects the intensity of the firm's commitment. Throughout this analysis our focus is on the fundamental link between a firm's commitment decision and the level of its scope 1 emissions.

4.1.1 *Extensive-margin decisions*

In Table 2, we report that firms that make commitments have higher levels of emissions. This broad finding, however, does not include any controls, no firm characteristics, and no fixed effects. To allow for the additional confounders, we estimate the pooled predictive regression model with various commitment actions measured one year ahead as dependent variables and a host of contemporaneous controls from Table 2. All regressions also include country and year-fixed effects. Finally, we iteratively include industry and firm-fixed effects. Unless otherwise stated, in all regressions throughout the paper, we double cluster standard errors at the firm and year dimensions.

Columns 1-3 of Table 3, Panel A, report the results for CDP commitments. The dependent variable, *CDPCOM,* is an indicator variable taking the value one if the firm commits and the value zero if it does not. The main explanatory variable is *LOGS1TOT*, which is the level of the firm's yearly scope 1 carbon emissions in logs. Column 1 reports the result with no industry or firm-fixed effects. The coefficient of *LOGS1TOT* is positive and highly significant. This result is not entirely surprising and reflects the possibility that firms located in industries with low emissions are unlikely

to bother with any commitments to begin with. The expected sign of the relationship is less obvious once we absorb the cross-industry variation. We find that the positive correlation between emissions and future commitments is reversed when we add GICS-6 industry-fixed effects (column 2). This result indicates that, within a given industry, it is companies with lower emissions that are more likely to make commitments. The relationship becomes even more negative in the specification with firm-fixed effects (column 3), suggesting that companies that reduce their emissions subsequently are more likely to make commitments, perhaps because it is easier for them to do so. The last result is also economically significant: a one-standard-deviation increase in scope 1 emissions corresponds to a 25% reduction in the likelihood of CDP commitment.

Other significant predictors of a firm's propensity to commit are firm size, property plant and equipment (PPE), stock price volatility, and inclusion in the MSCI ACWI index. As the coefficients of these variables in columns 2 and 3 indicate, the larger is the firm (by sales) the more likely it is to commit. This is true whether we control for industry or not. The largest firms tend to have the highest PPE and to be constituents of the MSCI index, so the fact that both higher PPE and index inclusion also predict a firm's future commitment suggests that CDP has been successfully targeting the more established and visible corporations. Particularly interesting is the finding that among these corporations, the ones with a higher stock price volatility are more likely to commit (the coefficient of *VOLAT* is highly significant and positive, irrespectively of whether we add industry or firm-fixed effects). This finding suggests that commitments are perceived by firms as a way to reduce uncertainty and provide better guidance to investors.

Columns 4-6 of Table 3, Panel A report the results for SBTi commitments. The dependent variable here is *SBTCOM*. Other regressors are the same as before. Qualitatively, the results line up with the findings for CDP commitments, but the coefficients are slightly smaller. This is to be expected given that the SBTi commitment drive was launched later and that the commitment criteria are more stringent. Still, a one-standard-deviation increase in cross-firms scope 1 emissions is associated with a 20% reduction in the likelihood of a SBTi commitment in the next year.

We check the robustness of these results in Panel A for both types of commitments by also including in the regression specification industry*year fixed effects that exploit the variation within a given industry and year. The coefficients of the emissions variables then become slightly more negative and are statistically highly significant. We have also estimated the regression specifications in Panels A and B separately for companies headquartered in different regions: North America, Europe, Asia, and Other. The results of these region-specific regressions are reported in Table A.1. The key finding that emerges is that the negative effect of emissions on commitments is present in all geographic areas except for the catchall category "Other", in which the effect is positive but statistically insignificant. Among the different geographical locations,

companies located in North America and Asia feature stronger negative relationships, while the results for Europe are statistically and economically weaker. These results are consistent with our earlier discussion of Figure 1.

In columns 4 and 8 of Panel A, we also report estimates of a logit model for respectively CDP and SBTi commitments. We bootstrap standard errors and include firm and time fixed effects in the logit model. The results are qualitatively similar, especially for *LOGS1TOT,* our variable of primary interest, which suggests that the functional form of our statistical specification does not have a material impact on our findings. Finally, in Table A.2 we report the results of the regression specification when we replace the variable *LOGS1TOT* with the variable of percentage changes in emissions over respectively the previous one, three, and five years. We find that companies that reduce their emissions over these time periods are more likely to subsequently make commitments, both to CDP and SBTi. This is true across all specifications.

Firms that commit to a specific target reduction in carbon emission send a stronger signal about their willingness to decarbonize. A commitment to a specific target, however, while enhancing their reputation, can also expose them to greater scrutiny and to greater reputation risk. We next explore which firm characteristics, among the firms that make commitments, are associated with emission-level targets, and whether companies that have high levels of emissions to begin with, are less likely to make such commitments. The results are reported in Panel B. Columns 1-3 are for CDP commitments. The dependent variable, *CDPs12tgt*, is an indicator variable taking the value one if a firm commitment is a future scope 1 or scope 2 emission level target, and the value zero if the commitment takes another form. Consistent with the earlier findings, we find that firms are less likely to make an ambitious commitment when their scope 1 carbon emissions are higher. Both in columns 3 and 6, where we add firm-fixed effects, we find that the coefficient of *LOGS1TOT* is highly significant and negative. Note also that the coefficient of MSCI is highly significant and positive. Columns 4-6 report the results for the SBTi commitments. The dependent variable is *SBTs12tgt*, which indicates if the company specifies an SBTi scope 1 or scope 2 emission level target. Here the level of scope 1 emissions has no statistically significant effect on the emission margin. This is probably due to the small sample size of SBTi firms. Finally, in columns 7-9, we consider scope 1 or scope 2 emission intensity targets. The dependent variable here is *SBTs12intgt*. Again, in the most comprehensive specification, we find that the level of scope 1 emissions has no statistically significant effect on the likelihood of such commitments. In a final set of tests, we study predictors of two other extensive margin commitments, *CDPRED* and *SBTSIGN*. In these two cases, we find a consistent negative effect of level of emissions on the likelihood of commitment. We omit these results for brevity.

We conclude from these results that companies are more likely to commit, other things equal, when they have lower carbon emissions. This finding is consistent with a cost-benefit framing for commitments. Based on our results, the cost of attaining a net-zero target presumably is lower, the lower is the level of emissions to start with.

Alternative emissions measures

Are the costs of committing to a decarbonization pathway associated only with the level of direct scope 1 emissions? Or are they also related to scope 2 emissions, or even indirect upstream scope 3 emissions? We explore these questions in Table A.3 of the Online Appendix. Panel A reports the results for CDP commitments for the same regression model as in Table 3, column 3, which includes firm-fixed effects, but changing the emissions variable. Thus, in column 1, we observe that the level of scope 2 emissions (the variable *LOGS2TOT*) has no significant association with firm commitment decisions. In contrast, in column 2, we see that a firm's greater exposure to the level of upstream scope 3 emissions is significantly correlated with its willingness to commit. This finding suggests that companies engaged in activities that involve high carbon emissions along the entire value-chain are more reluctant to commit. Presumably, a commitment to reduce reliance on fossil fuels for downstream activities is likely to also translate into higher input procurement costs, which would be a disincentive to commit. For example, a construction company seeking to reduce its carbon emissions may need to rely less on cement or steel, the production of which involves large carbon emissions, which is likely to raise construction materials costs. Another finding in column 4, is that higher scope 1 and 2 emission intensity is associated with higher firm commitments.[10] Panel B reports the results for SBTi commitments. Again, these results are qualitatively in line with those for CDP commitments, although statistically less significant (one exception is the result for scope 2 emission intensity, which has the opposite effect for SBTi commitments, presumably because the science-based commitments are more rigorous).

Dynamics of firm fundamentals prior to CDP commitment

Our analysis in Table 3 and Table A.1 shows which firm characteristics predict a firm's decision to make a decarbonization commitment. However, these findings do not take account of the evolving context which led some firms to make such commitments. Accordingly, we have also explored what changes in firms' environment took place prior to their commitment decisions through CDP. We report changes in some key firm characteristics in the event window of 5 years prior to and including the commitment date. To allow for the possibility of time-varying and firm-

[10] Oddly, higher scope 2 emission intensity (the ratio of scope 2 emissions over sales) is associated with more firm commitments (see column 7). This finding is in line with the results in Bolton and Kacperczyk (2021a) suggesting that the emission intensity variable is not a good measure of a firm's overall abatement costs.

specific effects driving the different changes in firm characteristics, we take the residuals from the regressions that project each characteristic over the full sample period on these fixed effects.

Figure 2 presents the results. In Panel A, we plot the residuals for scope 1, scope 2, and scope 3 emissions, as well as firm size measured by a stock's market capitalization. What this figure reveals is a notable downward trend in scope 1 emissions prior to a firm making a CDP commitment. It is revealing that we do not observe any similar downward trend for scope 2 and scope 3 emissions, nor for firm size. The direct decarbonization observed prior to firms making a commitment thus does not appear to be driven by exogenous factors but is more likely the consequence of firm actions. In Section 4.1.3, we discuss possible strategic reasons that may explain the pre-trend in scope 1 emissions.

In Panel B, we further look at firm-level PPE, book leverage, ROE, and M/B. Here, the most visible effects are the increasing trend in ROE prior to making commitments and the downward trend in book leverage. These results broadly support the hypothesis that firms with better fundamentals are more likely to make CDP commitments.

Intensive margin

Our analysis has so far focused on the extensive margin: what induces a company to join CDP or SBTi or to choose specific targets? We next turn our attention to the intensive margin. Once a company makes a commitment, how strong is this commitment and what drives a company to make a weaker or stronger commitment?

To address this question, we estimate a regression model with three measures of strength of commitment, *ABATE*, *MAXTGTYR*, and *MAXEMRED*, as dependent variables and the same set of control variables as before. Importantly, in these tests we exploit the cross-sectional variation in commitment strength conditional on specifying a target. Again, our primary focus is on the role of scope 1 total emissions as the predictor of each of the variables. We consider two empirical specifications with industry-fixed effects and firm-fixed effects. We report the results in Table 4. In columns 1-2, we study the predictors of emission abatement. We observe a strong negative relationship between the level of emissions and the abatement rate, that is, firms that have higher emissions reduce their emissions at a slower annual rate. In columns 3-4, we look at the maximum number of years for which firms make commitments. In the specification with industry-fixed effects, in column 3, we find that firms with higher emissions tend to extend their target horizon more into the future, consistent with the greater costs these firms face when making commitments. The result becomes insignificant once we control for firm-fixed effects. Finally, when we look at the effect of emissions on the maximum emission reduction the firm commits to, we find that the effect is negative, suggesting that firms with higher emissions tend to commit

to milder emission reduction. The effect is statistically significant for the model with firm-fixed effects. In sum, our results indicate that the level of emissions plays an important role in the strength of firm commitment. Hence, the decision to commit is not only a simple yes or no, but also a more nuanced choice that reflects the perceived likelihood of making such commitments.

Another intensive margin is how targets are revised over time. Are they strengthened or weakened, and what determines the direction of the revision? To answer this question, we define two sets of variables. First, *UPGRADE_EXT* (*DOWNGRADE_EXT*) is equal to one any time a firm *qualitatively* strengthens (weakens) its target, and equal to zero when the target remains the same. Among the firms that commit through CDP, some make commitments based on *emission intensity* targets and others on *emission level* targets (and some report both intensity and level targets). Emission intensity targets are less ambitious because it is possible for a company to reduce emission intensity, while still increasing the level of their emissions. This is the case whenever sales grow faster than emissions. In effect, companies that make emission intensity commitments could simply be making high sales growth commitments, without necessarily intending to reduce their emissions. Our ranking of target strength follows the increasing order of "no target", "no target – committed", "intensity target without absolute level target equivalent", "intensity target with absolute level target equivalent", "absolute target", and "absolute and intensity target". In an alternative specification, we define variable *UPGRADE_INT* (*DOWNGRADE_INT*) based on the *quantitative* change in the target, *CDPTGT*. Firm observations that indicate an increase in the fraction of intended emissions reduction are defined as upgrades and any reductions in the target value are defined as downgrades.

Table 5 reports the results of this analysis. The dependent variables are the respective upgrades and downgrades variables. For brevity, we only report results that include firm-fixed effects. Columns 1 and 2 report results for upgrades. In both cases, the coefficient of *LOGS1TOT* is negative and highly significant, suggesting that among the firms that commit those with higher emissions are less likely to strengthen their commitments. In turn, the coefficients for the downgrade variables indicate that firms that weaken their commitments are more likely to have high emissions. However, these results are statistically insignificant. One reason for the weaker power of the tests could be that fewer firms weaken their targets over time.

4.1.2 *Disciplinary Forces*

The firm-level decision to commit is often influenced by pressure exerted by various stakeholders of the firm. In this section, we evaluate several channels through which such disciplinary forces play out. First, we examine the importance of external and internal governance forces. Next, we

study the role of various peers in this decision, such as industry pressure, and pressure coming from national commitments and social norms.

External and internal corporate governance

We assess the extent to which the likelihood to commit relates to corporate governance and the pressure from different firm stakeholders. As is common, we distinguish between external and internal governance forces. External governance relates to market monitoring, which can be captured by analyst coverage, the number of institutional owners, institutional ownership concentration, and the sentiment coming from media coverage. Internal monitoring relates mainly to board composition and the profile of directors. We report the results on the effects of external governance on firm commitments in Table 6. The key explanatory variables of interest are *ANALYST*, which is the natural logarithm of the number of analysts covering the stock, *NOOWN*, which stands for the natural logarithm of the number of institutional owners, *HERF*, which is the Herfindahl index for ownership concentration, and *ESS*, which is the fraction of news articles with a positive tone relative to both positive and negative articles. Panel A reports the results for CDP commitments. In columns 1-4, we show the results for the model with industry-fixed effects. Our key findings from these regressions are that greater analyst coverage tends to act as an incentive to commit (the coefficient of *ANALYST* is significant and positive), but more dispersed ownership, as reflected in a higher number of institutional investors, tends to magnify the disincentive to commit for firms with higher emissions (the coefficient of *NOOWN* is highly significant and negative). Interestingly, greater ownership concentration (a higher *HERF*) is associated with a higher propensity to commit. In column 4, we assess the effect of *ESS* on *CDPCOM*. We find a negative and statistically significant effect of the media tone suggesting that firms that sign up for CDP activity may want to reverse the negative media attention they get in the press.

In columns 5-8, we estimate the same model now replacing industry-fixed effects with firm-fixed effects, which allows us to absorb time-invariant firm-level heterogeneity in the data. In this regard, the interpretation of the results is less cross-sectional but more within a firm. The results from this model differ slightly. While the effects of *ANALYST* and *NOOWN* remain similar, the effect of *HERF* is now reversed, which indicates that the increase in ownership concentration of a given firm may in fact reduce the likelihood of commitment. One interpretation of this result could be that making a commitment for such companies would in effect be a form of self-commitment for the large owners, which they may have no urge to do. The coefficient of *ESS* remains negative, but it becomes statistically insignificant.

Panel B reports the results for SBTi commitments. Again, the results for *ANALYST* and *NOOWN* qualitatively mirror those for CDP commitments. The coefficient of *HERF* is now positive and significant throughout. Notably, the effect of *ESS* is now positive, and borderline statistically significant in the model with firm-fixed effects. This result is more consistent with the view that SBTi attracts firms that are truly good firms, enjoying positive media attention prior to their commitment.

We report our first set of results on the effects of internal governance in Table 7. We consider *CDPCOM* and *SBTCOM* as our dependent variables. As before, all the regression specifications include the same control variables, as well as country and year-fixed effects. In Panel A, we explore the effects on CDP commitments with industry-fixed effects. We analyse in turn the role of *Board Size* (variable CG_BD_BS_O01 in column 1), the number of *women directors* on the board (CG_BD_BS_O03 in column 2), the fraction of directors with a *finance background* (CG_BD_BS_O04 in column 3), the average *tenure* of board members (CG_BD_BS_O05 in column 4), the fraction of *nonexecutive directors* (CG_BD_BS_O06, in column 5), the fraction of independent directors (CG_BD_BS_O07 in column 6), and the fraction of *strictly independent* board members (CG_BD_BS_O08 in column 7). These results uncover several novel cross-firms facts. Larger boards are generally seen as less functional, and longer tenures of directors as reflecting more captured boards, both giving greater discretion to the CEO. Interestingly, more CEO discretion maps into a lower likelihood for the firm to commit. Indeed, the coefficients of *board size* and *tenure* are both significant and negative. Interestingly, a finance background is not helpful in bringing firms to make decarbonization commitments. Indeed, boards with more directors with a finance background are more likely to be associated with firms that do not commit, as the negative and significant coefficient for this variable indicates. Remarkably, the most significant variable to affect firm commitments is the number of women on the board. The greater their number the more likely the firm is to commit, as the highly significant and positive coefficient for this variable indicates. Another positive factor, although less significant is the fraction of nonexecutive and strictly independent directors. We further explore governance variables related to voting and the strength of internal governance practices. Our explanatory variables are *equal voting rights* (CG_SH_SR_O02 in column 8), which captures the extent to which a company is controlled by a minority owner through a dual-class share structure, the *number of antitakeover devices* (CG_SH_SR_O06 in column 9), which shield the company from the discipline imposed by the threat of a hostile takeover, and *controversial company* (CG_SH_SR_O07 in column 10), which is based on the number of articles and stories in the financial media on controversial decisions made by the corporation. We find that companies with more equal voting rights are associated with fewer firm commitments, although this effect is weak. More significantly, companies with more

antitakeover protections are less likely to commit (the coefficient of this variable is highly significant). Finally, we find that more controversial companies from a governance perspective are associated with more firm commitments (the coefficient for this variable is positive and highly significant). This result is consistent with our findings reported in Table 6 of a negative and statistically significant association between positive media coverage and CDP commitments, suggesting that companies may seek to reverse negative media coverage with a positive initiative such as signing up with CDP. Panel B reports the results for SBTi commitments. They are qualitatively in line with those for CDP commitments. Most of the coefficients in the regressions with industry-fixed effects are consistent with our CDP findings and statistically significant.

We consider the same regression specifications with firm-fixed effects. The results are presented in Table A.4. In Panel A, we report the results for CDP commitments. The predictions are statistically less significant, suggesting that most of the variation in the data comes from the cross-firm differences within industries. Firm governance does not change as much over time; hence, the identification of within-firm effects is more difficult. Of all the variables we consider, only the equality of voting rights remains a statistically significant predictor of CDP commitment. Still, several other variables have the same directional effect. In Panel B, we report the results for SBTi commitments. As before, the statistical power to identify within-firm variation in governance is limited, though the direction of the effects remains the same.

