Firm Commitments[1]

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Abstract

We provide a first empirical analysis of firm commitments to reduce their carbon emissions. A growing fraction of publicly traded companies around the world have already voluntarily made commitments to attain reductions in their emissions by a certain date or to reduce the emission intensity of their activities. What drives companies to make such commitments and what are their effects? We explore two major commitment movements, the carbon disclosure project (CDP), and the science-based target initiative (SBTi). Our main findings are, first that while the companies that make commitments subsequently further reduce their emissions, the effect of these commitment initiatives on overall emissions of publicly traded companies (including those that do not commit) has been small. Second, the companies that agree to commit, and those that make the most ambitious commitments, tend to be companies with lower carbon emissions. Third, firm commitments to reduce emissions are less prevalent in countries where governments have made national commitments. Overall, the movements to get companies to commit have been successful in drawing in the willing but have found greater resistance from the companies that need to reduce their emissions the most.

JEL codes G12, G23, G30, D62, D83

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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 race to the top for countries in setting decarbonization commitments for their economies. In the runup to the agreement, countries made *intended nationally determined contributions* (INDCs), which were for the most part converted into *nationally determined contributions* (NDCs) after the agreement. Moreover, many of these NDCs have now taken the form of carbon neutrality or *net-zero commitments*. By now, 113 countries, representing half of world GDP have made net-zero commitments. 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 *science-based target initiative* (SBTi) and the CDP initiative to encourage companies to commit to a carbon emissions reduction pathway.[2]

By some measures, this *firm commitments* campaign has already received significant backing by corporations, with by now over one thousand companies joining the SBTi according to the SBTi's latest progress report (2020). In this paper, we explore what motivates companies to join a commitment movement, and what the effects have been so far of these commitment drives. Two broad opposing perspectives immediately suggest themselves for why companies seek to join SBTi or CDP. On the positive side, making a long-term decarbonization commitment may be an effective way of signaling the company's sustainability credentials. Likewise, it could be a self-disciplining device to ensure that current and future management will carry out the advertised carbon emission reductions. Finally, making commitments may be an effective way of reducing cost of capital. However, on the negative side, commitments have been decried by critics as mostly empty promises, a convenient way of appearing virtuous while putting off difficult and costly choices. A slightly softer critique is that the companies signing up to SBTi or CDP were already on a decarbonization pathway: making the commitments does not change anything, it simply formalizes and advertises a process the company had already engaged in.

[1] The Carney quote above refers to the COP26 meetings in Glasgow in November 2021.
[2] SBTi is a joint initiative by CDP, the UN Global Compact, the WWF, and the WRI.

Commitments by companies are not the same as commitments by nations. Although companies may seek to operate in a sustainable way, they are not charged with solving the climate crisis, nor are they expected to hammer out a global agreement among corporations towards reducing GHG emissions. For the most part, companies compete in the marketplace under the rules and signals set by governments. When it comes to climate change, companies increasingly understand that the market rules are deficient in reigning in emissions to protect the climate, and that they cannot content themselves to blindly compete under those rules. Pending fundamental reforms of market rules and regulations on carbon emissions, they must strive to compete in a more sustainable way and reduce their climate impact even if this hurts their bottom lines.

There has been a long-running debate over corporate stewardship and shareholder value maximization as the exclusive objective of companies competing in the marketplace, even before concerns over climate change rose to prominence. As early as the 1930s, Dodd (1932) argued that: "[business] is private property only in the qualified sense, and society may properly demand that it be carried on in such a way as to safeguard the interests of those who deal with it either as employees or consumers even if the proprietary rights of its owners are thereby curtailed". More recently, Blair and Stout (1999) and Mayer (2013) among others have argued that the executives and directors should protect the interests of all stakeholders of the firm, not just shareholders (see Becht, Bolton, and Röell, 2003 for an overview of these debates). And even if CEOs are induced to pursue mostly shareholder interests, Hart and Zingales (2017) have forcefully argued that "companies should maximize shareholder welfare not market value,"[3] so that companies can take up environmental and social goals, if that is what their shareholders want. These perspectives have recently been prominently embraced by the Business Roundtable (an association of CEOs of major US companies) in its 2019 statement on *corporate purpose*, urging US companies to abandon shareholder primacy.