Policy and Investor Pressure

One important factor that could encourage firms to make commitments is external pressure from policy makers, investors, and consumers. Accordingly, we assess the importance of some of these external pressures in this section. Specifically, we explore the effects of climate change mitigation policies from two sources: domestic regulators or international pan-governmental agreements. We evaluate the importance of each of these policy channels separately, using unique data on country-specific regulatory tightness. Our policy variables come from *Germanwatch* and have been previously used in other studies of global climate risk (e.g., Ylä-Anttila, Gronow, Stoddart, Broadbent, Schneider, and Tindall, 2018, and Bolton and Kacperczyk, 2023). Each year, *Germanwatch* collects information on all climate-related policies and converts this information into a numerical score, where a higher number means a stricter regulatory regime. We define two variables that we interact with firm-level carbon emissions, *INTPOLICY*, which is a normalized measure of international policy tightness, and *DOMPOLICY*, which is a normalized measure of domestic policy tightness.[11] For both scores, countries with higher values have tighter climate

[11] Further details on the methodology behind the policy measures can be obtained from the Germanwatch website, at https://www.germanwatch.org/en/21110.

policies in place. We further capture investor pressure using the variable distance-to-exit (*DTE*), a firm-level measure by Cenedese et al. (2024), which estimates the risk of future divestment: A higher DTE measure means lower investor pressure since firms face a longer horizon before their stock is at risk of being excluded from net-zero portfolios, which aim to gradually reduce their carbon footprint.

With these three measures we estimate the effect of policy and institutional investor pressure on the likelihood that firms make a commitment to either CDP or SBTi (or both). Our regression model follows that in Table 3. In addition, we condition the effect of each external pressure variable on firm-level emissions. We report the results in Table 8. We find that a more stringent domestic climate policy environment increases the likelihood that a firm joins CDP or SBTi. When it comes to international climate policies, the effect is only significant for CDP commitments. Moreover, we find that the effect of climate policies on commitments becomes weaker for firms with higher emissions, as is indicated by the negative coefficient for the interaction term climate policy and emissions. This latter finding suggests that policy pressure to commit only goes so far and tends to sway the firms with low costs of making such commitments.

When it comes to investor pressure, we find that companies that face a greater threat of future divestment are less (more) likely to join CDP (SBTi). Moreover, the pressure effect is smaller if companies have higher scope 1 emissions, which is in line with our other findings on the effects of external pressure.

Peer effects

Our analysis so far has mostly examined firm-level determinants of firm commitments. But the broader socioeconomic context and peer effects are also relevant. We explore the role of such effects in three ways.

In our first test, we focus on the role of industry peer pressure. Our hypothesis is that companies that operate in industries with a greater fraction of committed firms in year t may be more likely to commit in year $t+1$. To evaluate this hypothesis, we define the variable *INDCOM*, which measures the fraction of companies within an industry that has already committed to either of the two initiatives. We estimate the effect of this variable on the next-year's commitment decision of uncommitted firms. To account for any nonlinear effects in the relationship we further include a squared value of the variable, *INDCOMSQ*. Table 9 reports the results. We iteratively present the results for the baseline model, the model with industry-fixed effects, and the model with firm-fixed effects. Columns 1-3 correspond to the effects based on CDP commitment and columns 4-6 the effects based on SBTi commitment. For all specifications we find a strong positive relationship between the fraction of firms adopting commitment and the subsequent decision to

join the commitment by an individual firm. For the model without firm-fixed effects we also find a positive effect on the quadratic term, which suggests that the decision to join the coalition gets progressively more likely as more firms join. However, this effect disappears when we include firm-fixed effects, in columns 3 and 6.

In our second test, we break down the effects of carbon emissions on firms' willingness to commit by continent, mainly North America, Europe, Asia, and Others, and ask in which parts of the world firms are least likely to commit. Table A.5 reports the results with *CDPCOM* (Panel A) and *SBTCOM* (Panel B) as dependent variables, and with firm characteristics, country, time, and firm-fixed effects. Interestingly, the negative coefficient for the level of scope 1 emissions is not significant in Europe. It is only in North America and Asia that companies are less likely to commit when their direct carbon emissions are higher. In other words, the CDP and SBTi commitment campaigns can reach companies in Europe beyond those for which the effort to reduce emissions is smallest. This could reflect the fact that the socially responsible investment and economic sustainability movements have started earlier in Europe than elsewhere. It could also reflect the fact that the Emission Trading System (ETS) has been active longer in Europe and has imposed greater discipline on high emitters. Another striking finding in Panel A is that MSCI index constituents, both in Europe and in Asia, are significantly more likely to commit. It is well known that index inclusion, especially for major market indexes, attracts greater visibility and scrutiny, which could explain the lower resistance to making commitments by these companies.

In our third test, we zoom in on the decision to join the second coalition when a firm has already joined one coalition. We evaluate this decision either by means of predicting *SBTCOM* with *CDPCOM*, or vice versa. We present the results in Panel C. In both cases, we find a strong positive coefficient of either of the two variables. This result suggests that being associated with one coalition may make it easier for the firm to join the second coalition. Overall, our results indicate the important role of other players in an individual firm's decision to make a commitment.

National and firm commitments

Another factor that is likely to influence companies to commit is the general stance towards carbon emissions of the countries in which they operate (or are headquartered). If the government is already highly committed to reducing the country's carbon footprint, as in the UK or Sweden, then companies may believe that the onus is no longer on them. Indeed, the recent recognition by leading US corporate executives of the social and environmental responsibility of business was partly a response to government inaction. But if the government is more active in tackling social and environmental problems, there may be a perception that business can safely return to the business of business. Alternatively, national commitments can be a spur to action for companies.

Business leaders may think that their commitments will have a bigger impact if their governments take the lead. We explore the interaction between national and firm commitments by looking at the effects of INDCs and NDCs on firm commitments. The main control variables, *INDC* and *NDC*, are indicator variables taking the value one if the country in which the company is based has already made an INDC (respectively NDC) commitment, and zero otherwise. Many countries made an INDC in the runup to the Paris Agreement, and most converted their INDC into an NDC after the agreement was ratified. Since the variation in the data is at the country level, we cluster standard errors at that level. We report the results in Table A.6. Our main finding is that companies based in countries making INDCs were more likely to commit. The coefficients of INDC under all specifications (including columns 3 and 6, which include firm-fixed effects) are positive and highly significant. In sharp contrast, however, companies in countries later making NDCs were less likely to commit. One possible explanation for these apparently contradictory results is that INDCs were mostly seen as signalling intent, and companies were willing to signal their own intent along with their governments. But once intentions became national commitments, companies perceived a lower urgency to take the reduction in emissions in their own hands.[12] One caveat though is that our sample is not ideal for this test given that the control group is tilted towards smaller countries, which raises selection concerns. The robust finding, however, is that the rate of commitments has been rising steadily following the Paris agreement.

4.1.3 *Strategic aspects of commitment choices*

Our results so far establish that firms that announce commitments seem to have lower emissions upon announcement, and potentially in the years leading up to the announcement (Figure 2). In this section, we explore potential drivers of these patterns by looking at firm choices of the baseline year in setting commitment targets and the degree to which firms are able to reduce emissions consistent with their declared targets.

Conditional on making a commitment, firms are obviously concerned about the risk of failing to reach their stipulated target. To manage this risk firms could respond by setting targets that are within easy reach. They can do this by setting a low bar, or by setting a target far in the future. One way of lowering the bar is to choose the base year strategically. That is, to choose a reference year when the firm had particularly high emissions. To explore this question, we look at all firm commitments with an explicitly stated base year and estimate the relationship between the level of scope 1 emissions and the choice of the base year. We define the variable *BASEYEAR* equal one for the year specified as the base year and zero for each of the two years before and each

[12] Even though both variables are correlated with each other, the qualitative result does not depend on whether we include each variable separately, or whether we pool them together as in our current test.

of the two years after the base year. Importantly, we can only consider cases for which the information about emissions is known up to the point when the firm makes its formal commitment. In this regard, the firm has all the information about its own emissions in all five years we consider. Our dependent variable is *LOGS1TOT*.

We present the results in Table 10. In columns 1-3, we show the results from the unconditional model that iteratively adds various fixed effects. The more comprehensive specifications, in columns 2 and 3, indicate a positive and statistically significant effect of the base year on the level of emissions. This result suggests that the choice of the base year is unlikely to be random. We find that firms do tend to choose the years when emissions are the largest. Making such a strategic choice allows them to meet any future target more easily since they start from the point with higher emissions, knowing that they have already made some progress thereafter. We further sharpen our analysis by looking at the subset of firms with either high or low emission levels. The cut-off value we specify is based on the median value of emissions in the year of making commitments. We present the results from this model in column 4 (high-emission group) and column 5 (low-emission group). We find that the relationship between *BASEYEAR* and *LOGS1TOT* is positive for the two subsamples. This result sheds further light on the empirical finding in Figure 2 that emissions may be declining prior to the commitment announcement dates. However, the effect is significantly larger for high carbon emitters. Given that such companies are more likely to struggle to meet their target, it is plausible that the choice of base year is strategic. Moreover, this finding suggests that firm commitments are not just formalizing what firms intend to do anyway. If that were the case, it would be unnecessary to strategically pick a favourable base year. What is more, the hypothesis that firm commitments simply formalize a decarbonization process that is already baked in is inconsistent with our findings in Figure 2 that both scope 2 and scope 3 emissions do not decline in line with scope 1 emissions.

We further assess whether companies that have made commitments have been falling behind in the implementation their pledges. To do this we posit that the *effective* annual abatement rate consistent with the company's absolute-level commitment is a linear yearly reduction rate that will bring the company's emissions down to the limit set in the commitment for the target year. We contrast this yearly reduction rate with the actual decarbonization rates following the announcement of the commitment. Figure 3 reports the shortfall in decarbonization for the entire sample of firms making CDP commitments. We find that the average firm in our sample fails to meet its CDP commitment by 7.9 percentage points. The median value is 3.3 percentage points, which is a consequence of the right skewness in the sample, with some companies failing by a significant margin. The distribution of firm-level outcomes is heterogeneous, with 38% of cases involving companies that have been meeting their commitments.

These findings provide further evidence against the hypothesis that firm commitments are simply formalizing what firms intended to do anyway. For, if that were the case, why would the company fall behind on its commitments? Rather, these findings suggest that companies making commitments have been over-optimistic in their ability to meet the promised target, or that they have not been particularly careful in setting their targets, expecting that the failure to meet the promised target would not be too consequential. These findings are also consistent with the idea that companies face a lot of uncertainty with respect to external factors that may facilitate or impede their ability to decarbonize.

4.2 *Do firm commitments correlate with future emissions and profitability?*

We turn next to the question of the effects of firm commitments. Do they actually have an impact on the carbon emissions of the firms that commit? A related question is to what extent commitments are mostly a communication tool (a form of greenwashing), or whether they are materially changing the firm's future carbon emissions.

We begin by exploring whether in fact emissions decline after a commitment is made. To do this, we regress scope 1 emissions, *LOGS1TOT*, in respectively years t+1 and t+3, where t is the first year the commitment is made, against the respective indicator variables, *CDPCOM*, *SBTCOM*, as well as country-level commitments *INDC* and *NDC*. We report the results in Panel A of Table 11. The first three columns show the results for one-year ahead emissions, and the next three columns for three-year ahead emissions. Note that when we exclude industry or firm-fixed effects the coefficient of *CDPCOM* is highly significant and positive in column 1. In turn, the coefficient for *SBTCOM* is negative. However, in the model where we add industry-fixed effects, in column 2, the coefficients of both *CDPCOM* and *SBTCOM* turn negative but only the latter is highly significant. When we add firm-fixed effects, in column 3, both coefficients are negative but statistically insignificant. Interestingly, NDCs also appear to have a negative effect on one-year ahead emissions. The results for three-year ahead emissions are generally similar but statistically noisier. Again, the coefficient of *SBTCOM* is negative throughout but it is statistically significant only for the model with industry-fixed effects. Overall, the results suggest that the commitment requirements of SBTi have more bite both in the short and in the longer run.

While the results are suggestive, they do not reveal a full picture of what kind of companies reduce their emissions the most, high or low emitters? We answer this question in the subsequent test in which we interact both *CDPCOM* and *SBTCOM* with *LOGS1TOT*. We report the results from the estimation in Panel B. We find some interesting results, especially in the model with industry-fixed effects. The coefficient of the interaction term is positive and significant both for *CDPCOM* and *SBTCOM*, suggesting that the reduction in emissions coming from commitments

is larger for companies that have smaller emissions to begin with. This result underscores our main thesis that the commitments are largely acted upon by firms that are already best in class, which could be why they do not lead to significant aggregate effects.

We repeat the same analysis as in Panel A of Table 11 for commitments that target future emission *intensity*. The dependent variable is now *S1INT*. The results are reported in Table A.7, in columns 1-3 for one-year ahead emissions, and in columns 4-6 for three-year ahead emissions. We find some evidence that intensity targets reduce firms' emissions, but the results are visibly weaker.

We explore further the effects of commitments on the intensive margin in Table A.8. Instead of just looking at whether the firm commits to a level or intensity target, we also look at the target year (how far into the future is the commitment), *MAXTGTYR*, the maximum emission reduction target, *MAXEMRED,* and the yearly abatement rate implied by the commitments on a linear basis, *ABATE,* as the main control variables. Panel A reports the results for one-year ahead emissions. Focusing on column 3, the only one that includes firm-fixed effects, we find that the most significant commitment is the maximum emission reduction target. We also find that the later the target date the lower the effect (the coefficient of *MAXTGTYR* is significant and positive), which offers some confirmation to the many skeptical commentators who have argued that firm commitments are mostly cheap talk. The results in Panel B for three-year ahead emissions are further confirmation of the weaker effects of later targets on carbon emissions.

Finally, we undertake a staggered difference-in-differences analysis, comparing the levels of scope 1 emissions pre and post commitment for the companies that do commit relative to those that do not. Our empirical implementation follows the recent methodology.[13] In the tests, we specify commitments using *CDPCOM* and *SBTCOM*. Companies that commit are defined with an indicator variable *TREAT* equal to one. The firms for which *TREAT* is equal to zero is the control group. Moreover, we specify the control group for each treated firm using companies from the same GICS industry and closest to the firm in terms of market capitalization. The control group is sampled with replacement. For each commitment event, we also define a corresponding variable *AFTER* that is equal to one for all the firm-level observations within three years after the commitment takes place, and equal to zero for all the firm-level observations before the commitment takes place. Both *TREAT* and *AFTER* are correspondingly numbered 1 and 2 for the two commitment variables. Our coefficient of interest is *TREAT*AFTER*, which captures the difference in emissions post commitment.

The results are reported in Table 12. In Panel A, we validate the quality of our matched control group by performing a balance test. We compare the average values of all control variables in the regression before the treatment takes place separately for the treatment sample and the

[13] Baker et al. (2022) and Roth et al. (2022) provide excellent summaries of the various approaches.

control sample. The left panel corresponds to *CDPCOM*, and the right panel corresponds to *SBTCOM*. We find that both groups are closely matched along all the observables. In the first group, the only variable that is statistically different across the two groups is *BETA*, while *ROE* is different between the two samples for the second group. We conclude that the treatment and control groups are not very different from each other prior to the treatment.

In Panel B, we report the results from estimating the difference-in-differences model with *LOGS1TOT* as a dependent variable. In the first two columns, we consider the change in one year around the treatment while in columns 3 and 4 we look at the effect on emissions three years out in the future. Column 1 focuses on CDP commitments. The coefficient of the interaction term is significant and negative, indicating that firms with CDP commitments reduce their emissions more than those that do not make any commitments. Column 2 focuses on SBTi commitments. The coefficient of the interaction term is also negative and highly significant. At the same time, we find very weak effects when we look at the emissions in the longer horizon. If anything, the effect becomes weakly positive. Overall, the results indicate that, companies tend to reduce their emissions after making commitments in the short run, but less so in the longer run.

A potential issue for the interpretation of most our empirical findings relates to the application of two-way fixed effects in our estimation. Including industry, and especially firm-fixed effects could introduce an artificial bias in the estimated coefficients, possibly even change their signs.[14] However, basic economic logic calls for including industry-fixed effects in our regression specifications. As Bolton and Kacperczyk (2021a,b; 2023) argue, the impact of emissions on firm decisions is largely driven by differences within industry, so that the estimates are more informative in settings that account for cross-industry variation.

We have conducted several tests to address any econometric robustness concerns. First, to get more clarity on the potential concerns with the staggered diff-in-diff specification, which are due to possible heterogenous group mean comparisons across time, we disaggregate the data as much as possible. Following Fama and MacBeth's approach, we estimate our models separately for each industry and average the coefficient across all industries. This is akin to the stacked-regression approach that has been discussed in the literature (e.g., Baker et al, 2022). We find that the average coefficient has the same sign as the one obtained from the panel regression. We further split the sample into biannual industry-level clusters and estimate the cross-sectional regressions with firm-fixed effects. This method allows us to capture firm-level variations in the data. Averaging the coefficients across all strata we find that the effect of emissions on commitments is again negative. Second, as Goodman-Bacon (2022) and others have argued, the problem with

[14] Note that the new methods have been predominantly developed for binary treatments, but most of our regressions use continuous variables as right-hand-side variables (Tables 3-10).

extreme biases typically arises in settings where the sample size that includes both early and late treated observations is relatively large. This is unlikely to be the case in our setting because our sample is predominantly composed of "never-treated" cases. Specifically, the frequency of CDP committed observations is 13.8% and the same number for SBTi observations is merely 1.4%, which means that the weight that our estimates place on the "bad comparisons" is small. There is therefore no reason to expect that our unconditional estimates are predominantly driven by this misspecification problem.[15] Finally, and more holistically, if the results in our paper were purely driven by an econometric bias, one would expect that this bias would also affect the coefficients of other variables. As an example, the results in Table 3 indicate that the other coefficients do not change materially. In sum, we believe that the more likely explanation behind our results relates to the underlying economic logic driving firm commitments.

In a final test we also relate firm-level commitments to future profitability. Our underlying hypothesis is that firm commitments are costly and hurt the bottom line, but they may improve medium-term profitability. We estimate the same model as that in Table 11 using next year and three-year ahead measures of ROE as dependent variables. We report the results in Table 13. Even though we find that firm commitments predict higher profitability in the future, the statistical significance of the result is weak, which suggests that profitability may not be the primary reason why firms make commitments in the first place.

5. Conclusion

Corporate purpose has been generally understood as a set of goals for a company that go beyond profit maximization (the latter objective is so self-evident that it requires no special reference). These goals are often explicitly specified in the company's mission statement. They commonly affirm a set of values the company stands for and a commitment to the welfare of the broader community in which the company operates. Increasingly, companies have included in their mission statements their concerns for protecting nature and mitigating climate change. Scholars have mostly framed corporate purpose as the isolated expression of individual preferences of the founders and owners of an individual company. There has been little exploration of the social forces that lead companies to assert their values and broader aspirations. Yet, when it comes to climate-change mitigation it is impossible to abstract from the context of the rising corporate social responsibility movement (see e.g., Eccles and Klimenko, 2019) if one wants to understand what has led companies to increasingly embrace climate preservation aspirations.

[15] As Baker et al. (2022, page 8) argue, "the issues posed by "potentially problematic 2x2s" are mitigated to the extent that units that never receive treatment account for a more significant portion of the sample."

Several leading non-profit organizations (most prominently CDP, the GHG Protocol, SBTi) and U.N. sponsored initiatives (most prominently the UN Global Compact, the Principles for Responsible Investment, the UNEP-FI) have played a major role in marshaling corporate support for climate change mitigation and in broadening the coalition of companies that are willing to play an active role in the drive to reduce greenhouse gas emissions. Following the Paris Agreement, CDP and other cofounders of SBTi started a major global initiative to get companies to set science-based emission reduction targets, with the assessment that a significant dent in emissions is only attainable if a large mass of companies commits to decarbonization. A significant impact on climate change would only materialize if the expression of individual companies' purpose becomes part of a global movement.

By some measures the science-based initiative has already gone far beyond the circle of a select few companies, with over 5,500 major companies signing up with SBTi and over 23,000 companies disclosing their emissions or committing to reduction targets through CDP. Yet, still little is known on the characteristics of the companies that have signed up, and how they differ from all the other companies that have stayed on the sidelines. Our study is a first step in understanding better how corporate social responsibility manifests itself through coalition building in driving the reduction in corporate carbon emissions. In an economic environment where public policy towards climate change is slow to respond to the rising climate crisis, and where carbon transition risk is underpriced, the corporate responsibility movement seeking to encourage voluntary decarbonization by the largest corporate emitters offers a third way, one that can elicit a faster public policy reaction to address the climate urgency (Bolton, 2023). Our findings highlight both the promise and the limits of this movement. If seen as a complement to public policy, our findings reveal that the reach of the movement is significant and has been rising, with material implications for the future emissions of the companies that have made decarbonization commitments. If seen as a substitute to public policy, however, our study reveals the limits of this effort, with overall carbon emissions of the entire listed corporate sector barely declining despite the rise in the number of companies making commitments through CDP and SBTi.

A key finding of our study is that corporate governance (internal and external) matters in getting companies to sign up, and that the companies that have signed up so far are the "good apples" in terms of carbon emissions. Although these companies have significantly reduced their emissions through their commitments, emissions of the corporate sector as a whole (including those companies that have not yet made any commitments) have barely changed. This underscores the difficulty faced by corporate social responsibility movements that rely mostly on goodwill and moral suasion. Unless their efforts are supported by public policy to curb emissions and institutional investor pressure, it will be increasingly difficult to persuade most companies that are

still on the sidelines to join the decarbonization commitment drive. A possibly encouraging development is that several regulatory agencies around the world have taken such policy initiatives, especially in the U.K. and the E.U. In the U.S., the Securities Exchange Commission (SEC) has also moved to mandate corporate carbon disclosures, although shortly after the final adoption of the new carbon disclosure rules, the SEC has stayed the rule pending judicial review.[16]

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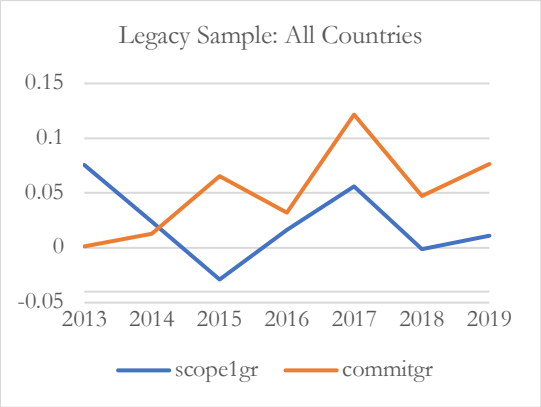
Appendix: Variables Definitions

Variable Name	Variable Definition	Data Source
Commitments variables		
CDPCOM	equals one if a firm issues a CDP commitment, and zero otherwise.	CDP
SBTCOM	equals one if a firm issues a SBTi commitment, and zero otherwise.	SBTI
CDPs12tgt	equals one if a firm specifies in its CDP commitment a scope 1 or scope 2 absolute emission target.	CDP
SBTs12tgt	equals one if a firm specifies in its SBT commitment a scope 1 or scope 2 absolute emission target.	SBTI
SBTs12intgt	equals one if a firm specifies in its SBT commitment a scope 1 or scope 2 emission intensity target.	SBTI
SBTSIGN	equals one if a firm is a SBTi signatory	SBTI
CDPRED	equals one if a firm joins a CDP emission reduction initiative	CDP
INDC	an indicator variable if a country has signed the INDC	
NDC	an indicator variable if a country has signed the NDC	
CDPTGT	percentage value reduction of total scope 1 emissions that the firm commits to CDP	CDP
CDPs1YR	earliest year to which the CDP commitment applies	CDP
MAXTGTYR	number of years to the maximum commitment date	CDP
MAXEMRED	maximum percentage reduction in emissions along all the stated commitments	CDP
ABATE	ratio of *MAXEMRED* and *MAXTGTYR*	CDP
CDPTGTHOR	difference between *CDPs1YR* and the base year of the stated target	CDP
UPGRADE_EXT	equal to one any time a firm *qualitatively* strengthens its target, and equal to zero when the target remains the same. Ranking of target strength follows the increasing order of "no target", "no target – committed", "intensity target without absolute level target equivalent", "intensity target with absolute level target equivalent", "absolute target", and "absolute and intensity target".	CDP
DOWNGRADE_EXT	equal to one any time a firm *qualitatively* weakens its target, and equal to zero when the target remains the same. Ranking defined as above.	CDP
UPGRADE_INT	based on the *quantitative* change in the target, *CDPTGT*. Firm observations that indicate an increase in the fraction of intended emissions reduction are defined as upgrades	CDP
DOWNGRADE_INT	based on the *quantitative* change in the target, *CDPTGT*. Firm observations that indicate any reductions in the target value are defined as downgrades	CDP
INDCOM	fraction of companies within an industry that has already committed to either of the two initiatives	CDP
INDCOMSQ	squared value of INDCOM	CDP
BASEYEAR	equal one for the year specified as the base year and zero for each of the two years before and each of the two years after the base year	CDP
Emissions variables		
LOGS1TOT	natural logarithm of firm-level scope 1 emissions	S&P Global Trucost
LOGS2TOT	natural logarithm of firm-level scope 2 emissions	S&P Global Trucost
LOGS3TOT	natural logarithm of firm-level scope 3 emissions	S&P Global Trucost
S1CHG	annual percentage change in total scope 1 emissions	S&P Global Trucost
S2CHG	annual percentage change in total scope 2 emissions	S&P Global Trucost
S3CHG	annual percentage change in total scope 3 emissions	S&P Global Trucost
S1INT	firm-level scope 1 emission intensity defined as the level of emission divided by the firm sales	S&P Global Trucost
S2INT	firm-level scope 2 emission intensity defined as the level of emission divided by the firm sales	S&P Global Trucost
S3INT	firm-level scope 3 emission intensity defined as the level of emission divided by the firm sales	S&P Global Trucost
Corporate controls		
LOGSIZE	natural logarithm of market capitalization (in $ million)	Factset
LOGPPE	natural logarithm of plant, property & equipment (in $ million)	Factset
LEVERAGE	book value of leverage defined as the book value of debt divided by the book value of assets	Factset
ROE	return on equity	Factset
M/B	market value of equity divided by the book value of equity	Factset
BETA	firm-level market beta estimated over the one-year period	Factset
VOLAT	monthly stock return volatility calculated over the one-year period	Factset
MOM	cumulative stock return over the one-year period	Factset
RET	monthly stock return	Factset
INVEST/A	CAPEX divided by book value of assets	Factset
MSCI	an indicator variable equal to one if a stock is part of MSCI World Index, and zero otherwise	MSCI

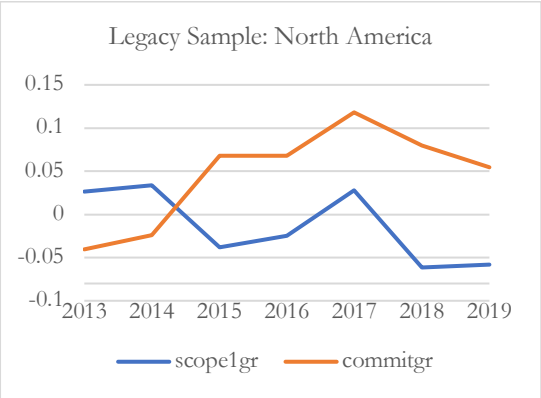
Governance and outside pressure variables		
ANALYST	natural logarithm of the number of equity analysts providing earnings forecast for a firm in a given year	IBES
NOOWN	natural logarithm of the number of institutional owners	Thomson Reuters
HERF	Herfindahl index for ownership concentration	Thomson Reuters
ESS	fraction of positive media news by Dow Jones newswires over the previous one-year period	Ravenspack
CG_BD_BS_O01	number of board members	Refinitiv
CG_BD_BS_O03	number of *women directors* on the board	Refinitiv
CG_BD_BS_O04	fraction of directors with a *finance background*	Refinitiv
CG_BD_BS_O05	average *tenure* of board members	Refinitiv
CG_BD_BS_O06	fraction of *nonexecutive directors*	Refinitiv
CG_BD_BS_O07	fraction of independent directors	Refinitiv
CG_BD_BS_O08	fraction of *strictly independent* board members	Refinitiv
CG_SH_SR_O02	*equal voting rights,* captures the extent to which a company is controlled by a minority owner through a dual-class share structure	Refinitiv
CG_SH_SR_O06	*number of antitakeover devices*, which shield the company from the discipline imposed by the threat of a hostile takeover	Refinitiv
CG_SH_SR_O07	equal one if the company is *controversial*	Refinitiv
DOMPOLICY	the score measuring the strength of domestic climate policy at the country level in a given year	Germanwatch
INTPOLICY	the score measuring the strength of international climate policy at the country level in a given year	Germanwatch
DTE	distance-to-exit; the number of years it is expected to take for a given company to be removed from the net-zero portfolio	From Cenedese et al. (2024)

Figure 1: Aggregate Commitment Growth and Scope 1 Emissions Growth

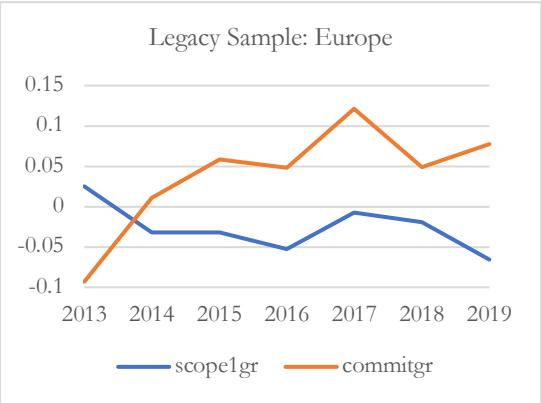
The sample is restricted to firms with emission data from Trucost prior to 2016 (legacy sample). The sample period is 2012-2019. Each graph presents the annual growth rate in the aggregate scope 1 emissions (*scope1gr*) and CDP commitment rate (*commitgr*) for four different samples. The first panel corresponds to the full sample, the subsequent panels are restricted to firms located in North America, Europe, and Asia, respectively. For each panel, we report the results from the regression model with the growth in scope 1 emissions as a dependent variable and the rate of commitment as the only independent variable.



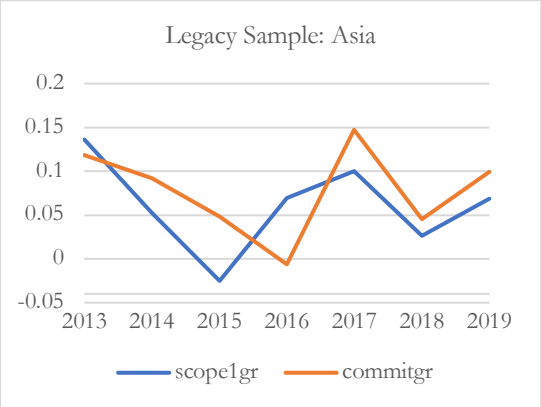
scope1gr	Coef.	Std. Err.	t	P>t
commitgr	-0.1155	0.3764	-0.31	0.771
Constant	0.0276	0.0240	1.15	0.3



scope1gr	Coef.	Std. Err.	t	P>t
commitgr	-0.3318	0.2907	-1.14	0.305
Constant	0.0019	0.0205	0.09	0.931



scope1gr	Coef.	Std. Err.	t	P>t
commitgr	-0.2536	0.1639	-1.55	0.182
Constant	-0.0162	0.0120	-1.35	0.234

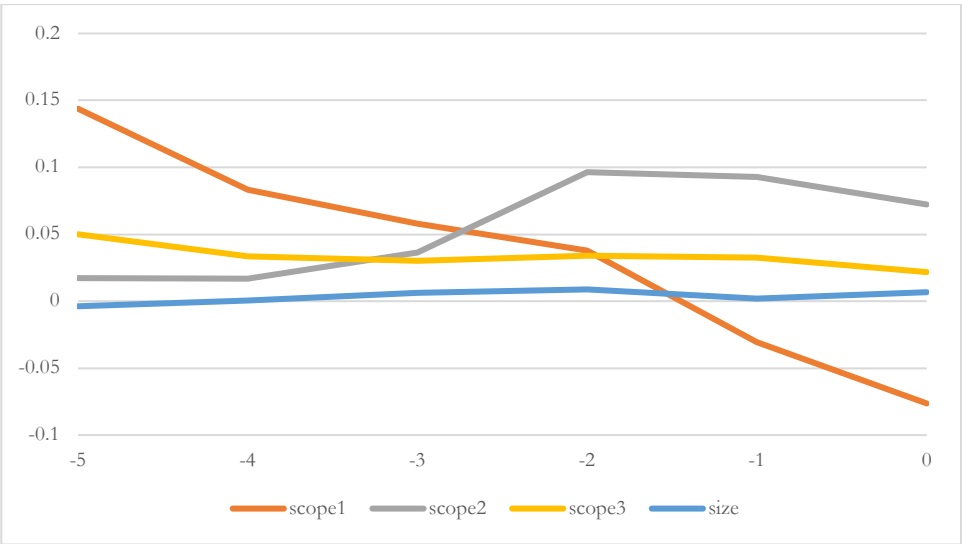


scope1gr	Coef.	Std. Err.	t	P>t
commitgr	0.5445	0.3733	1.46	0.204
Constant	0.0189	0.0341	0.55	0.604

Figure 2: Commitments and Dynamics of Firm Characteristics

The sample period is 2012-2019. Each graph presents the values of residuals of individual firm characteristics regressed on country, year, and firm-fixed effects. The values are plotted in a event window of -5-0 years, where 0 denotes the year when a company makes a CDP commitment. Panel A presents the residuals for scope 1, scope 2, and scope 3 carbon emissions as well as firm size, measured as market capitalization, all represented in the log scale. Panel B presents the residuals for PPE, book leverage, ROE, and M/B.

Panel A: Emissions and Firm Size



Panel B: PPE, Leverage, ROE, and M/B

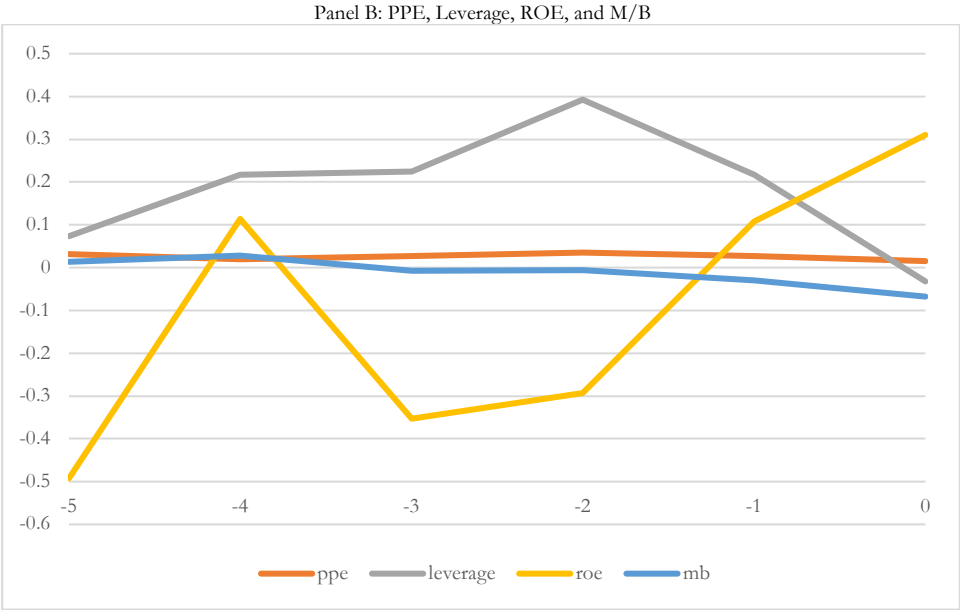


Figure 3: Performance of Commitments

The sample period is 2012-2019. We present the empirical distribution of the difference (*Performance*) between the actual year-on-year percentage changes in scope 1 emissions and the annual rate of scope 1 emissions abatement based on CDP commitment targets. Positive number indicates that a company is failing on its expected decarbonization path.

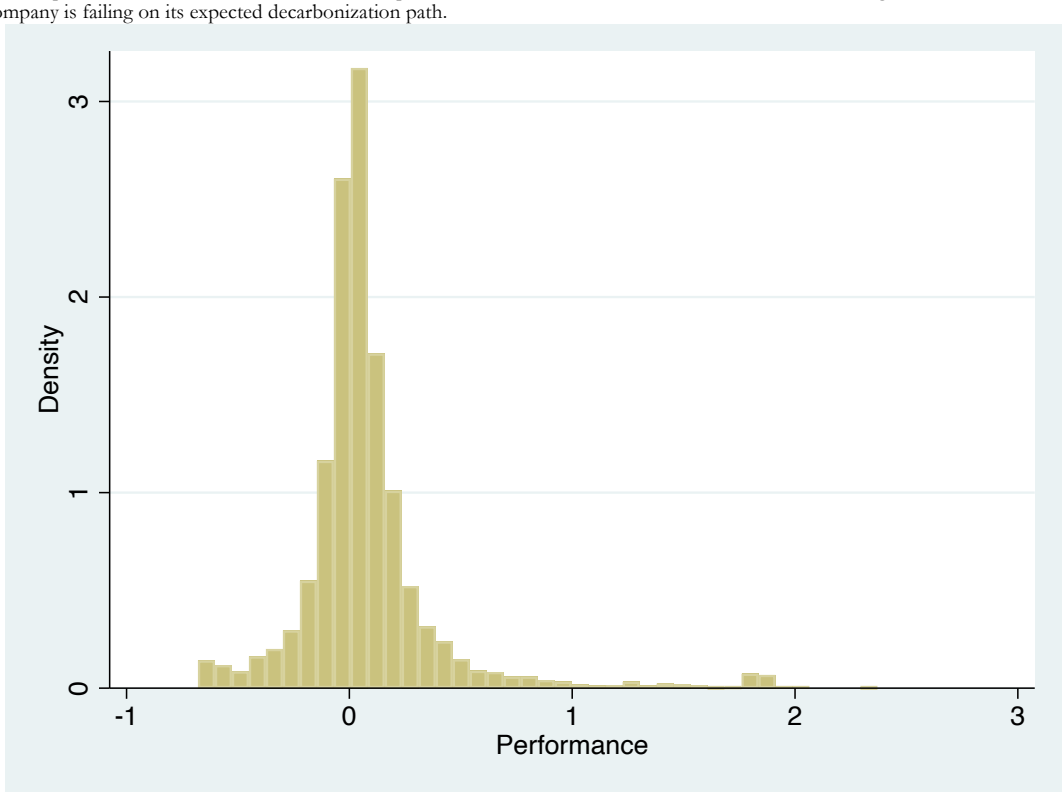


Table 1: Dependent Variables: Summary Statistics

The sample period is 2011-2019 for CDP-based measures and 2014-2019 for SBT-based measures. The distributions are based on annual frequency. Panel A reports the distribution of firm-year observations by country, Panel B the distribution of firm-year observations by GICS6-industry, Panel C the distribution of firm observations by year, and Panel D measures of strength of commitment. N(all) is the number (percentage) of observations in given strata. N(com) is the number of firms with commitment for the strata. *CDPCOM* equals one if a firm issues a CDP commitment, and zero otherwise. *SBTCOM* equals one if a firm makes an SBTi commitment, and zero otherwise. *CDPs12tgt* equals one if a firm specifies in its CDP commitment a scope 1 or scope 2 absolute emission target. *SBTs12tgt* equals one if a firm specifies in its SBT commitment a scope 1 or scope 2 absolute emission target. *SBTs12intgt* equals one if a firm specifies in its SBT commitment a scope 1 or scope 2 emission intensity target. *SBTSIGN* equals one if a firm is a SBTi signatory. *CDPRED* equals one if a firm joins a CDP emission reduction initiative. *INDC* (*NDC*) is an official date a country signs the INDC (NDC). The legacy sample restricts inclusion of firms into those that Trucost covers in its database before 2016. *MAXTGTYR* is the number of years for the commitment with longest horizon. *MAXEMRED* is maximum percentage reduction in emissions along all the stated commitments. *ABATE* is ratio of *MAXEMRED* and *MAXTGTYR*. *CDPTGTHOR* is the difference between *CDPs1YR* and the base year of the stated target.