Notably, the debate over stewardship and corporate purpose has been cast at the level of an individual company, how it could be governed. It has largely abstracted from the broader sociopolitical context, social movements, and political coalitions to exert change. Yet, as the extraordinary attention paid to the recent statement of the Business Roundtable (and to other prominent organizations, for example, the signatories of the principles for responsible investment (PRI)) attests, any significant change in corporate purpose comes about as a result of the collective action of coalitions. This "collective action" aspect of the socially responsible investment movement has not been studied much. Our analysis of the SBTi and CDP drives is a first attempt at understanding how coalition formation for corporate social responsibility works, with a special emphasis on corporate collective actions towards mitigating climate change.

[3] This is the title of their article.

In effect, 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.

Another related question is whether firm commitments substitute or complement 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?

We begin our analysis by exploring the impact of the firm commitments drive on overall 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 has been affected by 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 effect of firm commitments in reducing carbon emissions in Europe is somewhat encouraging. Still, over our sample period, firm commitments have had little impact. It is possible, of course, that it is too soon for the commitments by over one thousand firms to have materialized

[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

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. 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 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). In terms of external governance, companies under more scrutiny, greater analyst coverage, and media attention, may be more inclined to commit. Alternatively, those that face greater short-term activist shareholder demands may be less inclined. We find broad support for the view that institutional shareholder pressure matters to get companies 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.

We next turn to the effects of commitments on the emissions of firms who commit. We explore which commitments are most ambitious and credible, and which ones are mostly window dressing. We also analyze whether commitments are just a formalization of decarbonization plans,

or whether they further induce companies to curb emissions. A rich set of results emerges from this analysis. Encouragingly, firm commitments do lead the companies that commit to 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. However, 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.

Finally, we explore how national commitments affect firm commitments. Are national commitments (INDCs and NDCs) substitutes or complements for firm commitments? The socially responsible investment movement, the rise of ESG factors in guiding investment allocations, are often plugged as private sector responses to make up for inadequate market rules and anemic government action to protect the environment. To be sure, when the US pulled out of the Paris Agreement, Michael Bloomberg and other business leaders argued that the effect would be dampened by commitments made by financial institutions, businesses, municipalities, and state governments. This line of reasoning suggests that national and firm commitments are substitutes. Another, more top-down possibility, however, is that firm commitments are a means to implement national commitments. By this view, national and firm commitments are complements, and we should see more firms making commitments in countries with ambitious national commitments. Interestingly, we find that INDCs predict more firm commitments, while NDCs predict less. INDCs are relevant for the runup to the Paris Agreement, whereas NDCs are the formal commitments made after ratification of the Agreement. In other words, INDCs signal a country's aspirations, whereas NDCs are actual commitments. Thus, our findings suggest that in the years leading up to the Paris Agreement firm commitments like INDCs were perceived as mostly expressions of an objective, whereas post COP21 commitments had a more tangible meaning and companies in countries that had made NDCs felt less pressured to make their own commitments.

Related Literature: Even though there exists large literature on ESG-related disclosures, the literature on climate-related commitments is relatively scant. The most closely related study is by Ramadorai and Zeni (2019). They 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. In

a concurrent study, Comello, Reichelstein, and Reichelstein (2021) examine net-zero commitments by seven large companies and argue that the form of commitments used by these firms is related to their carbon footprint and their ability to offset emissions. More generally, Potoski and Prakash (2005, 2013) show a positive link between ISO 14001 certification and firms' environmental compliance. Contrary to the setting we study, ISO scheme is a coordination mechanism that does not follow a particular scheme.

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 (2019) explore how environmental, social, and governance (ESG) motivated investing varies across countries. Krueger, Sautner, and Starks (2020) survey institutional investors and find that they 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 describes the data and provides summary statistics. Section 3 discusses the results. Section 4 concludes.

2. Data and Sample

Our global data set covers the 2005-2019 period and is a combination of several sources. We combine data on firm commitments to reduce their carbon emissions with the 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.

There are two important firm commitment initiatives, the *science-based targets initiative* (SBTi) and the commitments tracked by CDP. The purpose of the SBTi, which is a joint initiative by CDP, the UN Global Compact, the World Wide Fund for Nature (WWF) (formerly named the World Wildlife Fund), and the World Resources Institute (WRI), is to define and promote net-zero targets in line with the climate science. The overall goal of the initiative is to induce companies to commit to decarbonization pathways to increase the chance that global emissions can be reduced to a level that limits average temperature rise below 1.5°C. Since its launch in 2014, the number of companies joining the SBTi has been rising steadily and now comprises just over 1000 companies in 60 countries, with a combined value of $20.5 trillion (see *From Ambition to Impact: Science Based Targets Initiative Annual Progress Report 2020*). The idea of the initiative is to recruit

pioneering companies in all sectors around the world to lead the way towards global corporate decarbonization, and to influence other coalitions and governments to take supporting actions. SBTi determines science-based decarbonization pathways and standards for companies and sectors that are set to achieve net carbon neutrality by 2050.