Panel A: Country Breakdown

country	N(all)	N(com)	CDPCOM	SBTCOM	CDPs12tgt	SBTs12tgt	SBTs12intgt	SBTSIGN	CDPRED	INDC	NDC
ARGENTINA	114	1	1.22%	1.52%	0.00%	0.00%	0.00%	1.52%	1.22%	01-Oct-15	16-Nov-16
AUSTRALIA	3812	280	11.32%	1.05%	7.63%	0.14%	0.00%	1.05%	18.57%	11-Aug-15	08-Nov-16
AUSTRIA	377	64	26.24%	1.02%	21.67%	3.55%	0.51%	6.60%	35.74%	06-Mar-15	04-Oct-16
BAHAMAS	2	0	0.00%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	18-Nov-15	30-Oct-16
BELGIUM	543	57	15.05%	1.86%	13.83%	2.48%	0.00%	3.73%	20.15%	06-Mar-15	05-Apr-17
BERMUDA	21	0	0%	0%	0.00%	0.00%	0.00%	0.00%	19.05%	.	.
BRAZIL	1422	161	16.18%	0.38%	13.23%	0.00%	0.00%	0.38%	26.17%	28-Sep-15	20-Sep-16
CANADA	3054	328	14.91%	0.39%	9.37%	0.05%	0.15%	0.74%	25.82%	15-May-15	04-Oct-16
CAYMAN ISL.	47	0	0%	0%	0.00%	0.00%	0.00%	0.00%	2.70%	.	.
CHILE	464	9	3.54%	1.72%	2.25%	0.00%	0.00%	1.72%	7.07%	05-Jan-16	09-Feb-17
CHINA	10542	15	0.18%	0%	0.10%	0.00%	0.00%	0.00%	1.19%	30-Jun-15	02-Sep-16
COLOMBIA	144	29	32.48%	10.59%	22.22%	0.00%	0.00%	10.59%	40.17%	07-Sep-15	11-Jul-18
CYPRUS	13	1	7.69%	0%	0.00%	0.00%	0.00%	0.00%	7.69%	06-Mar-15	03-Jan-17
CZECH REP.	64	4	26.83%	0%	4.88%	0.00%	0.00%	0.00%	26.83%	06-Mar-15	04-Oct-17
DENMARK	482	110	37.46%	1.91%	28.32%	3.82%	1.15%	6.11%	46.61%	06-Mar-15	31-Oct-16
EGYPT	364	1	0.40%	1.06%	0.00%	0.00%	0.00%	1.06%	0.79%	16-Nov-15	28-Jun-17
FINLAND	552	150	40.85%	8.42%	26.79%	3.51%	1.75%	11.58%	53.32%	06-Mar-15	13-Nov-16
FRANCE	2325	471	28.21%	6.93%	19.97%	1.84%	1.13%	8.13%	34.51%	06-Mar-15	04-Oct-16
GEORGIA	9	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	.	.
GERMANY	2031	406	29.36%	3.80%	19.46%	1.07%	0.17%	4.29%	34.67%	06-Mar-15	04-Oct-16
GREECE	301	10	4.65%	0%	4.65%	0.00%	0.00%	0.00%	6.05%	06-Mar-15	13-Oct-16
GUERNSEY	12	0	0%	0%	0.00%	0.00%	0.00%	0.00%	25.00%	.	.
HONG KONG	2893	90	4.74%	0.50%	3.51%	0.00%	0.20%	0.80%	6.31%		
HUNGARY	62	9	23.68%	7.69%	23.68%	3.85%	0.00%	7.69%	23.68%	06-Mar-15	04-Oct-16
INDIA	3705	234	8.69%	1.50%	2.66%	0.24%	0.04%	1.54%	11.44%	01-Oct-15	01-Oct-16
INDONESIA	990	3	1.13%	0%	0.76%	0.00%	0.00%	0.00%	0.88%	24-Sep-15	05-Nov-16
IRELAND	361	55	20.52%	3.74%	10.45%	2.34%	0.00%	5.61%	24.25%	06-Mar-15	03-Nov-16
ISLE OF MAN	11	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	.	.
ISRAEL	784	17	2.80%	0%	2.80%	0.00%	0.00%	0.00%	2.80%	30-Sep-15	21-Nov-16
ITALY	1148	195	25.20%	1.32%	22.18%	0.73%	0.73%	2.05%	29.50%	06-Mar-15	10-Nov-16
JAPAN	13745	1573	15.67%	1.58%	12.95%	0.92%	0.09%	2.23%	16.36%	17-Jul-15	07-Nov-16
JERSEY	24	2	15.38%	0%	15.38%	0.00%	0.00%	0.00%	30.77%	.	.
KAZAKHSTAN	8	0	0%	0%	0.00%	0.00%	0.00%	0.00%	33.33%	28-Sep-15	05-Dec-16
KOREA, REP	6317	440	11.38%	0.17%	9.22%	0.00%	0.00%	0.24%	12.01%	30-Jun-15	02-Nov-16
LUXEMBOURG	172	10	16.33%	0%	1.36%	0.00%	0.00%	0.00%	22.45%	06-Mar-15	03-Nov-16
MALAYSIA	1402	3	1.31%	0%	1.31%	0.00%	0.00%	0.00%	2.54%	18-Jan-16	15-Nov-16
MALTA	2	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	06-Mar-15	04-Oct-16
MARSHALL ISL	6	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	.	.
MEXICO	661	33	6.84%	1.89%	4.18%	0.00%	0.00%	1.89%	11.22%	30-Mar-15	20-Sep-16
MOROCCO	149	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	.	.
NETHERLANDS	772	155	28.83%	8.27%	22.16%	3.07%	0.24%	9.69%	32.25%	06-Mar-15	27-Jul-17
NEW ZEALAND	363	44	17.57%	2.51%	11.82%	2.15%	0.00%	3.94%	23.64%	25-Nov-15	04-Oct-16
NORWAY	645	140	28.51%	2.40%	19.48%	1.44%	0.00%	2.64%	39.56%	27-Mar-15	19-Jun-16
PAKISTAN	340	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	06-Nov-16	09-Nov-16
PAPUA	7	0	0%	0%	100.00%	0.00%	0.00%	0.00%	100.00%	.	.
PERU	189	3	2.40%	0%	0.00%	0.00%	0.00%	0.00%	5.60%	28-Sep-15	24-Jul-16
PHILIPPINES	587	2	1.33%	0%	2.22%	0.00%	0.00%	0.00%	7.33%	01-Oct-15	
POLAND	602	4	0.92%	0%	3.23%	0.00%	0.00%	0.00%	3.23%	06-Mar-15	06-Oct-16
PORTUGAL	183	47	40.32%	6.59%	20.16%	3.30%	3.30%	9.89%	41.94%	06-Mar-15	04-Oct-16
RUSSIA	504	20	5.58%	0%	3.55%	0.00%	0.00%	0.00%	10.41%	01-Apr-15	
REUNION	1	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	.	.
SAUDI ARABIA	237	1	0.42%	0%	0.00%	0.00%	0.00%	0.00%	0.42%	10-Nov-15	02-Nov-16
SINGAPORE	1020	50	6.60%	1.10%	4.01%	0.94%	0.00%	1.57%	8.54%	03-Jul-15	20-Sep-16
SOUTH AFRICA	1678	355	29.41%	3.36%	19.76%	0.00%	0.00%	3.36%	43.76%	25-Sep-15	31-Oct-16
SPAIN	853	231	40.49%	6.65%	34.10%	2.15%	0.86%	9.87%	44.10%	06-Mar-15	11-Jan-17
SWEDEN	1459	234	22.21%	3.59%	12.02%	1.27%	0.53%	4.43%	26.74%	06-Mar-15	12-Oct-16
SWITZERLAND	1737	259	20.03%	3.02%	14.29%	1.38%	0.78%	4.06%	26.96%	27-Feb-15	05-Oct-17
TAIWAN	4765	221	7.88%	0.72%	6.89%	0.06%	0.13%	1.04%	8.55%		
THAILAND	1203	40	5.21%	0%	2.40%	0.00%	0.00%	0.48%	6.25%	01-Oct-15	20-Sep-16
TURKEY	731	118	22.63%	2.11%	12.62%	0.00%	0.00%	2.81%	28.39%	30-Sep-15	
UKRAINE	7	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	30-Sep-15	18-Sep-16
UAE	6	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	22-Oct-15	20-Sep-16
UK	6412	1063	29.76%	3.02%	18.84%	0.99%	0.18%	4.05%	38.65%	06-Mar-15	17-Nov-16
USA	20659	2175	14.79%	1.19%	9.99%	0.78%	0.09%	1.87%	18.89%	31-Mar-15	02-Sep-16
VIETNAM	124	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	30-Sep-15	02-Nov-16
VIRGIN ISL	1	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	.	.

Panel B: Industry Breakdown

GICS-6	Industry	N(all)	N(com)	CDPCOM	SBTCOM	CDPs12tgt	SBTs12tgt	SBTs12intgt	SBTSIGN	CDPRED
1	Energy Equip. & Services	1041	96	8.62%	0.16%	2.22%	0.00%	0.00%	0.16%	12.92%
2	Oil, Gas & Cons. Fuels	3646	545	13.57%	0.48%	10.24%	0.10%	0.00%	0.48%	22.74%
3	Chemicals	3998	564	18.19%	1.05%	11.65%	0.50%	0.08%	1.67%	20.29%
4	Construction Materials	1194	155	16.57%	1.52%	4.75%	0.14%	0.41%	2.07%	17.68%
5	Containers & Packaging	685	156	28.03%	1.48%	14.47%	1.05%	0.00%	4.22%	31.46%
6	Metals & Mining	4352	542	11.82%	0.49%	7.83%	0.12%	0.12%	0.73%	18.58%
7	Paper & Forest Products	679	90	18.80%	2.78%	12.79%	0.23%	0.93%	2.78%	21.51%
8	Aerospace & Defense	860	176	25.55%	1.18%	19.59%	0.00%	0.00%	1.18%	32.29%
9	Building Products	988	131	16.60%	2.26%	10.68%	1.66%	0.00%	3.61%	18.02%
10	Construct. & Engineering	2549	377	14.55%	1.37%	11.61%	0.78%	0.00%	2.03%	20.93%
11	Electrical Equipment	1833	207	12.78%	1.72%	10.01%	0.57%	0.25%	2.29%	15.61%
12	Industrial Conglomerates	1110	144	16.19%	0.55%	9.85%	0.00%	0.00%	0.55%	22.67%
13	Machinery	4143	440	12.38%	1.06%	8.96%	0.26%	0.11%	1.28%	15.22%
14	Trading Comp. & Distrib.	1257	99	7.48%	0.89%	3.98%	0.11%	0.00%	0.89%	10.30%
15	Comm. Svcs & Suppl.	1621	260	16.55%	1.00%	12.30%	0.63%	0.00%	1.18%	21.50%
16	Professional Services	922	108	11.08%	1.08%	6.14%	0.00%	0.31%	1.08%	14.95%
17	Air Freight & Logistics	463	117	29.46%	4.39%	15.41%	3.76%	1.25%	7.52%	34.05%
18	Airlines	660	110	26.28%	1.37%	19.66%	0.00%	0.00%	1.37%	29.91%
19	Marine	635	72	17.12%	0.90%	11.87%	0.00%	1.20%	1.51%	19.41%
20	Road & Rail	1008	165	20.50%	1.04%	11.00%	0.00%	0.52%	2.08%	25.17%
21	Transport. Infrastructure	987	98	12.80%	0%	9.70%	0.52%	0.00%	0.52%	15.90%
22	Auto Components	1932	226	13.62%	0.53%	7.78%	0.00%	0.00%	1.06%	15.94%
23	Automobiles	738	152	29.08%	6.85%	24.95%	0.00%	0.25%	6.85%	29.27%
24	Household Durables	1889	251	14.23%	2.23%	11.62%	1.07%	0.33%	3.05%	18.83%
25	Leisure Products	507	53	11.20%	0.62%	7.81%	0.31%	0.00%	0.62%	14.06%
26	Textiles, Apparel & Luxury Gds	1701	120	7.25%	1.73%	3.62%	0.49%	0.33%	2.06%	9.38%
27	Hotels, Restaurants & Leisure	2481	226	9.82%	1.07%	5.98%	0.66%	0.00%	1.49%	12.95%
28	Dvsfd Consumer Services	654	22	2.67%	0.41%	2.67%	0.00%	0.00%	0.41%	4.27%
29	Media	1747	140	9.05%	0.79%	7.22%	0.00%	0.16%	0.95%	12.70%
30	Distributors	338	10	0.37%	0%	0.00%	0.00%	0.00%	0.00%	6.25%
31	Internet & Direct Mktg Ret.	624	42	5.88%	0.20%	2.02%	0.41%	0.00%	0.61%	8.09%
32	Multiline Retail	901	124	17.22%	1.20%	11.18%	1.20%	0.00%	2.40%	23.56%
33	Specialty Retail	2241	195	8.69%	2.05%	6.11%	0.21%	0.07%	2.26%	10.82%
34	Food & Staples Retailing	1554	267	19.58%	3.88%	12.44%	1.05%	0.21%	4.19%	24.29%
35	Beverages	1009	189	26.72%	5.52%	15.47%	4.42%	0.74%	9.02%	27.43%
36	Food Products	3395	405	13.47%	1.45%	6.74%	1.18%	0.23%	2.35%	16.49%
37	Tobacco	223	67	41.06%	9.65%	28.48%	6.14%	0.00%	11.40%	43.71%
38	Household Products	314	95	44.70%	7.60%	29.49%	7.02%	0.00%	12.28%	45.16%
39	Personal Products	643	100	18.17%	5.01%	9.89%	1.25%	0.00%	5.01%	18.88%
40	Healthcare Equip & Suppl.	1419	171	11.86%	0.30%	6.97%	0.20%	0.00%	0.30%	15.17%
41	Healthcare Prov. & Services	1437	122	6.29%	0.81%	5.17%	0.20%	0.00%	0.81%	9.48%
42	Healthcare Technology	202	0	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%
43	Biotechnology	1596	59	3.83%	0.30%	2.44%	0.22%	0.00%	0.30%	4.53%
44	Pharmaceuticals	2641	294	12.34%	1.56%	10.05%	1.45%	0.00%	2.84%	15.14%
45	Life Sciences Tools & Srvs	423	76	15.81%	0%	10.94%	0.00%	0.00%	0.00%	24.01%
46	Banks	5351	774	15.92%	1.78%	13.94%	0.00%	0.00%	1.78%	20.39%
47	Thrifts & Mortgage Finance	371	4	1.28%	0%	1.28%	0.00%	0.00%	0.00%	1.28%
48	Dvsfd Financial Services	1129	115	8.34%	1.17%	8.09%	0.00%	0.00%	1.17%	13.74%
49	Consumer Finance	607	49	8.25%	0.68%	4.43%	0.00%	0.00%	0.68%	9.86%
50	Capital Markets	2499	301	9.89%	0.41%	8.16%	0.00%	0.00%	0.41%	15.22%
51	Mortgage REITs	102	1	0%	0%	0.00%	0.00%	0.00%	0.00%	2.13%
52	Insurance	2407	500	24.22%	2.46%	19.44%	0.00%	0.00%	2.46%	31.88%
53	Internet Software & Svcs	508	17	2.72%	0%	1.63%	0.00%	0.00%	0.00%	4.63%
54	IT Services	1887	245	12.97%	2.33%	9.21%	1.65%	0.23%	3.30%	16.47%
55	Software	2112	117	4.63%	0.44%	4.12%	0.75%	0.00%	1.13%	6.52%
56	Communications Equip.	917	83	9.20%	1.94%	8.13%	1.20%	0.00%	2.99%	10.93%
57	Tech Hrdw, Storage & Peripherals	1175	217	26.73%	4.20%	23.45%	3.30%	0.15%	5.56%	28.68%
58	Elect. Eq., Instruments & Comp.	3254	317	12.04%	0.76%	8.49%	0.13%	0.13%	0.89%	13.65%
59	Semis & Semi Equipment	2618	311	13.36%	0.51%	9.47%	0.23%	0.00%	0.91%	15.76%
60	Dvsfd Telecomm. Svcs	1198	289	30.99%	2.75%	25.98%	4.05%	0.00%	6.63%	37.54%
61	Wireless Telecomm. Svcs	722	107	20.66%	3.18%	20.04%	0.87%	0.00%	3.47%	27.27%
62	Media	760	65	8.55%	0.92%	6.84%	0.53%	0.39%	1.05%	11.18%
63	Entertainment	560	10	1.07%	0%	0.89%	0.00%	0.00%	0.00%	1.61%
64	Inter. Media & Services	231	5	0.43%	0%	0.00%	0.00%	0.00%	0.00%	1.73%
65	Electric Utilities	1395	322	30.61%	4.40%	20.89%	1.70%	1.99%	6.53%	36.71%
66	Gas Utilities	555	64	14.11%	0.96%	10.58%	0.00%	0.00%	2.56%	17.38%
67	Multi-Utilities	530	174	48.53%	8.40%	45.00%	1.26%	0.00%	8.40%	57.06%
68	Water Utilities	335	49	14.74%	0.99%	13.15%	0.00%	0.00%	0.99%	20.32%
69	Indep. Power and Rnwble Elect. Prod.	1090	95	7.01%	0.97%	4.79%	0.69%	0.00%	1.66%	11.45%
70	Equity REITs	2584	312	12.94%	1.60%	9.51%	0.57%	0.67%	2.53%	14.75%
71	RE Mgmt & Development	4082	210	4.99%	0.76%	2.94%	0.25%	0.04%	0.94%	6.75%

Panel C: Annual Breakdown

Full Sample

year	CDPCOM	SBTCOM	CDPs12tgt	SBTs12tgt	SBTs12intgt	SBTSIGN	CDPRED	INDC	NDC
2011	16.35%		9.49%				22.22%	0	0
2012	19.41%		11.89%				25.34%	0	0
2013	19.43%		12.83%				25.44%	0	0
2014	19.68%	0.20%	13.67%			0.20%	25.70%	0	0
2015	20.97%	1.05%	14.79%	0.12%	0.04%	1.28%	26.71%	98.48%	0
2016	10.69%	0.86%	7.67%	0.17%	0.05%	1.12%	13.29%	100%	95.65%
2017	10.95%	1.20%	7.91%	0.45%	0.14%	1.74%	13.41%	100%	99.88%
2018	10.86%	1.77%	8.48%	0.74%	0.17%	2.39%	13.47%	100%	100.00%
2019	11.10%	2.18%	8.40%	1.26%	0.26%	3.00%	13.67%	100%	100.00%

Legacy Sample

year	CDPCOM	SBTCOM	CDPs12tgt	SBTs12tgt	SBTs12intgt	SBTSIGN	CDPRED	INDC	NDC
2011	16.35%	0	9.49%	0	0	0	22.22%	0	0
2012	19.41%	0	11.89%	0	0	0	25.34%	0	0
2013	19.43%	0	12.83%	0	0	0	25.44%	0	0
2014	19.68%	0.20%	13.67%	0	0	0.20%	25.70%	0	0
2015	20.97%	1.05%	14.79%	0.12%	0.04%	1.28%	26.71%	98.48%	0
2016	21.64%	1.73%	15.63%	0.36%	0.10%	2.26%	26.94%	100%	92.82%
2017	24.27%	2.67%	17.66%	1.01%	0.29%	3.86%	29.70%	100%	99.81%
2018	25.42%	4.15%	20.14%	1.77%	0.38%	5.60%	31.71%	100%	100%
2019	27.36%	5.31%	21.21%	3.15%	0.64%	7.31%	34.13%	100%	100%

Panel D: Annual Breakdown: Intensive Margin

Full Sample

year	CDPTGT	CDPs1YR	MAXTGTYR	MAXEMRED	ABATE	CDPTGTHOR
2011	18.50	2013.34	5.02	22.24	6.94	10.41
2012	18.84	2014.41	5.00	22.43	8.02	9.49
2013	20.23	2015.03	4.52	23.17	7.01	8.56
2014	19.67	2016.26	4.79	22.28	6.27	8.75
2015	18.91	2017.00	4.70	21.96	7.84	8.86
2016	22.28	2019.25	7.85	28.63	4.66	10.51
2017	23.64	2021.48	9.89	32.13	4.40	11.88
2018	30.71	2025.02	13.11	39.99	4.70	14.38
2019	30.46	2024.93	11.71	39.15	5.71	14.36

Table 2: Control Variables: Summary Statistics

The distributions are based on annual frequency. The table reports sample averages, medians, and standard deviations of various firm-level characteristics for the two sub-periods: 2011-2019 and 2014-2019. The top panel aggregates all firms with emissions reported in Trucost database; the bottom panel conditions on firms that state a CDP commitment. *LOGS1TOT* (*LOGS2TOT* and *LOGS3TOT*) is the natural logarithm of firm-level scope 1 (2 and 3) emissions; *S1CHG* (*S2CHG* and *S3CHG*) is the annual percentage change in total scope 1 (scope 2 and scope 3) emissions; *S1INT* (*S2INT* and *S3INT*) is the firm-level scope 1 (2 and 3) emission intensity defined as the level of emission divided by the firm sales; *LOGSIZE* is the natural logarithm of market capitalization (in $ million); *LOGPPE* is the natural logarithm of plant, property & equipment (in $ million); *LEVERAGE* is the book value of leverage defined as the book value of debt divided by the book value of assets; *ROE* is the return on equity; *M/B* is the market value of equity divided by the book value of equity; *BETA* is the firm-level market beta estimated over the one-year period; *VOLAT* is the monthly stock return volatility calculated over the one year period; *MOM* is the cumulative stock return over the one-year period; *RET* is the monthly stock return; *INVEST/A* is the CAPEX divided by book value of assets; $MSCI_{i,t}$ is an indicator variable equal to one if a stock *i* is part of MSCI ACWI Index in year *t*, and zero otherwise.

	2011-2019			**2014-2019**		
Variables	mean	p50	sd	mean	p50	sd
LOGS1TOT	5.2878	5.1250	2.9229	5.0732	4.9129	2.8991
LOGS2TOT	5.2617	5.3064	2.3094	5.0869	5.1328	2.3065
LOGS3TOT	6.9756	7.0343	2.2626	6.7818	6.8427	2.2567
S1CHG	0.0884	0.0241	0.4105	0.0896	0.0244	0.4147
S2CHG	0.1219	0.0327	0.4640	0.1238	0.0327	0.4692
S3CHG	0.0677	0.0331	0.2510	0.0670	0.0323	0.2547
S1INT	1.9090	0.1789	5.6316	1.8355	0.1753	5.5179
S2INT	0.4242	0.2161	0.5798	0.4258	0.2188	0.5783
S3INT	1.7658	1.1298	1.7275	1.7580	1.1228	1.7207
LOGSIZE	7.2557	7.2317	1.6689	7.1036	7.0464	1.6596
LOGPPE	7.7238	7.6960	3.2028	7.6098	7.6074	3.1944
LEVERAGE	23.4717	21.8407	17.9729	23.3654	21.6432	18.1183
ROE	8.6644	9.6116	17.7815	8.1219	9.3126	17.9005
M/B	1.4056	0.4015	2.2041	1.3577	0.3477	2.1969
BETA	0.6763	0.7203	0.3972	0.6703	0.7059	0.3705
VOLAT	0.0945	0.0819	0.0538	0.0959	0.0829	0.0552
MOM	0.0032	0.0042	0.0315	0.0024	0.0033	0.0314
RET	0.0136	0.0069	0.1168	0.0165	0.0086	0.1204
INVEST/A	4.6588	3.0763	5.0484	4.5038	2.9419	4.9536
MSCI	0.2383	0.0000	0.4260	0.1970	0.0000	0.3978

Conditioning on CDP Commitments

	2011-2019						**2014-2019**					
Variables	No-CDP commitment			CDP commitment			No-CDP commitment			CDP commitment		
	mean	p50	sd	mean	p50	sd	mean	p50	sd	mean	p50	sd
LOGS1TOT	4.9813	4.8427	2.8232	7.1962	6.9974	2.8083	4.7787	4.6594	2.7920	7.0834	6.9146	2.8168
LOGS2TOT	4.9405	5.0281	2.1944	7.2635	7.4147	1.9777	4.7838	4.8847	2.1885	7.1559	7.3216	2.0083
LOGS3TOT	6.6364	6.7236	2.1492	9.0885	9.1816	1.7470	6.4545	6.5545	2.1339	9.0153	9.1090	1.7472
S1CHG	0.0987	0.0319	0.4218	0.0331	-0.0057	0.3389	0.0995	0.0316	0.4259	0.0327	-0.0055	0.3380
S2CHG	0.1363	0.0463	0.4750	0.0452	-0.0107	0.3910	0.1383	0.0467	0.4805	0.0398	-0.0135	0.3873
S3CHG	0.0762	0.0392	0.2614	0.0220	0.0068	0.1794	0.0753	0.0380	0.2645	0.0197	0.0048	0.1807
S1INT	1.8460	0.1824	5.5676	2.3012	0.1531	6.0003	1.7708	0.1785	5.4449	2.2775	0.1494	5.9742
S2INT	0.4114	0.2161	0.5580	0.5042	0.2114	0.6950	0.4144	0.2205	0.5581	0.5038	0.2078	0.6959
S3INT	1.7373	1.0747	1.7276	1.9432	1.4787	1.7169	1.7291	1.0684	1.7182	1.9557	1.4831	1.7248
LOGSIZE	6.9845	6.9877	1.5362	8.9446	8.9408	1.4571	6.8384	6.8078	1.5134	8.9134	8.9061	1.4714
LOGPPE	7.4823	7.4569	3.1790	9.2276	8.9268	2.9292	7.3718	7.3901	3.1603	9.2346	8.9161	2.9425
LEVERAGE	23.0432	21.0488	18.2932	26.1399	25.1740	15.5708	22.9508	20.8403	18.4124	26.1952	25.1778	15.6780
ROE	8.0578	9.3015	18.0687	12.4420	11.3244	15.3471	7.4728	8.9734	18.1810	12.5522	11.3621	15.1293
M/B	1.3115	0.3448	2.1371	1.9921	1.1716	2.5042	1.2659	0.3051	2.1252	1.9842	1.1192	2.5486
BETA	0.6699	0.7059	0.3793	0.7163	0.8225	0.4929	0.6633	0.6920	0.3514	0.7178	0.8169	0.4782
VOLAT	0.0978	0.0850	0.0556	0.0739	0.0672	0.0349	0.0991	0.0860	0.0568	0.0740	0.0671	0.0350
MOM	0.0027	0.0036	0.0325	0.0060	0.0071	0.0240	0.0020	0.0028	0.0325	0.0048	0.0061	0.0230
RET	0.0137	0.0059	0.1214	0.0127	0.0125	0.0825	0.0167	0.0075	0.1248	0.0148	0.0145	0.0844
INVEST/A	4.6705	2.9417	5.2028	4.5856	3.7676	3.9534	4.5036	2.8099	5.0925	4.5046	3.7459	3.8758
MSCI	0.1641	0.0000	0.3703	0.7006	1.0000	0.4580	0.1266	0.0000	0.3326	0.6776	1.0000	0.4674

Table 3: Future Commitments and Controls (Extensive Margin)

The unit of observation is firm—year. The dependent variables are *CDPCOM* and *SBTCOM* in Panel A. The dependent variables in Panel B are *CDPs12tgt* in columns 1-3, *SBTs12tgt* in columns 4-6, and *SBTs12intgt* in columns 7-9. The sample period is 2011-2019 for CDPCOM, and 2014-2019 for SBTCOM. All variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include country and year fixed effects. Column 2 and 5 includes GICS-6 industry-fixed effects, and columns 3 and 6 includes firm-fixed effects. We cluster standard errors at the firm and year dimensions. In columns 4 and 8 of Panel A, we further report estimates using logit model with bootstrapped standard errors. ***1% significance; **5% significance; *10% significance.

Panel A: CDP (*CDPCOM*) & SBTI (*SBTCOM*) Commitments

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			CDPCOM				SBTCOM	
LOGS1TOT/100	0.785***	-0.278**	-0.877***	-0.349***	-0.001	-0.179***	-0.280***	-0.823***
	(0.062)	(0.110)	(0.179)	(0.087)	(0.027)	(0.045)	(0.087)	(0.298)
LOGSIZE	0.052***	0.060***	0.009***	0.904***	0.010***	0.012***	0.004***	2.171***
	(0.001)	(0.002)	(0.002)	(0.165)	(0.001)	(0.001)	(0.001)	(0.490)
LOGPPE	0.015***	0.017***	0.004**	1.757***	0.002***	0.002***	-0.003**	1.842**
	(0.001)	(0.001)	(0.002)	(0.340)	(0.000)	(0.000)	(0.001)	(0.864)
LEVERAGE/100	-0.006	0.030***	0.005	0.011	-0.007**	-0.003	-0.009	-0.012
	(0.007)	(0.008)	(0.014)	(0.007)	(0.003)	(0.003)	(0.009)	(0.018)
ROE/100	-0.036***	-0.041***	0.027***	0.0001	-0.004	-0.006**	0.001	0.002
	(0.008)	(0.008)	(0.008)	(0.003)	(0.003)	(0.003)	(0.004)	(0.014)
(M/B)/100	-0.061	-0.504***	-0.048	-0.015	-0.080*	-0.172***	-0.065	-0.156
	(0.088)	(0.089)	(0.118)	(0.053)	(0.042)	(0.043)	(0.081)	(0.201)
(INVEST/A)/100	-0.329***	-0.342***	0.043	-0.109***	-0.039***	-0.044***	0.043***	-0.124**
	(0.023)	(0.025)	(0.027)	(0.018)	(0.009)	(0.009)	(0.014)	(0.057)
BETA	0.012***	0.016***	0.011*	-0.093	0.002	0.007***	-0.007	-8.410
	(0.004)	(0.005)	(0.006)	(0.257)	(0.002)	(0.002)	(0.005)	(378.213)
VOLAT	0.105***	0.102***	0.019	-1.909	0.018**	0.024***	0.004	-0.409
	(0.022)	(0.022)	(0.018)	(1.324)	(0.008)	(0.008)	(0.008)	(3.807)
MOM	-0.367***	-0.352***	-0.033	-8.391***	-0.060***	-0.060***	-0.023	-31.926***
	(0.040)	(0.040)	(0.029)	(1.541)	(0.015)	(0.015)	(0.015)	(3.991)
RET	0.010	-0.003	-0.006	1.423***	0.001	0.001	-0.001	1.468*
	(0.009)	(0.009)	(0.006)	(0.338)	(0.003)	(0.003)	(0.003)	(0.860)
MSCI	0.195***	0.191***	0.055***	0.581***	0.024***	0.023***	0.004	0.241
	(0.005)	(0.004)	(0.006)	(0.217)	(0.002)	(0.002)	(0.004)	(2.448)
Constant	-0.439***	-0.455***	0.088***		-0.073***	-0.081***	0.027**	
	(0.009)	(0.009)	(0.021)		(0.004)	(0.004)	(0.012)	
Model	OLS	OLS	OLS	Logit	OLS	OLS	OLS	Logit
Country FE	Y	Y	N	N	Y	Y	N	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	N	Y	N	N
Firm FE	N	N	Y	Y	N	N	Y	Y
Observations	63,049	63,046	61,578	8880	51,248	51,244	49,760	1592
R-squared	0.309	0.352	0.821	0.821	0.060	0.092	0.635	0.635

Panel B: Scope 1+2 Targets

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		CDPs12tgt			SBTs12tgt			SBTs12intgt	
LOGS1TOT	0.002***	-0.002	-0.004***	0.030*	-0.001*	-0.001**	0.028***	-0.011	0.003
	(0.001)	(0.001)	(0.001)	(0.016)	(0.0003)	(0.001)	(0.010)	(0.014)	(0.016)
LOGSIZE	0.044***	0.046***	0.003	0.005***	0.006***	0.005***	0.050**	0.113***	-0.008
	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)	(0.021)	(0.025)	(0.033)
LOGPPE	0.013***	0.014***	-0.002	0.001***	0.001***	-0.005***	0.026*	0.015	-0.095**
	(0.001)	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)	(0.013)	(0.012)	(0.044)
LEVERAGE/100	0.001	0.031***	-0.003	-0.002	-0.001	0.009	-0.023	-0.202*	-0.866***
	(0.006)	(0.007)	(0.012)	(0.002)	(0.002)	(0.006)	(0.090)	(0.110)	(0.301)
ROE/100	-0.043***	-0.045***	0.011*	-0.006***	-0.007***	-0.001	-0.148	-0.239**	-0.244
	(0.007)	(0.007)	(0.006)	(0.002)	(0.002)	(0.003)	(0.107)	(0.105)	(0.172)
(M/B)/100	-0.210**	-0.408***	0.292***	0.110***	0.032	0.062	1.487	0.311	4.494**
	(0.082)	(0.083)	(0.102)	(0.032)	(0.032)	(0.069)	(1.559)	(1.446)	(2.102)
(INVEST/A)/100	-0.244***	-0.209***	0.098***	-0.019***	-0.033***	0.042***	-0.263	-0.427	0.955*
	(0.020)	(0.022)	(0.021)	(0.006)	(0.007)	(0.009)	(0.276)	(0.348)	(0.528)
BETA	0.019***	0.016***	0.001	0.001	0.006***	-0.001	0.134***	0.186***	-0.028
	(0.003)	(0.004)	(0.005)	(0.001)	(0.001)	(0.002)	(0.042)	(0.060)	(0.036)
VOLAT	0.079***	0.063***	0.017	0.012***	0.013***	0.008	-0.377	0.117	-0.121
	(0.019)	(0.020)	(0.015)	(0.005)	(0.005)	(0.006)	(0.234)	(0.245)	(0.289)
MOM	-0.254***	-0.217***	-0.003	-0.026**	-0.022**	-0.009	0.357	0.022	-0.061
	(0.035)	(0.035)	(0.024)	(0.010)	(0.010)	(0.012)	(0.437)	(0.432)	(0.446)
RET	-0.000	-0.008	-0.007	-0.007***	-0.006***	-0.011***	-0.180*	-0.210**	-0.177*
	(0.008)	(0.008)	(0.005)	(0.002)	(0.002)	(0.002)	(0.095)	(0.099)	(0.106)
MSCI	0.139***	0.136***	0.021***	0.010***	0.009***	0.004	0.331***	0.318***	0.021
	(0.004)	(0.004)	(0.005)	(0.001)	(0.001)	(0.003)	(0.076)	(0.075)	(0.131)
Constant	-0.364***	-0.369***	0.121***	-0.042***	-0.047***	0.013	-0.659***	-0.830***	1.106**
	(0.008)	(0.008)	(0.018)	(0.003)	(0.003)	(0.009)	(0.113)	(0.130)	(0.527)
Country FE	Y	Y	N	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y	N	N	Y
Observations	63,049	63,046	61,578	51,248	51,244	49,760	51,248	51,244	49,760
R-squared	0.226	0.265	0.831	0.034	0.074	0.475	0.012	0.044	0.541

Table 4: Future Commitments and Controls (Intensive Margin)

The unit of observation is firm—year. The dependent variables are *ABATE*, *MAXTGTYR*, and *MAXEMRED*. The sample period is 2011-2019 for Panel A, and 2014-2019 for Panel B. All variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include country and year fixed effects. Column 2 and 5 includes GICS-6 industry-fixed effects, and columns 3 and 6 includes firm-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	ABATE		MAXTGTYR		MAXEMRED	
LOGS1TOT	-0.282**	-0.915***	0.280**	-0.347	-0.196	-1.944***
	(0.124)	(0.352)	(0.109)	(0.224)	(0.342)	(0.700)
LOGSIZE	0.505*	-1.308**	0.616***	0.661	1.630**	-2.169*
	(0.281)	(0.572)	(0.230)	(0.468)	(0.668)	(1.257)
LOGPPE	-0.110	-0.430	0.418**	-0.055	1.740***	0.775
	(0.191)	(0.510)	(0.167)	(0.218)	(0.570)	(0.876)
LEVERAGE	-0.005	0.033	0.003	-0.024	0.027	0.043
	(0.016)	(0.030)	(0.012)	(0.022)	(0.034)	(0.061)
ROE	0.009	0.011	-0.002	0.002	0.004	0.012
	(0.015)	(0.016)	(0.012)	(0.012)	(0.032)	(0.028)
M/B	-0.141	-0.232	-0.078	0.118	-0.374	0.097
	(0.122)	(0.216)	(0.095)	(0.165)	(0.277)	(0.315)
INVEST/A	0.058	0.064	0.166***	0.135**	0.358***	0.456***
	(0.063)	(0.092)	(0.048)	(0.057)	(0.135)	(0.168)
BETA	-0.131	0.119	0.095	0.361	2.138*	-0.398
	(0.525)	(1.161)	(0.453)	(0.692)	(1.249)	(1.790)
VOLAT	10.569	6.086	-9.329**	-4.780	-10.085	-8.007
	(7.596)	(6.861)	(4.731)	(4.323)	(14.856)	(12.646)
MOM	7.719	21.270***	-7.047	-8.485	-26.303	-2.062
	(7.072)	(7.702)	(6.458)	(5.454)	(19.221)	(15.709)
RET	1.697	1.890	0.451	-1.093	9.156*	0.885
	(2.183)	(1.972)	(1.759)	(1.469)	(5.126)	(4.054)
MSCI	-0.372	0.034	-0.324	0.136	-1.350	-0.927
	(0.577)	(0.803)	(0.482)	(0.682)	(1.313)	(1.899)
Constant	3.805*	27.086***	-3.281**	5.079	-2.035	54.394***
	(2.107)	(7.579)	(1.614)	(4.735)	(4.385)	(14.034)
Country FE	Y	N	Y	N	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	N	Y	N	Y	N
Firm FE	N	Y	N	Y	N	Y
Observations	4,183	4,017	4,894	4,731	4,899	4,732
R-squared	0.165	0.462	0.318	0.677	0.316	0.702