The SBTi commitments are tailored to firms and sectors. 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 firms. 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. A first small group of companies joined SBTi in 2014, and by the end of 2015 over fifty (mostly European and North American) had joined. 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. 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 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[5]. 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.

Trucost 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

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

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 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 general industry classification (GIC-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 tradeoff between the ambition 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: $LOGSIZE_{i,t}$, which is given by the natural logarithm of firm *i*'s market capitalization (price times shares outstanding) at the end of year *t*; $LOGPPE_{i,t}$, which is given by the natural logarithm, of the firm's property, plant, and equipment; $LEVERAGE_{i,t}$, which is the ratio of debt to book value of assets; $ROE_{i,t}$, which is given by the ratio of firm i's net yearly income divided by the value of its equity; $M/B_{i,t}$, which is firm *i*'s market cap at the end of year *t* divided by its book value; $BETA_{i,t}$, which is the market beta of individual companies calculated over the preceding 12-month period; $VOLAT_{i,t}$, which is the standard deviation of returns based on the past 12 monthly returns; momentum, $MOM_{i,t}$, which 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, $RET_{i,t}$, which is the past year's December return on stock *i* in month *t*-1; capital expenditure $INVEST/A$, which we measure as the firm's capital expenditures divided by the book value of its assets; and, $MSCI_{i,t}$, which is an indicator variable equal to one if a stock *i* is part of the MSCI World 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, we show in the next section that this is not the case once one controls 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.

3. Results

We obtain two broad sets of results. First, we identify what company characteristics are associated with firm commitments and how the level of a company' carbon emissions affect its decision to make a decarbonization commitment. Second, we determine the impact of commitments on companies' future emissions. We begin our analysis with the first set of results establishing which company characteristics are associated with firm commitments. We then explore the effects of commitments.

3.1 *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 in on the fundamental link between a firm's commitment decision and the level of its scope 1 emissions.

3.1.1 *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 time fixed effects. Finally, we iteratively include industry and firm fixed effects. In all regressions throughout the paper, we cluster standard errors at the firm and year dimensions.

Table 3, Panel A, reports the results for CDP commitments. The dependent variable 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 controls. The coefficient of *LOGS1TOT* is positive and highly significant. This result is even stronger for the specification in column 2, where we add industry fixed effects. However, this result is reversed when we add firm fixed effects, as reported in column 3. The coefficient of *LOGS1TOT* is now negative and highly significant. In other words, a firm is less likely to commit when its scope 1 emissions increase. Columns 4, 5, and 6 add key firm characteristics, such as size, capital expenditures, tangible assets, etc. As can be seen, when we control for firm characteristics, the positive association between commitments and scope 1 carbon emissions remains when we do not include industry fixed effects (column 4). 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 industry fixed effects (column 5). 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 6), 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 world index. As the coefficients of these variables in columns 4 and 5 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.

Note that the coefficients of *LOGS1TOT* and the R-squared in columns 3 and 6 are essentially the same, indicating that the effect of firm characteristics is very stable over our sample period. We conclude from these results that companies are more likely to commit, other things equal, when they have lower carbon emissions. One way of understanding this latter finding is that the decision to commit is based on some form of cost-benefit analysis. Indeed, such an analysis would yield that companies are more likely to commit if the cost of doing so is lower, and presumably the cost of attaining a net zero target is lower, the lower is the level of emissions to start with.

Table 3, Panel B reports 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 corresponds to a 20% reduction in the likelihood of a SBTi commitment.

To check the robustness of our results in Panel A and B for both types of commitments, we have also estimated models with industry*year fixed effects that exploit the variation within a given industry and year. The coefficients of the emissions variables become slightly more negative and are statistically highly significant.

Firms that commit to a target reduction in carbon emission send a stronger signal about their willingness to decarbonize. A commitment to a specific target can enhance their reputation but it 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 C. 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.