Table 5: Emission Targets Upgrades and Downgrades: Extensive and Intensive Margin

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *UPGRADE_EXT* in column 1, *UPGRADE_INT* in column 2, *DOWNGRADE_EXT* in column 3, and *DOWNGRADE_INT* in column 4. *UPGRADE_EXT* (*DOWNGRADE_EXT*) is equal to one any time a firm qualitatively strengthens (weakens) its target, and equal to zero when the target remains the same. Our order of target strength follows the increasing order of "no target", "no target – committed", "intensity target without absolute level target equivalent", "intensity target with absolute level target equivalent", "absolute target", and "absolute and intensity target". *UPGRADE_INT* (*DOWNGRADE_INT*) is the increase (decrease) in total emission reduction target based on the sample of firms with non-zero changes. All control variables are defined in Table 2. The model is estimated using pooled regression model. All regressions include year and firm-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

VARIABLES	(1) UPGRADE_EXT	(2) UPGRADE_INT	(3) DOWNGRADE_EXT	(4) DOWNGRADE_INT
LOGS1TOT	-0.015**	-2.684**	-0.001	-0.696
	(0.006)	(1.360)	(0.004)	(6.756)
LOGSIZE	0.014	-0.417	0.005	-6.092
	(0.012)	(2.114)	(0.007)	(8.674)
LOGPPE	0.025**	-1.032	0.001	-8.950
	(0.011)	(1.085)	(0.007)	(10.755)
LEVERAGE	0.000	-0.044	0.000	-0.347
	(0.001)	(0.118)	(0.000)	(0.279)
ROE	0.001**	-0.011	-0.000	-0.318
	(0.000)	(0.063)	(0.000)	(0.218)
M/B	-0.009**	-0.456	-0.003	-2.778
	(0.004)	(1.031)	(0.003)	(2.911)
INVEST/A	-0.000	0.158	0.000	1.461
	(0.001)	(0.293)	(0.001)	(1.241)
BETA	0.024	1.866	-0.003	-29.327
	(0.020)	(3.548)	(0.011)	(30.204)
VOLAT	0.064	-18.542	-0.032	-62.055
	(0.121)	(29.526)	(0.079)	(99.845)
MOM	-0.201	0.350	-0.101	20.829
	(0.155)	(28.591)	(0.102)	(107.456)
RET	0.046	-0.138	-0.054**	-22.520
	(0.040)	(6.630)	(0.026)	(27.363)
MSCI	0.093***	1.780	0.009	1.500
	(0.017)	(4.159)	(0.010)	(6.320)
Constant	-0.152	34.969	0.016	188.487
	(0.120)	(21.802)	(0.071)	(124.903)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	15,497	1,238	13,422	197
R-squared	0.139	0.339	0.149	0.511

Table 6: Future Commitments and External Governance

The unit of observation is firm—year. The sample period is 2011-2019 in Panel A and 2014-2019 in Panel B. The dependent variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. *ANALYST* is the natural logarithm of the number of equity analysts providing earnings forecast for a firm in a given year. *NOOWN* is the natural logarithm of the number of institutional owners. *HERF* is the Herfindahl index for ownership concentration. ESS is the fraction of positive media news by Dow Jones newswires over the previous one-year period. All other variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include the same set of firm-level controls as in Table 3, country and year fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: CDPCOM

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOGS1TOT	-0.003***	-0.002**	-0.002*	-0.005***	-0.009***	-0.009***	-0.009***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
ANALYST	0.030***				0.008**			
	(0.002)				(0.004)			
NOOWN		-0.007***				-0.004*		
		(0.002)				(0.002)		
HERF			0.082***				-0.012*	
			(0.006)				(0.006)	
ESS				-0.041**				-0.003
				(0.017)				(0.013)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	N	N	N	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	N	N	N	N
Firm FE	N	N	N	N	Y	Y	Y	Y
Observations	63,046	59,919	59,917	43,232	61,578	58,472	58,471	41,930
R-squared	0.354	0.355	0.356	0.355	0.821	0.822	0.822	0.826

Panel B: SBTCOM

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOGS1TOT	-0.002***	-0.002***	-0.002***	-0.002***	-0.003***	-0.002***	-0.003***	-0.004***
	(0.0004)	(0.0005)	(0.0005)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ANALYST	0.003*				0.014***			
	(0.001)				(0.004)			
NOOWN		-0.001*				-0.003***		
		(0.001)				(0.001)		
HERF			0.020***				0.006**	
			(0.002)				(0.003)	
ESS				0.008				0.010*
				(0.007)				(0.006)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	N	N	N	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	N	N	N	N
Firm FE	N	N	N	N	Y	Y	Y	Y
Observations	51,244	48,659	48,657	33,967	49,760	47,199	47,198	32,657
R-squared	0.092	0.092	0.092	0.095	0.635	0.634	0.634	0.646

Table 7: Future Commitments and Internal Governance

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. All other variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include the same set of firm-level controls as in Table 3, country, year, and industry-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: CDP Commitments

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Board Size	-0.060***									
(CG_BD_BS_O01)	(0.009)									
Percentage female on board		0.111***								
(CG_BD_BS_O03)		(0.008)								
Percentage with finance background			-0.032***							
(CG_BD_BS_O04)			(0.008)							
Avg. number of years on board				-0.056***						
(CG_BD_BS_O05)				(0.008)						
Percent of nonexecutive members					0.096***					
(CG_BD_BS_O06)					(0.010)					
Perc of independent board members						0.104***				
(CG_BD_BS_O07)						(0.011)				
Perc of strictly indep board members							0.088***			
(CG_BD_BS_O08)							(0.010)			
Equal voting rights								-0.039***		
(CG_SH_SR_O02)								(0.011)		
Number of antitakeover devices									-0.020*	
(CG_SH_SR_O06)									(0.011)	
Is company controversial										-0.008
(CG_SH_SR_O07)										(0.068)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	35,119	34,976	34,859	33,913	35,071	35,037	18,771	35,119	35,119	35,119
R-squared	0.359	0.362	0.359	0.362	0.360	0.360	0.386	0.358	0.358	0.358

Panel B: SBT Commitments

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Board Size	-0.010**									
(CG_BD_BS_O01)	(0.005)									
Percentage female on board		0.015***								
(CG_BD_BS_O03)		(0.004)								
Percentage with finance background			-0.005							
(CG_BD_BS_O04)			(0.004)							
Avg. number of years on board				-0.016***						
(CG_BD_BS_O05)				(0.004)						
Percent of nonexecutive members					0.033***					
(CG_BD_BS_O06)					(0.005)					
Perc of independent board members						0.034***				
(CG_BD_BS_O07)						(0.006)				
Perc of strictly indep board members							0.020***			
(CG_BD_BS_O08)							(0.005)			
Equal voting rights								-0.008		
(CG_SH_SR_O02)								(0.006)		
Number of antitakeover devices									-0.013**	
(CG_SH_SR_O06)									(0.007)	
Is company controversial										-0.194
(CG_SH_SR_O07)										(0.145)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	26,225	26,130	26,028	25,382	26,196	26,181	13,982	26,225	26,225	26,225
R-squared	0.129	0.130	0.129	0.131	0.131	0.131	0.163	0.129	0.129	0.130

Table 8: Future Commitments and Climate Policy and Investor Pressure

The unit of observation is firm—year. The dependent variable is *CDPCOM* in columns 1-3 and *SBTCOM* in columns 4-6. All other variables are defined in Table 1, Table 2, and the Appendix. The model is estimated using pooled regression model. All regressions include the same set of firm-level controls as in Table 3, country, industry, and year fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

	(1)	(2)	(3)	(4)	(5)	(6)
		CDPCOM			SBTCOM	
LOGS1TOT	0.010***	0.002	0.003*	0.001	-0.002***	-0.003***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
DOMPOLICY	0.116***			0.010*		
	(0.013)			(0.006)		
LOGS1TOT*DOMPOLICY	-0.020***			-0.003***		
	(0.002)			(0.001)		
INTPOLICY		0.033***			-0.003	
		(0.011)			(0.005)	
LOGS1TOT*INTPOLICY		-0.008***			0.001	
		(0.002)			(0.001)	
DTE/100			0.432***			-0.034*
			(0.043)			(0.020)
LOGS1TOT*DTE/100			-0.012*			0.009**
			(0.007)			(0.004)
Controls	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Observations	57,221	57,221	47,014	46,444	46,444	37,128
R-squared	0.361	0.360	0.367	0.098	0.097	0.103

Table 9: Future Commitments and Peer Effects

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variables are *CDPCOM* and *SBTCOM*. All variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include country, year, and firm-fixed effects. *INDCOM* is a fraction of companies making commitments (either CDP or SBT) within the same industry cluster. *INDCOMSQ* is the squared version of *INDCOM*. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

	Industry Peer Effects					
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES		CDPCOM			SBTCOM	
INDCOM	0.546***	0.545***	0.266***	0.858***	0.439*	0.567*
	(0.075)	(0.040)	(0.061)	(0.046)	(0.163)	(0.207)
INDCOMSQ	0.259**	0.196**	-0.090	0.582*	0.280	0.118
	(0.083)	(0.064)	(0.054)	(0.239)	(0.223)	(0.424)
LOGS1TOT	0.004	-0.003	-0.007*	-0.000	-0.002*	-0.003*
	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
LOGSIZE	0.051***	0.059***	0.007	0.010***	0.012***	0.004
	(0.004)	(0.005)	(0.004)	(0.001)	(0.001)	(0.002)
LOGPPE	0.013***	0.017***	0.003	0.002**	0.002*	-0.003
	(0.003)	(0.005)	(0.003)	(0.001)	(0.001)	(0.002)
LEVERAGE	0.000	0.000	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE	-0.000**	-0.000**	0.000**	-0.000*	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B	-0.002	-0.005**	-0.001	-0.001	-0.002*	-0.001
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
INVEST/A	-0.003***	-0.003***	0.000	-0.000	-0.000**	0.000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
BETA	0.007	0.017	0.007	0.003	0.009	-0.004
	(0.010)	(0.012)	(0.008)	(0.004)	(0.005)	(0.004)
VOLAT	0.150**	0.098*	0.021	0.031*	0.024	0.002
	(0.044)	(0.043)	(0.029)	(0.014)	(0.018)	(0.015)
MOM	-0.353**	-0.343**	-0.031	-0.063	-0.065	-0.002
	(0.115)	(0.105)	(0.041)	(0.029)	(0.032)	(0.033)
RET	0.003	0.000	-0.002	-0.000	-0.000	-0.002
	(0.024)	(0.022)	(0.009)	(0.004)	(0.004)	(0.005)
MSCI	0.192***	0.198***	0.060***	0.027*	0.027*	0.000
	(0.021)	(0.021)	(0.016)	(0.010)	(0.010)	(0.004)
Constant	-0.467***	-0.519***	0.065	-0.082***	-0.090***	0.023
	(0.035)	(0.040)	(0.041)	(0.011)	(0.013)	(0.016)
Country FE	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y
Observations	59,257	59,254	57,814	46,650	46,645	45,167
R-squared	0.352	0.368	0.842	0.092	0.102	0.727

Table 10: Emissions Backdating

The unit of observation is firm—year. The dependent variable is next year's *LOGS1TOT*. *BASEYEAR* is equal to one for the year the company chooses as its baseline year for its emission target; and zero for the two years before and two years after the baseline year. All other variables are defined in Table 1, Table 2, and Table 11. The model is estimated using pooled regression model. All regressions include country, year, and GICS-6 industry-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

VARIABLES	(1)	(2)	(3)	(4) High Emissions	(5) Low Emissions
BASEYEAR	0.046	0.038*	0.026*	0.031**	0.021
	(0.050)	(0.021)	(0.014)	(0.014)	(0.036)
LOGSIZE	-0.492***	0.355***	0.122**	0.042	0.149*
	(0.082)	(0.083)	(0.051)	(0.051)	(0.071)
LOGPPE	1.209***	0.486***	0.137**	0.417***	0.013
	(0.077)	(0.070)	(0.062)	(0.107)	(0.040)
LEVERAGE	-0.019***	-0.001	0.006***	0.004	0.007**
	(0.004)	(0.003)	(0.002)	(0.002)	(0.003)
ROE	0.003	-0.002	0.001	0.001	0.001
	(0.004)	(0.002)	(0.001)	(0.001)	(0.002)
M/B	0.088**	-0.037	-0.034**	-0.018	-0.001
	(0.034)	(0.021)	(0.012)	(0.013)	(0.022)
INVEST/A	0.031*	-0.023*	-0.001	-0.005	0.003
	(0.015)	(0.012)	(0.005)	(0.004)	(0.009)
BETA	-0.088	0.185	0.105	0.073	0.105
	(0.162)	(0.127)	(0.071)	(0.043)	(0.116)
Constant	0.744	-0.412	4.491***	3.772***	2.238***
	(0.427)	(0.331)	(0.606)	(1.013)	(0.616)
Country FE	Y	Y	N	N	N
Year FE	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	N
Firm FE	N	N	Y	Y	Y
Observations	4,294	4,284	4,286	3,038	1,181
R-squared	0.472	0.841	0.965	0.969	0.839

Table 11: Commitments and Future Scope 1 Emission Levels

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *LOGS1TOT* next year and in three years. All variables are defined in the Appendix. The coefficients are estimated using pooled regression model. All regressions in Panel A include country and year fixed effects. Columns 2 and 5 include GICS-6 industry-fixed effects, and columns 3 and 6 include firm-fixed effects. In Panel B, we only consider specifications with GICS-6 industry-fixed effects or firm-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: Future Emissions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
		One Year Ahead			Three Years Ahead	
CDPCOM	0.433***	-0.022	-0.015	0.395***	-0.029	-0.025
	(0.038)	(0.025)	(0.021)	(0.052)	(0.035)	(0.026)
SBTCOM	-0.172*	-0.170***	-0.030	-0.022	-0.159*	-0.039
	(0.093)	(0.056)	(0.029)	(0.163)	(0.094)	(0.030)
INDC	-0.111	-0.104	-0.068	0.001	0.043	0.054
	(0.269)	(0.149)	(0.068)	(0.290)	(0.175)	(0.053)
NDC	-0.073	-0.008	-0.050*	-0.037	0.106	0.070**
	(0.124)	(0.067)	(0.026)	(0.144)	(0.085)	(0.028)
LOGSIZE	-0.011	0.471***	0.137***	-0.016	0.498***	0.024
	(0.013)	(0.009)	(0.014)	(0.021)	(0.015)	(0.024)
LOGPPE	0.810***	0.365***	0.152***	0.819***	0.358***	-0.018
	(0.009)	(0.007)	(0.020)	(0.015)	(0.012)	(0.031)
LEVERAGE	0.002***	0.009***	0.004***	0.002*	0.008***	-0.000
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
ROE	0.009***	0.005***	0.001***	0.002**	0.004***	0.001***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)
M/B	0.031***	-0.061***	-0.016***	0.055***	-0.041***	0.001
	(0.006)	(0.005)	(0.005)	(0.010)	(0.007)	(0.007)
INVEST/A	0.006**	-0.029***	-0.003***	0.023***	-0.018***	-0.002
	(0.002)	(0.002)	(0.001)	(0.004)	(0.003)	(0.002)
BETA	-0.260***	0.090***	-0.078	-0.322***	0.061**	0.141
	(0.027)	(0.021)	(0.127)	(0.040)	(0.031)	(0.253)
VOLAT	3.824***	0.328**	-0.322***	3.833***	0.665**	-0.030
	(0.221)	(0.156)	(0.092)	(0.353)	(0.258)	(0.179)
MOM	1.061***	-0.531**	0.241*	1.826***	0.072	-0.278
	(0.358)	(0.252)	(0.133)	(0.591)	(0.433)	(0.225)
RET	-0.443***	-0.105*	0.001	0.082	0.136	0.013
	(0.080)	(0.061)	(0.028)	(0.149)	(0.102)	(0.063)
MSCI	0.045	0.032	0.016	0.023	-0.029	0.021
	(0.037)	(0.023)	(0.028)	(0.052)	(0.034)	(0.030)
Constant	-1.196***	-1.022***	3.158***	-1.222***	-1.255***	5.829***
	(0.271)	(0.152)	(0.189)	(0.268)	(0.167)	(0.355)
Country FE	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y
Observations	45,530	45,524	44,058	19,955	19,948	13,854
R-squared	0.485	0.808	0.979	0.469	0.792	0.987

Panel B: Conditioning on Initial Emissions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	One Year Ahead				Three Years Ahead			
CDPCOM	-0.084***	-0.023			-0.132***	0.062		
	(0.018)	(0.058)			(0.042)	(0.073)		
SBTCOM			-0.120**	-0.046			-0.234*	0.044
			(0.059)	(0.105)			(0.142)	(0.124)
LOGS1TOT	0.921***	0.459***	0.924***	0.292***	0.815***	-0.013	0.823***	-0.053***
	(0.004)	(0.014)	(0.004)	(0.016)	(0.008)	(0.016)	(0.010)	(0.020)
CDPCOM*LOGS1TOT	0.012***	0.008			0.022***	-0.005		
	(0.002)	(0.008)			(0.005)	(0.010)		
SBTCOM*LOGS1TOT			0.015**	0.004			0.022	-0.012
			(0.007)	(0.013)			(0.017)	(0.015)
LOGSIZE	0.046***	0.082***	0.045***	0.091***	0.101***	0.062***	0.095***	0.024
	(0.004)	(0.010)	(0.005)	(0.012)	(0.009)	(0.016)	(0.011)	(0.024)
LOGPPE	0.024***	0.094***	0.024***	0.085***	0.063***	0.115***	0.065***	-0.003
	(0.003)	(0.013)	(0.004)	(0.018)	(0.007)	(0.020)	(0.009)	(0.032)
LEVERAGE	0.001***	0.003***	0.001***	0.002***	0.001***	0.002**	0.001**	0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
ROE	-0.000	0.000	-0.000	0.000	-0.001	-0.000	-0.000	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
M/B	0.001	-0.004	0.002	-0.009**	0.004	0.005	0.011**	0.002
	(0.002)	(0.004)	(0.002)	(0.004)	(0.004)	(0.006)	(0.005)	(0.006)
INVEST/A	0.004***	-0.003***	0.004***	-0.002	0.009***	-0.007***	0.009***	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
BETA	0.007	-0.003	0.002	-0.078	-0.008	-0.003	-0.015	0.096
	(0.007)	(0.019)	(0.009)	(0.112)	(0.015)	(0.023)	(0.020)	(0.236)
VOLAT	0.031	-0.248***	0.098	-0.256***	0.337**	0.119	0.550***	-0.045
	(0.068)	(0.076)	(0.077)	(0.087)	(0.150)	(0.129)	(0.188)	(0.175)
MOM	1.208***	0.609***	1.176***	0.438***	1.712***	0.185	1.592***	-0.305
	(0.114)	(0.111)	(0.132)	(0.125)	(0.234)	(0.173)	(0.303)	(0.220)
RET	-0.004	-0.005	-0.009	0.009	0.058	0.006	0.042	0.010
	(0.027)	(0.025)	(0.030)	(0.027)	(0.065)	(0.048)	(0.078)	(0.062)
MSCI	-0.030***	-0.012	-0.036***	-0.007	-0.068***	-0.008	-0.089***	0.019
	(0.008)	(0.015)	(0.010)	(0.025)	(0.016)	(0.022)	(0.022)	(0.031)
Constant	-0.120***	1.601***	-0.132***	2.444***	-0.296***	4.787***	-0.308***	6.142***
	(0.020)	(0.112)	(0.023)	(0.165)	(0.047)	(0.190)	(0.057)	(0.338)
Country FE	Y	N	Y	N	Y	N	Y	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	N	Y	N	Y	N	Y	N
Firm FE	N	Y	N	Y	N	Y	N	Y
Observations	59,241	57,795	46,638	45,158	32,674	26,503	20,492	14,280
R-squared	0.962	0.978	0.960	0.981	0.907	0.972	0.907	0.987

Table 12: Emissions and Commitments: Difference in Differences

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *LOGS1TOT*. We specify commitments using *CDPCOM* and *SBTCOM*. Companies that commit are defined with an indicator variable *TREAT*. *TREAT* is equal to zero for companies that are in the same GICS-6 industry as the treated firm and are within the smallest distance based on its stock's the market capitalization. For each commitment episode, we also define a corresponding variable *AFTER* that is equal to one for all the firm-level observations after the commitment takes place. Both *TREAT* and *AFTER* are correspondingly numbered 1 to 2 for the above commitment variables. Panel A presents the balance test across the two treatment samples. Panel B shows the results from estimating the difference-in-differences regression model with *LOGS1TOT* and its value one year and three years later. All control variables are defined in Table 1, Table 2, and Table 11. The model is estimated using pooled regression. All regressions include country, year, and GICS-6 industry-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: Balance Test

Variables	Treatment	Control	Difference	p-value	Treatment	Control	Difference	p-value
	CDPCOM				SBTCOM			
LOGS1TOT	6.50	6.62	-0.1225	0.412	6.14	6.69	-0.5423	0.293
LOGSIZE	8.40	8.46	-0.0590	0.369	8.64	8.95	-0.3140	0.234
LOGPPE	8.50	8.52	-0.0144	0.934	8.60	8.56	0.0441	0.427
LEVERAGE	25.15	24.19	0.9548	0.216	25.78	25.55	0.2344	0.942
ROE	12.81	13.08	-0.2693	0.647	12.59	14.65	-2.0572	0.019
M/B	1.80	1.75	0.0560	0.610	1.96	2.39	-0.4264	0.203
INVEST/A	4.93	5.32	-0.3920	0.103	4.87	4.73	0.1415	0.355
BETA	0.73	0.69	0.0426	0.048	0.71	0.65	0.0642	0.248
VOLAT	0.08	0.09	-0.0027	0.088	0.07	0.07	0.0005	0.319
MOM	0.01	0.01	-0.0002	0.834	0.01	0.01	-0.0005	0.902
MSCI	0.55	0.52	0.0284	0.202	0.49	0.55	-0.0599	0.158

Panel B: Difference-in-Differences Estimation

	(1)	(2)	(3)	(4)
VARIABLES	CDPCOM	SBTCOM	CDPCOM	SBTCOM
	One Year Ahead		Three Years Ahead	
TREAT	0.043		0.000	
	(0.060)		(0.049)	
AFTER	0.076***		0.027	
	(0.022)		(0.031)	
TREAT*AFTER	-0.153***		0.049*	
	(0.024)		(0.028)	
TREAT2		-0.105		0.113
		(0.108)		(0.105)
AFTER2		0.073**		-0.037
		(0.033)		(0.057)
TREAT2*AFTER2		-0.065**		0.027
		(0.033)		(0.061)
Controls	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Observations	13,278	3,357	8,861	1,736
R-squared	0.956	0.975	0.969	0.986

Table 13: Commitments and Future Firm Profitability

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is next year's *ROE* in columns 1 and 2, and *ROE* in three years in columns 3 and 4. All variables are defined in the Appendix. The coefficients are estimated using pooled regression model. All regressions include country, firm, and year fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

VARIABLES	(1)	(2)	(3)	(4)
	One Year Ahead		Three Years Ahead	
CDPCOM	0.199	0.192	0.498	0.547
	(0.436)	(0.410)	(0.803)	(0.800)
SBTCOM	0.423	0.289	1.639	1.499
	(0.698)	(0.659)	(1.002)	(1.005)
INDC	-0.229	-0.886	1.548	1.584
	(0.972)	(0.979)	(1.295)	(1.282)
NDC	-0.191	-0.497	0.933	0.971
	(0.548)	(0.541)	(0.692)	(0.693)
LOGSIZE		1.509***		-1.519***
		(0.294)		(0.575)
LOGPPE		-2.859***		-1.604***
		(0.322)		(0.563)
LEVERAGE		0.095***		0.020
		(0.017)		(0.030)
M/B		2.087***		0.331
		(0.177)		(0.289)
INVEST/A		-0.015		0.057
		(0.027)		(0.049)
BETA		1.361		-4.647
		(2.130)		(2.847)
VOLAT		-7.943***		-0.400
		(2.390)		(4.327)
MOM		42.529***		-8.342
		(3.202)		(5.823)
RET		2.004***		-1.276
		(0.708)		(1.442)
MSCI		-0.321		1.305*
		(0.573)		(0.693)
Constant	8.553***	15.044***	9.084***	35.666***
	(0.986)	(3.318)	(0.946)	(5.747)
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	43,792	43,792	13,682	13,682
R-squared	0.718	0.736	0.747	0.748

Online Appendix

Table A.1: Future Commitments and Controls (Regional Distribution)

The unit of observation is firm—year. The dependent variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. The sample period is 2011-2019 for Panel A, and 2014-2019 for Panel B. All variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include country and year fixed effects. Columns 1-4 include GICS-6 industry-fixed effects, and columns 5-8 include firm-fixed effects. Columns 1 and 5 report the results for the sample of firms in North America, columns 2 and 6 in Europe, columns 3 and 7 in Asia, and columns 4 and 8 in all remaining countries. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: CDP Commitments (*CDPCOM*)

VARIABLES	(1) North Amer.	(2) Europe	(3) Asia	(4) Others	(5) North Amer.	(6) Europe	(7) Asia	(8) Others
LOGS1TOT	-0.010***	-0.007***	-0.003**	0.008*	-0.027***	-0.006	-0.007***	0.006
	(0.003)	(0.003)	(0.001)	(0.004)	(0.006)	(0.004)	(0.002)	(0.006)
LOGSIZE	0.045***	0.064***	0.060***	0.065***	0.016**	0.003	0.010***	0.004
	(0.004)	(0.004)	(0.002)	(0.006)	(0.006)	(0.007)	(0.003)	(0.006)
LOGPPE	0.032***	0.020***	0.012***	0.012***	0.001	0.017***	0.005**	-0.006
	(0.003)	(0.003)	(0.001)	(0.004)	(0.007)	(0.005)	(0.002)	(0.004)
LEVERAGE	0.000	0.001**	0.000*	0.000	0.001***	-0.000	-0.001***	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE	0.000***	-0.000	-0.001***	-0.000*	0.000	0.000*	0.000**	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B	-0.004***	-0.008***	0.002	-0.004	0.001	-0.004*	0.007**	-0.001
	(0.001)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
INVEST/A	-0.006***	-0.005***	-0.001***	-0.001	-0.002**	-0.001	0.001***	0.001
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
BETA	-0.022***	0.095***	0.054***	-0.070***	-0.001	0.009	0.019**	0.016
	(0.008)	(0.012)	(0.007)	(0.019)	(0.013)	(0.017)	(0.009)	(0.018)
VOLAT	0.279***	-0.015	-0.031	0.147	-0.013	-0.045	0.032	-0.056
	(0.053)	(0.074)	(0.026)	(0.090)	(0.044)	(0.063)	(0.020)	(0.070)
MOM	-0.408***	-0.296**	-0.213***	-0.233*	-0.152**	-0.027	-0.037	0.073
	(0.087)	(0.120)	(0.049)	(0.120)	(0.071)	(0.089)	(0.036)	(0.080)
RET	-0.036*	-0.003	-0.011	0.001	-0.005	0.007	-0.006	-0.002
	(0.019)	(0.034)	(0.010)	(0.032)	(0.014)	(0.023)	(0.007)	(0.022)
MSCI	0.213***	0.253***	0.140***	0.155***	0.052***	0.131***	0.019**	0.046***
	(0.009)	(0.012)	(0.006)	(0.016)	(0.013)	(0.017)	(0.008)	(0.017)
Constant	-0.384***	-0.384***	-0.476***	-0.410***	0.163***	0.174***	0.009	0.102**
	(0.021)	(0.022)	(0.013)	(0.038)	(0.051)	(0.052)	(0.028)	(0.048)
Country FE	Y	Y	Y	Y	N	N	N	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	N	N	N	N
Firm FE	N	N	N	N	Y	Y	Y	Y
Observations	14,546	12,938	30,238	5,279	14,163	12,686	29,335	5,186
R-squared	0.407	0.433	0.332	0.405	0.815	0.822	0.819	0.786

Panel B: SBT Commitments (*SBTCOM*)

VARIABLES	(1) North Amer.	(2) Europe	(3) Asia	(4) Others	(5) North Amer.	(6) Europe	(7) Asia	(8) Others
LOGS1TOT	-0.004***	-0.001	-0.001***	-0.002	-0.008***	-0.003	-0.002	0.001
	(0.001)	(0.001)	(0.000)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
LOGSIZE	0.009***	0.018***	0.010***	0.006**	0.005	0.001	0.006***	-0.000
	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.004)	(0.001)	(0.004)
LOGPPE	0.004***	0.003*	0.000	0.003**	-0.005	0.001	-0.003***	0.000
	(0.001)	(0.002)	(0.000)	(0.001)	(0.003)	(0.004)	(0.001)	(0.005)
LEVERAGE	-0.000**	-0.000	0.000***	-0.000**	-0.000	0.000	-0.000	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE	0.000	0.000	-0.000***	-0.000	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B	-0.002***	-0.002**	-0.002***	-0.001	-0.001	0.003	0.002***	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.003)
INVEST/A	-0.000	-0.001**	-0.000**	-0.000	0.001***	-0.000	0.000**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
BETA	-0.009*	0.028***	-0.004	0.001	-0.013*	0.010	-0.009	-0.007
	(0.005)	(0.008)	(0.003)	(0.005)	(0.008)	(0.012)	(0.008)	(0.007)
VOLAT	0.051**	-0.002	-0.011	0.012	0.002	-0.027	-0.001	-0.006
	(0.022)	(0.036)	(0.008)	(0.036)	(0.023)	(0.035)	(0.008)	(0.026)
MOM	-0.070**	-0.169***	-0.019	-0.054	-0.032	-0.111**	-0.016	-0.015
	(0.029)	(0.060)	(0.016)	(0.046)	(0.035)	(0.052)	(0.018)	(0.033)
RET	0.003	0.044***	-0.006**	-0.001	0.007	0.036***	-0.006*	0.001
	(0.007)	(0.017)	(0.003)	(0.013)	(0.007)	(0.013)	(0.003)	(0.010)
MSCI	0.006	0.044***	0.020***	0.023**	0.007	0.005	0.003	-0.014
	(0.004)	(0.007)	(0.003)	(0.009)	(0.006)	(0.011)	(0.004)	(0.012)
Constant	-0.057***	-0.119***	-0.055***	-0.028*	0.053*	0.028	0.013	0.041
	(0.009)	(0.012)	(0.006)	(0.015)	(0.029)	(0.034)	(0.012)	(0.032)
Country FE	Y	Y	Y	Y	N	N	N	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	N	N	N	N
Firm FE	N	N	N	N	Y	Y	Y	Y
Observations	11,708	9,931	25,587	3,974	11,312	9,687	24,673	3,882
R-squared	0.125	0.203	0.085	0.193	0.549	0.675	0.608	0.675

Table A.2: Future Commitments and Emission Changes

The unit of observation is firm—year. The dependent variables are *CDPCOM* and *SBTCOM* in Panel A. The dependent variables in Panel B are *CDPs12tgt* in columns 1-3, *SBTs12tgt* in columns 4-6, and *SBTs12intgt* in columns 7-9. The sample period is 2011-2019 for CDPCOM, and 2014-2019 for SBTCOM. All variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include country and year fixed effects. Column 2 and 5 includes GICS-6 industry-fixed effects, and columns 3 and 6 includes firm-fixed effects. We cluster standard errors at the firm and year dimensions. In columns 4 and 8 of Panel A, we further report estimates using logit model with bootstrapped standard errors. ***1% significance; **5% significance; *10% significance.

VARIABLES	CDPCOM			SBTCOM		
	1-year change	3-year change	5-year change	1-year change	3-year change	5-year change
S1CHG	-0.024***	-0.014***	-0.012***	-0.004***	-0.003***	-0.002***
	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
LOGSIZE	0.063***	0.073***	0.073***	0.013***	0.016***	0.016***
	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
LOGPPE	0.019***	0.027***	0.030***	0.002***	0.003***	0.003***
	(0.001)	(0.002)	(0.002)	(0.000)	(0.001)	(0.001)
LEVERAGE/100	0.000***	0.001***	0.001***	-0.000	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE/100	-0.000***	-0.000*	-0.000	-0.000**	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
(M/B)/100	-0.005***	-0.004***	-0.004**	-0.002***	-0.002***	-0.002**
	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)
(INVEST/A)/100	-0.004***	-0.005***	-0.004***	-0.000***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
BETA	0.017***	0.021***	0.022***	0.006**	0.005	0.004
	(0.005)	(0.006)	(0.006)	(0.003)	(0.003)	(0.004)
VOLAT	0.092***	0.050	0.062	0.029***	0.025	0.013
	(0.028)	(0.048)	(0.054)	(0.010)	(0.019)	(0.023)
MOM	-0.442***	-0.478***	-0.471***	-0.090***	-0.139***	-0.161***
	(0.048)	(0.078)	(0.089)	(0.019)	(0.035)	(0.041)
RET	-0.002	0.022	-0.001	-0.001	0.003	-0.001
	(0.012)	(0.021)	(0.024)	(0.004)	(0.009)	(0.010)
MSCI	0.177***	0.150***	0.157***	0.020***	0.012***	0.010***
	(0.005)	(0.006)	(0.006)	(0.002)	(0.003)	(0.003)
Constant	-0.500***	-0.623***	-0.641***	-0.095***	-0.124***	-0.115***
	(0.010)	(0.016)	(0.018)	(0.005)	(0.009)	(0.010)
Country FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Observations	54,251	35,217	30,624	42,918	25,288	21,763
R-squared	0.350	0.348	0.355	0.098	0.126	0.137

Table A.3: Future Commitments and Controls (Alternative Emissions)

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. All variables are defined in the Appendix. The model is estimated using pooled regression model. All regressions include the same set of firm-level controls as in Table 3, year and firm-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: CDP Commitments (*CDPCOM*)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOGS2TOT	-0.003							
	(0.002)							
LOGS3TOT		-0.005**						
		(0.002)						
S1CHG			0.000					
			(0.003)					
S2CHG				-0.002				
				(0.002)				
S3CHG					-0.002			
					(0.004)			
S1INT						0.001**		
						(0.001)		
S2INT							0.017***	
							(0.005)	
S3INT								0.003
								(0.003)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	61,554	61,578	52,725	52,704	52,733	61,578	61,578	61,578
R-squared	0.821	0.821	0.820	0.820	0.820	0.821	0.821	0.821

Panel B: SBT Commitments (*SBTCOM*)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOGS2TOT	-0.005***							
	(0.001)							
LOGS3TOT		-0.006***						
		(0.001)						
S1CHG			-0.000					
			(0.001)					
S2CHG				0.000				
				(0.001)				
S3CHG					-0.002			
					(0.002)			
S1INT						-0.001**		
						(0.000)		
S2INT							-0.011***	
							(0.002)	
S3INT								-0.005***
								(0.002)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	49,748	49,760	41,376	41,366	41,381	49,760	49,760	49,760
R-squared	0.634	0.635	0.641	0.641	0.641	0.635	0.635	0.635

Table A.4: Future Commitments and Internal Governance with Firm-Fixed Effects

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. All other variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include the same set of firm-level controls as in Table 3, year and firm-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: CDP Commitments

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Board Size	-0.014									
(CG_BD_BS_O01)	(0.011)									
Percentage female on board		-0.004								
(CG_BD_BS_O03)		(0.010)								
Percentage with finance background			-0.010							
(CG_BD_BS_O04)			(0.008)							
Avg. number of years on board				0.008						
(CG_BD_BS_O05)				(0.014)						
Percent of nonexecutive members					-0.001					
(CG_BD_BS_O06)					(0.013)					
Perc of independent board members						0.014				
(CG_BD_BS_O07)						(0.014)				
Perc of strictly indep board members							0.011			
(CG_BD_BS_O08)							(0.012)			
Equal voting rights								-0.070***		
(CG_SH_SR_O02)								(0.017)		
Number of antitakeover devices									0.023	
(CG_SH_SR_O06)									(0.015)	
Is company controversial										-0.023
(CG_SH_SR_O07)										(0.050)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	34,233	34,088	33,977	33,048	34,185	34,149	17,887	34,233	34,233	34,233
R-squared	0.808	0.808	0.809	0.809	0.808	0.808	0.822	0.808	0.808	0.808

Panel B: SBT Commitments

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Board Size	-0.009									
(CG_BD_BS_O01)	(0.008)									
Percentage female on board		0.002								
(CG_BD_BS_O03)		(0.007)								
Percentage with finance background			-0.012**							
(CG_BD_BS_O04)			(0.006)							
Avg. number of years on board				-0.024**						
(CG_BD_BS_O05)				(0.011)						
Percent of nonexecutive members					0.017**					
(CG_BD_BS_O06)					(0.008)					
Perc of independent board members						0.015				
(CG_BD_BS_O07)						(0.011)				
Perc of strictly indep board members							0.007			
(CG_BD_BS_O08)							(0.009)			
Equal voting rights								-0.032		
(CG_SH_SR_O02)								(0.022)		
Number of antitakeover devices									0.017	
(CG_SH_SR_O06)									(0.013)	
Is company controversial										-0.053
(CG_SH_SR_O07)										(0.077)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	25,329	25,231	25,134	24,508	25,298	25,276	13,065	25,329	25,329	25,329
R-squared	0.638	0.638	0.638	0.639	0.638	0.638	0.651	0.638	0.638	0.638