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 4. 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 Table 4, column 1, we observe that the level of scope 2 emissions (the variable *LOGS2TOT*) has no significant effect on firm commitment decisions. In contrast, in column 2, we see that a firm's greater exposure to the level of upstream scope 3 emissions significantly reduces 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 Table 4, column 4, is that higher scope 1 and 2 emission intensity is associated with higher firm commitments.[6]

[6] 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.

Table 4, 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).

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 5. 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 6 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.

3.1.2 *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

Another set of considerations affecting 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 variables. 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 7. 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 8. 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(B), we explore the effects on CDP commitments with industry (firm) fixed effects. We analyze

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). The results in the specification with industry-fixed effects 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 7 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.

Note that these findings become statistically less significant when we consider the specification with firm fixed effects, 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.

Panels C and D report 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. As before, however, our statistical power to identify within-firm variation in governance is limited, though the direction of the effects remains the same.

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. First, we break down the effects of carbon emissions on firms' willingness to commit by continent, mainly North America, Europe, and Asia, and ask in which parts of the world firms are least likely to commit. Table 9 reports the results of the regression model with *CDPCOM* (Panel A) and *SBTCOM* (Panel B) as dependent variables, and firm characteristics, country, time, and firm-fixed effects. Interestingly, the negative effect of the level of scope 1 emissions on firm commitments 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 Table 9, 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 second 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. commit. 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*. Panel C 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 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 D. 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 the individual firm 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. We report the results in Table 10. 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.[7]

3.1.3 *Strategic base year choices*

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 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 11. 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; however, it is significantly larger for the sample of high emitters. Given that such companies are more likely to fail meeting their target, this result is consistent with the hypothesis that firms are trying to reduce this cost by strategically choosing the baseline year as the one with the highest emissions.

[7] 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.

3.2 *The effects of firm commitments on emissions*

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? In other words, is the rate of decline in emissions higher after a firm commits, or do commitments simply formalize a decarbonization policy that the firm had already implemented? 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 13. 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 12 for commitments that target future emission *intensity*. The dependent variable is now *S1INT*. The results are reported in Table 13. Strikingly, in Panel A for one-year ahead emissions neither the coefficients of *CDPCOM* or *SBTCOM* are now statistically significant. The coefficients reported in columns 3 and 6 are

negative, but not statistically significant. As for three-year ahead emissions in Panel B, there is again no statistically significant effect of either CDP or SBTi commitments to emission-intensity targets. These results further underscore the weaker value of emission-intensity targets. These targets do not appear to constrain the level of future emissions, suggesting that these commitments are mostly for show; they seem to be mostly a communication tool.

We explore further the effects of commitments on the intensive margin in Table 14. 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 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. 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 industry and closest to the firm in terms of market capitalization. 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 15. 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 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 in the short run, but less so in the longer run, after making commitments.

4. 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.

Several leading non-profit organizations (most prominently CDP) 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 others started a major global initiative to get companies to set science-based emission reduction targets, with the appreciation that a significant dent in emissions is only attainable if a large mass of companies commits to decarbonization; an 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 1,000 major companies signing up with SBTi and over 8,000 companies disclosing their emissions or committing to reduction targets through CDP. And

according to the SBTi progress report 2020, the companies that have signed up so far represent a total market value of over $15 trillion. 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. Our most important findings are that corporate governance (internal and external) matter in getting companies to sign up, and that the companies that have signed up so far are the better apples in terms of carbon emissions. Although these companies have significantly reduced their emissions as a result of 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 the vast majority of companies that are still on the sidelines to join the decarbonization commitment drive.

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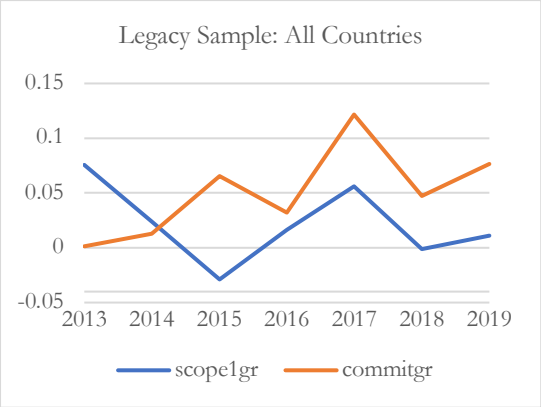
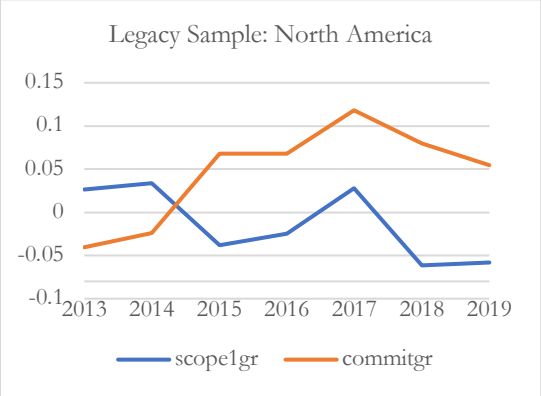
Figure 1: Aggregate Commitment Growth and Scope 1 Emissions Growth

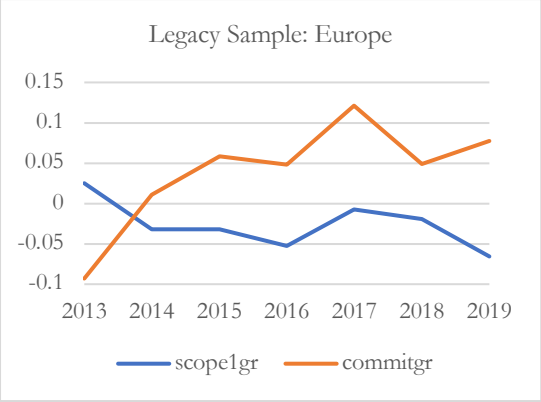
The sample is restricted to firms with emission data from Trucost prior to 2016 (legacy sample). The sample period is 2012-2019. Each graph presents the annual growth rate in the aggregate scope 1 emissions (*scope1gr*) and CDP commitment rate (*commitgr*) for four different samples. The first panel 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.



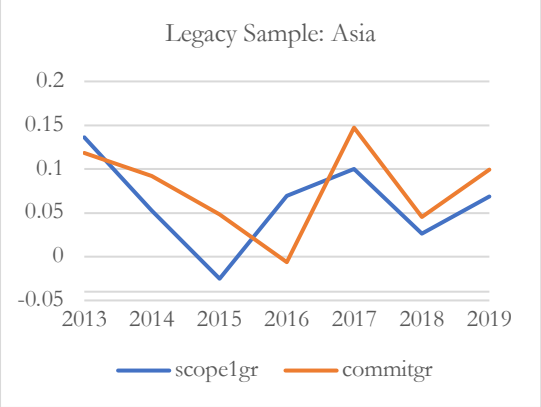
scope1gr	Coef.	Std. Err.	t	P>t
commitgr	-0.1155	0.3764	-0.31	0.771
Constant	0.0276	0.0240	1.15	0.3



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

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. N(all) is the number of firms n 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 issues a 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). Panel A reports the distribution of firm-year observations by country, Panel B the distribution of firm-year observations by GIC6-industry, and Panel C the distribution of firm observations by year. The legacy sample restricts inclusion of firms into those that Trucost covers in its database before 2016.