Table A.5: Future Commitments and Peer Effects

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. All variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include country, year, and firm-fixed effects. Column 1 reports the results for the sample of firms in North America, column 2 in Europe, column 3 in Asia, and column 4 in all remaining countries. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: CDP Commitments (*CDPCOM*)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	NAmerica	Europe	Asia	Others	NAmerica	Europe	Asia	Others
LOGS1TOT	-0.010***	-0.007***	-0.003**	0.008*	-0.027***	-0.006	-0.007***	0.006
	(0.003)	(0.003)	(0.001)	(0.004)	(0.006)	(0.004)	(0.002)	(0.006)
LOGSIZE	0.045***	0.064***	0.060***	0.065***	0.016**	0.003	0.010***	0.004
	(0.004)	(0.004)	(0.002)	(0.006)	(0.006)	(0.007)	(0.003)	(0.006)
LOGPPE	0.032***	0.020***	0.012***	0.012***	0.001	0.017***	0.005**	-0.006
	(0.003)	(0.003)	(0.001)	(0.004)	(0.007)	(0.005)	(0.002)	(0.004)
LEVERAGE	0.000	0.001**	0.000*	0.000	0.001***	-0.000	-0.001***	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE	0.000***	-0.000	-0.001***	-0.000*	0.000	0.000*	0.000**	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B	-0.004***	-0.008***	0.002	-0.004	0.001	-0.004*	0.007**	-0.001
	(0.001)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
INVEST/A	-0.006***	-0.005***	-0.001***	-0.001	-0.002**	-0.001	0.001***	0.001
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
BETA	-0.022***	0.095***	0.054***	-0.070***	-0.001	0.009	0.019**	0.016
	(0.008)	(0.012)	(0.007)	(0.019)	(0.013)	(0.017)	(0.009)	(0.018)
VOLAT	0.279***	-0.015	-0.031	0.147	-0.013	-0.045	0.032	-0.056
	(0.053)	(0.074)	(0.026)	(0.090)	(0.044)	(0.063)	(0.020)	(0.070)
MOM	-0.408***	-0.296**	-0.213***	-0.233*	-0.152**	-0.027	-0.037	0.073
	(0.087)	(0.120)	(0.049)	(0.120)	(0.071)	(0.089)	(0.036)	(0.080)
RET	-0.036*	-0.003	-0.011	0.001	-0.005	0.007	-0.006	-0.002
	(0.019)	(0.034)	(0.010)	(0.032)	(0.014)	(0.023)	(0.007)	(0.022)
MSCI	0.213***	0.253***	0.140***	0.155***	0.052***	0.131***	0.019**	0.046***
	(0.009)	(0.012)	(0.006)	(0.016)	(0.013)	(0.017)	(0.008)	(0.017)
Constant	-0.384***	-0.384***	-0.476***	-0.410***	0.163***	0.174***	0.009	0.102**
	(0.021)	(0.022)	(0.013)	(0.038)	(0.051)	(0.052)	(0.028)	(0.048)
Country FE	Y	Y	Y	Y	N	N	N	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	N	N	N	N
Firm FE	N	N	N	N	Y	Y	Y	Y
Observations	14,546	12,938	30,238	5,279	14,163	12,686	29,335	5,186
R-squared	0.407	0.433	0.332	0.405	0.815	0.822	0.819	0.786

Panel B: SBT Commitments (*SBTCOM*)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	NAmerica	Europe	Asia	Others	NAmerica	Europe	Asia	Others
LOGS1TOT	-0.004***	-0.001	-0.001***	-0.002	-0.008***	-0.003	-0.002	0.001
	(0.001)	(0.001)	(0.000)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
LOGSIZE	0.009***	0.018***	0.010***	0.006**	0.005	0.001	0.006***	-0.000
	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.004)	(0.001)	(0.004)
LOGPPE	0.004***	0.003*	0.000	0.003**	-0.005	0.001	-0.003***	0.000
	(0.001)	(0.002)	(0.000)	(0.001)	(0.003)	(0.004)	(0.001)	(0.005)
LEVERAGE	-0.000**	-0.000	0.000***	-0.000**	-0.000	0.000	-0.000	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE	0.000	0.000	-0.000***	-0.000	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B	-0.002***	-0.002**	-0.002***	-0.001	-0.001	0.003	0.002***	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.003)
INVEST/A	-0.000	-0.001**	-0.000**	-0.000	0.001***	-0.000	0.000**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
BETA	-0.009*	0.028***	-0.004	0.001	-0.013*	0.010	-0.009	-0.007
	(0.005)	(0.008)	(0.003)	(0.005)	(0.008)	(0.012)	(0.008)	(0.007)
VOLAT	0.051**	-0.002	-0.011	0.012	0.002	-0.027	-0.001	-0.006
	(0.022)	(0.036)	(0.008)	(0.036)	(0.023)	(0.035)	(0.008)	(0.026)
MOM	-0.070**	-0.169***	-0.019	-0.054	-0.032	-0.111**	-0.016	-0.015
	(0.029)	(0.060)	(0.016)	(0.046)	(0.035)	(0.052)	(0.018)	(0.033)
RET	0.003	0.044***	-0.006**	-0.001	0.007	0.036***	-0.006*	0.001
	(0.007)	(0.017)	(0.003)	(0.013)	(0.007)	(0.013)	(0.003)	(0.010)
MSCI	0.006	0.044***	0.020***	0.023**	0.007	0.005	0.003	-0.014
	(0.004)	(0.007)	(0.003)	(0.009)	(0.006)	(0.011)	(0.004)	(0.012)
Constant	-0.057***	-0.119***	-0.055***	-0.028*	0.053*	0.028	0.013	0.041
	(0.009)	(0.012)	(0.006)	(0.015)	(0.029)	(0.034)	(0.012)	(0.032)
Country FE	Y	Y	Y	Y	N	N	N	N
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	N	N	N	N
Firm FE	N	N	N	N	Y	Y	Y	Y
Observations	11,708	9,931	25,587	3,974	11,312	9,687	24,673	3,882
R-squared	0.125	0.203	0.085	0.193	0.549	0.675	0.608	0.675

Panel C: Joint Commitments

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
		CDPCOM			SBTCOM	
SBTCOM	0.508***	0.483***	0.032**			
	(0.011)	(0.011)	(0.016)			
CDPCOM				0.095***	0.093***	0.044***
				(0.004)	(0.004)	(0.007)
LOGS1TOT	0.008***	-0.002*	-0.006***	-0.001***	-0.002***	-0.003***
	(0.001)	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)
LOGSIZE	0.045***	0.051***	0.004	0.005***	0.007***	0.004***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
LOGPPE	0.013***	0.015***	0.001	0.001**	0.001*	-0.003**
	(0.001)	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)
LEVERAGE	-0.000**	0.000**	-0.000	-0.000**	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROE	-0.000***	-0.000***	0.000*	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
M/B	0.000	-0.004***	-0.002	-0.001*	-0.001***	-0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
INVEST/A	-0.002***	-0.003***	-0.000	-0.000	-0.000*	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BETA	0.021***	0.025***	0.005	0.000	0.004*	-0.008*
	(0.004)	(0.006)	(0.017)	(0.002)	(0.002)	(0.004)
VOLAT	0.122***	0.113***	0.031**	0.008	0.015*	0.003
	(0.022)	(0.023)	(0.015)	(0.008)	(0.008)	(0.008)
MOM	-0.359***	-0.341***	0.000	-0.031**	-0.033**	-0.021
	(0.042)	(0.042)	(0.026)	(0.015)	(0.015)	(0.015)
RET	0.007	0.001	-0.000	0.001	0.001	-0.001
	(0.009)	(0.009)	(0.005)	(0.003)	(0.003)	(0.003)
MSCI	0.213***	0.212***	0.068***	0.004**	0.004*	0.002
	(0.006)	(0.006)	(0.010)	(0.002)	(0.002)	(0.003)
Constant	-0.379***	-0.388***	0.129***	-0.036***	-0.044***	0.022*
	(0.009)	(0.010)	(0.023)	(0.004)	(0.004)	(0.012)
Country FE	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y
Observations	46,650	46,645	45,167	51,248	51,244	49,760
R-squared	0.360	0.396	0.896	0.105	0.133	0.637

Table A.6: Future Commitments and NDC

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. *INDC* (*NDC*) is an indicator variable equal one if a country in which a firm is located in a given year is an active INDC (NDC) signatory, and zero otherwise. All the remaining variables are defined in Table 1 and Table 2. The model is estimated using pooled regression model. All regressions include country and year fixed effects. Column 2 and 5 additionally includes GICS-6 industry-fixed effects, and columns 3 and 6 includes firm-fixed effects. We cluster standard errors at the country and year dimensions. ***1% significance; **5% significance; *10% significance.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES		CDPCOM			SBTCOM	
INDC	0.091***	0.074***	0.022	0.011**	0.009	0.0003
	(0.027)	(0.021)	(0.014)	(0.004)	(0.006)	(0.012)
NDC	-0.022**	-0.024**	-0.019	0.005	0.004	0.003
	(0.010)	(0.010)	(0.012)	(0.005)	(0.005)	(0.006)
LOGS1TOT	0.008***	-0.003**	-0.009***	0.000	-0.002***	-0.003***
	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)
LOGSIZE	0.053***	0.060***	0.010***	0.010***	0.012***	0.004**
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.002)
LOGPPE	0.016***	0.017***	0.003	0.002***	0.002***	-0.003**
	(0.002)	(0.002)	(0.002)	(0.000)	(0.001)	(0.001)
LEVERAGE/100	-0.011	0.025***	0.008	-0.010***	-0.007*	-0.008
	(0.009)	(0.009)	(0.018)	(0.003)	(0.004)	(0.009)
ROE/100	-0.037***	-0.041***	0.024***	-0.004	-0.006**	0.002
	(0.014)	(0.013)	(0.008)	(0.003)	(0.003)	(0.004)
M/B	-0.001	-0.005***	-0.000	-0.001	-0.002***	-0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
INVEST/A	-0.003***	-0.003***	0.000	-0.000***	-0.000***	0.000**
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BETA	0.013	0.017**	0.011	0.002	0.007***	-0.008
	(0.010)	(0.009)	(0.007)	(0.002)	(0.002)	(0.006)
VOLAT	0.111***	0.111***	0.028	0.019*	0.025**	0.002
	(0.038)	(0.034)	(0.022)	(0.010)	(0.010)	(0.011)
MOM	-0.370***	-0.359***	-0.045	-0.059***	-0.059***	-0.021
	(0.069)	(0.063)	(0.033)	(0.017)	(0.017)	(0.019)
RET	0.011	-0.002	-0.007	0.001	0.001	-0.001
	(0.016)	(0.014)	(0.008)	(0.004)	(0.004)	(0.004)
MSCI	0.200***	0.196***	0.057***	0.025***	0.024***	0.005
	(0.011)	(0.011)	(0.009)	(0.004)	(0.004)	(0.003)
Constant	-0.486***	-0.491***	0.081***	-0.085***	-0.091***	0.025
	(0.033)	(0.031)	(0.027)	(0.011)	(0.012)	(0.018)
Country FE	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y
Observations	61,488	61,485	60,032	49,993	49,988	48,522
R-squared	0.313	0.355	0.823	0.061	0.095	0.633

Table A.7: Commitments and Future Scope 1 Emission Intensity

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is next year's *S1INT* in columns 1-3, and *S1INT* in three years in columns 4-6. All variables are defined in Table 1, Table 2, and Table 11. The model is estimated using pooled regression model. All regressions include country and year fixed effects. Column 2 and 5 includes GICS-6 industry-fixed effects, and columns 3 and 6 includes firm-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
		One Year Ahead			Three Years Ahead	
CDPCOM	0.161*	-0.107*	-0.130**	0.089	-0.105	-0.105
	(0.094)	(0.060)	(0.056)	(0.127)	(0.083)	(0.091)
SBTCOM	-0.724***	-0.808***	-0.006	-0.501	-1.101***	0.013
	(0.192)	(0.159)	(0.044)	(0.333)	(0.309)	(0.073)
INDC	-1.222	-0.683	-0.236	-0.682	-0.277	0.233
	(0.990)	(0.546)	(0.257)	(1.069)	(0.633)	(0.200)
NDC	-0.086	0.039	-0.050	-0.030	0.136	0.116*
	(0.283)	(0.159)	(0.043)	(0.317)	(0.184)	(0.063)
LOGSIZE	-0.655***	-0.119***	-0.074**	-0.727***	-0.154***	0.052
	(0.027)	(0.017)	(0.029)	(0.044)	(0.029)	(0.060)
LOGPPE	0.819***	0.155***	0.017	0.866***	0.187***	0.028
	(0.020)	(0.012)	(0.021)	(0.032)	(0.021)	(0.034)
LEVERAGE	0.012***	0.005***	0.001	0.015***	0.006***	-0.003
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
ROE	-0.009***	-0.003***	-0.002**	-0.015***	-0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
M/B	0.017*	-0.018***	-0.003	0.023	-0.010	-0.004
	(0.010)	(0.006)	(0.005)	(0.017)	(0.011)	(0.015)
INVEST/A	-0.001	0.000	-0.001	0.031***	0.015**	0.002
	(0.006)	(0.003)	(0.003)	(0.009)	(0.006)	(0.006)
BETA	0.344***	0.062	0.226	0.158	0.078	0.580
	(0.072)	(0.061)	(0.188)	(0.102)	(0.087)	(0.366)
VOLAT	4.470***	0.545*	-0.150	4.737***	1.485**	0.222
	(0.540)	(0.306)	(0.226)	(0.917)	(0.620)	(0.436)
MOM	4.746***	0.774	-0.009	-0.570	-1.076	0.188
	(0.894)	(0.516)	(0.315)	(1.572)	(1.038)	(0.783)
RET	-0.772***	-0.086	0.196***	-0.184	-0.070	-0.242*
	(0.195)	(0.110)	(0.063)	(0.364)	(0.219)	(0.133)
MSCI	0.316***	0.256***	0.104	0.322**	0.191**	0.007
	(0.091)	(0.056)	(0.065)	(0.126)	(0.080)	(0.089)
Constant	0.462	1.833***	2.263***	0.086	1.353**	1.016
	(0.929)	(0.521)	(0.364)	(0.887)	(0.543)	(0.703)
Country FE	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y
Observations	45,537	45,531	44,067	19,960	19,953	13,862
R-squared	0.128	0.726	0.966	0.144	0.694	0.981

Table A.8: Commitments and Future Scope 1 Emission Levels: Intensive Margin

The unit of observation is firm—year. The sample period is 2005-2019. The dependent variable is next year's LOGS1TOT in Panel A, and *LOGS1TOT* in three years in Panel B. *MAXEMRED* is the maximum (percentage) reduction in emissions for which a target commitment is specified; *MAXTGTYR* is the maximum number of years for which the firm specifies its scope 1 or 2 target. All other variables are defined in Table 1, Table 2, and Table 11. The model is estimated using pooled regression model. All regressions include country and year fixed effects. Column 2 and 5 includes GICS-6 industry-fixed effects, and columns 3 and 6 includes firm-fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: One-Year Ahead Emissions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
ABATE	-0.002	-0.002	-0.001	0.003	-0.001	-0.000
	(0.007)	(0.004)	(0.001)	(0.004)	(0.002)	(0.001)
MAXEMRED	-0.007	0.000	-0.001*	-0.008**	-0.002	-0.001*
	(0.004)	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)
MAXTGTYR	0.048***	0.021***	0.003*	0.024**	0.009**	0.003
	(0.012)	(0.005)	(0.002)	(0.008)	(0.003)	(0.001)
LOGSIZE				-0.464***	0.355***	0.010
				(0.089)	(0.091)	(0.049)
LOGPPE				1.302***	0.551***	0.243
				(0.079)	(0.080)	(0.150)
LEVERAGE				-0.018***	-0.009**	0.003
				(0.005)	(0.004)	(0.003)
ROE				-0.004	-0.006**	0.000
				(0.004)	(0.002)	(0.001)
M/B				0.147**	-0.012	-0.009
				(0.042)	(0.029)	(0.009)
INVEST/A				0.026	-0.003	0.014**
				(0.020)	(0.014)	(0.006)
BETA				-0.022	0.420***	0.101
				(0.179)	(0.115)	(0.068)
VOLAT				0.797	0.369	-0.610
				(2.162)	(0.790)	(0.330)
MOM				2.093	-2.122	0.508
				(2.489)	(1.684)	(0.404)
RET				-0.002	0.388*	-0.237*
				(0.327)	(0.189)	(0.103)
MSCI				-0.046	0.105	0.063
				(0.201)	(0.120)	(0.065)
Constant	7.130***	7.169***	7.431***	-0.728	-1.267**	4.801***
	(0.136)	(0.067)	(0.014)	(0.547)	(0.367)	(1.344)
Country FE	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y
Observations	3,521	3,504	3,230	3,521	3,504	3,230
R-squared	0.105	0.737	0.985	0.514	0.851	0.985

Panel B: Three-Year Ahead Emissions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
ABATE	0.004	-0.000	-0.001	0.003	-0.002	-0.001
	(0.007)	(0.004)	(0.001)	(0.004)	(0.003)	(0.001)
MAXEMRED	-0.008	-0.001	0.001	-0.007*	-0.003	0.000
	(0.005)	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)
MAXTGTYR	0.061***	0.025***	-0.001	0.031**	0.013**	-0.001
	(0.013)	(0.006)	(0.001)	(0.008)	(0.004)	(0.002)
LOGSIZE				-0.480***	0.409**	-0.033
				(0.103)	(0.104)	(0.056)
LOGPPE				1.292***	0.488***	0.071
				(0.090)	(0.090)	(0.035)
LEVERAGE				-0.020**	-0.010	-0.003
				(0.005)	(0.005)	(0.002)
ROE				-0.005	-0.007**	-0.001
				(0.005)	(0.003)	(0.001)
M/B				0.151**	-0.028	-0.008
				(0.050)	(0.041)	(0.010)
INVEST/A				0.026	-0.015	0.009
				(0.025)	(0.016)	(0.007)
BETA				0.078	0.451**	-0.017
				(0.188)	(0.129)	(0.090)
VOLAT				-0.556	0.404	1.097
				(2.212)	(0.988)	(0.646)
MOM				5.022*	0.550	0.767
				(2.464)	(1.644)	(0.678)
RET				-0.599	0.037	-0.001
				(0.457)	(0.390)	(0.248)
MSCI				-0.129	0.096	0.082
				(0.206)	(0.128)	(0.068)
Constant	7.219***	7.314***	7.533***	-0.393	-0.997*	7.083***
	(0.139)	(0.077)	(0.018)	(0.612)	(0.429)	(0.521)
Country FE	Y	Y	N	Y	Y	N
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	Y	N	N	Y	N
Firm FE	N	N	Y	N	N	Y
Observations	2,210	2,178	2,004	2,210	2,178	2,004
R-squared	0.117	0.748	0.984	0.515	0.847	0.984

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