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	479	11.32%	1.05%	7.63%	0.14%	0.00%	1.05%	18.57%	11-Aug-15	08-Nov-16
AUSTRIA	377	82	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	77	15.05%	1.86%	13.83%	2.48%	0.00%	3.73%	20.15%	06-Mar-15	05-Apr-17
BERMUDA	21	4	0%	0%	0.00%	0.00%	0.00%	0.00%	19.05%	.	.
BRAZIL	1422	270	16.18%	0.38%	13.23%	0.00%	0.00%	0.38%	26.17%	28-Sep-15	20-Sep-16
CANADA	3054	625	14.91%	0.39%	9.37%	0.05%	0.15%	0.74%	25.82%	15-May-15	04-Oct-16
CAYMAN ISL.	47	2	0%	0%	0.00%	0.00%	0.00%	0.00%	2.70%	.	.
CHILE	464	24	3.54%	1.72%	2.25%	0.00%	0.00%	1.72%	7.07%	05-Jan-16	09-Feb-17
CHINA	10542	73	0.18%	0%	0.10%	0.00%	0.00%	0.00%	1.19%	30-Jun-15	02-Sep-16
COLOMBIA	144	36	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	5	26.83%	0%	4.88%	0.00%	0.00%	0.00%	26.83%	06-Mar-15	04-Oct-17
DENMARK	482	144	37.46%	1.91%	28.32%	3.82%	1.15%	6.11%	46.61%	06-Mar-15	31-Oct-16
EGYPT	364	4	0.40%	1.06%	0.00%	0.00%	0.00%	1.06%	0.79%	16-Nov-15	28-Jun-17
FINLAND	552	197	40.85%	8.42%	26.79%	3.51%	1.75%	11.58%	53.32%	06-Mar-15	13-Nov-16
FRANCE	2325	560	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	503	29.36%	3.80%	19.46%	1.07%	0.17%	4.29%	34.67%	06-Mar-15	04-Oct-16
GREECE	301	11	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	116	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	300	8.69%	1.50%	2.66%	0.24%	0.04%	1.54%	11.44%	01-Oct-15	01-Oct-16
INDONESIA	990	5	1.13%	0%	0.76%	0.00%	0.00%	0.00%	0.88%	24-Sep-15	05-Nov-16
IRELAND	361	67	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	19	2.80%	0%	2.80%	0.00%	0.00%	0.00%	2.80%	30-Sep-15	21-Nov-16
ITALY	1148	232	25.20%	1.32%	22.18%	0.73%	0.73%	2.05%	29.50%	06-Mar-15	10-Nov-16
JAPAN	13745	1659	15.67%	1.58%	12.95%	0.92%	0.09%	2.23%	16.36%	17-Jul-15	07-Nov-16
JERSEY	24	3	15.38%	0%	15.38%	0.00%	0.00%	0.00%	30.77%	.	.
KAZAKHSTAN	8	2	0%	0%	0.00%	0.00%	0.00%	0.00%	33.33%	28-Sep-15	05-Dec-16
KOREA, REP	6317	490	11.38%	0.17%	9.22%	0.00%	0.00%	0.24%	12.01%	30-Jun-15	02-Nov-16
LUXEMBOURG	172	19	16.33%	0%	1.36%	0.00%	0.00%	0.00%	22.45%	06-Mar-15	03-Nov-16
MALAYSIA	1402	15	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	51	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	177	28.83%	8.27%	22.16%	3.07%	0.24%	9.69%	32.25%	06-Mar-15	27-Jul-17
NEW ZEALAND	363	68	17.57%	2.51%	11.82%	2.15%	0.00%	3.94%	23.64%	25-Nov-15	04-Oct-16
NORWAY	645	194	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	2	0%	0%	100.00%	0.00%	0.00%	0.00%	100.00%	.	.
PERU	189	7	2.40%	0%	0.00%	0.00%	0.00%	0.00%	5.60%	28-Sep-15	24-Jul-16
PHILIPPINES	587	19	1.33%	0%	2.22%	0.00%	0.00%	0.00%	7.33%	01-Oct-15	
POLAND	602	7	0.92%	0%	3.23%	0.00%	0.00%	0.00%	3.23%	06-Mar-15	06-Oct-16
PORTUGAL	183	49	40.32%	6.59%	20.16%	3.30%	3.30%	9.89%	41.94%	06-Mar-15	04-Oct-16
RUSSIA	504	32	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	67	6.60%	1.10%	4.01%	0.94%	0.00%	1.57%	8.54%	03-Jul-15	20-Sep-16
SOUTH AFRICA	1678	521	29.41%	3.36%	19.76%	0.00%	0.00%	3.36%	43.76%	25-Sep-15	31-Oct-16
SPAIN	853	249	40.49%	6.65%	34.10%	2.15%	0.86%	9.87%	44.10%	06-Mar-15	11-Jan-17
SWEDEN	1459	297	22.21%	3.59%	12.02%	1.27%	0.53%	4.43%	26.74%	06-Mar-15	12-Oct-16
SWITZERLAND	1737	345	20.03%	3.02%	14.29%	1.38%	0.78%	4.06%	26.96%	27-Feb-15	05-Oct-17
TAIWAN	4765	248	7.88%	0.72%	6.89%	0.06%	0.13%	1.04%	8.55%		
THAILAND	1203	51	5.21%	0%	2.40%	0.00%	0.00%	0.48%	6.25%	01-Oct-15	20-Sep-16
TURKEY	731	147	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	1	0%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	22-Oct-15	20-Sep-16
UK	6412	1406	29.76%	3.02%	18.84%	0.99%	0.18%	4.05%	38.65%	06-Mar-15	17-Nov-16
USA	20659	2838	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

Gic-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	INDCDUM	NDCDUM
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	INDCDUM	NDCDUM
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 World 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		
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 variable is *CDPCOM* in Panel A and *SBTCOM* in Panel B. The dependent variables in Panel C are *CDPs12tgt* in columns 1-3, *SBTs12tgt* in columns 4-6, and *SBTs12intgt* in columns 7-9. 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 GIC-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: CDP Commitments (*CDPCOM*)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
LOGS1TOT	0.034***	0.057***	-0.006***	0.008***	-0.003**	-0.009***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
LOGSIZE				0.052***	0.060***	0.009***
				(0.001)	(0.002)	(0.002)
LOGPPE				0.015***	0.017***	0.004**
				(0.001)	(0.001)	(0.002)
LEVERAGE				-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)
M/B				-0.001	-0.005***	-0.000
				(0.001)	(0.001)	(0.001)
INVEST/A				-0.003***	-0.003***	0.000
				(0.000)	(0.000)	(0.000)
BETA				0.012***	0.016***	0.011*
				(0.004)	(0.005)	(0.006)
VOLAT				0.105***	0.102***	0.019
				(0.022)	(0.022)	(0.018)
MOM				-0.367***	-0.352***	-0.033
				(0.040)	(0.040)	(0.029)
RET				0.010	-0.003	-0.006
				(0.009)	(0.009)	(0.006)
MSCI				0.195***	0.191***	0.055***
				(0.005)	(0.004)	(0.006)
Constant	-0.026***	-0.152***	0.199***	-0.439***	-0.455***	0.088***
	(0.003)	(0.005)	(0.009)	(0.009)	(0.009)	(0.021)
Country FE	Y	Y	Y	Y	Y	Y
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	63,049	63,046	61,578	63,049	63,046	61,578
R-squared	0.155	0.238	0.820	0.309	0.352	0.821

Panel B: SBT Commitments (*SBTCOM*)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
LOGS1TOT	0.004***	0.008***	-0.003***	-0.000	-0.002***	-0.003***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
LOGSIZE				0.010***	0.012***	0.004***
				(0.001)	(0.001)	(0.001)
LOGPPE				0.002***	0.002***	-0.003**
				(0.000)	(0.000)	(0.001)
LEVERAGE				-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)
M/B				-0.001*	-0.002***	-0.001
				(0.000)	(0.000)	(0.001)
INVEST/A				-0.000***	-0.000***	0.000***
				(0.000)	(0.000)	(0.000)
BETA				0.002	0.007***	-0.007
				(0.002)	(0.002)	(0.005)
VOLAT				0.018**	0.024***	0.004
				(0.008)	(0.008)	(0.008)
MOM				-0.060***	-0.060***	-0.023
				(0.015)	(0.015)	(0.015)
RET				0.001	0.001	-0.001
				(0.003)	(0.003)	(0.003)
MSCI				0.024***	0.023***	0.004
				(0.002)	(0.002)	(0.004)
Constant	-0.004***	-0.023***	0.032***	-0.073***	-0.081***	0.027**
	(0.001)	(0.002)	(0.005)	(0.004)	(0.004)	(0.012)
Country FE	Y	Y	Y	Y	Y	Y
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	51,248	51,244	49,760	51,248	51,244	49,760
R-squared	0.032	0.070	0.634	0.060	0.092	0.635

Panel C: Scope 1+2 Targets

VARIABLES	(1)	(2) CDPs12tgt	(3)	(4)	(5) SBTs12tgt	(6)	(7)	(8) SBTs12intgt	(9)
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)	(0.000)	(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	0.000	0.000***	-0.000	-0.000	-0.000	0.000	-0.000	-0.002*	-0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.003)
ROE	-0.000***	-0.000***	0.000*	-0.000***	-0.000***	-0.000	-0.001	-0.002**	-0.002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)
M/B	-0.002**	-0.004***	0.003***	0.001***	0.000	0.001	0.015	0.003	0.045**
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.016)	(0.014)	(0.021)
INVEST/A	-0.002***	-0.002***	0.001***	-0.000***	-0.000***	0.000***	-0.003	-0.004	0.010*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.003)	(0.005)
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	Y	Y	Y	Y	Y	Y	Y
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 (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 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. Column 2 and 5 includes GIC-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: 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
Country FE	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
Country FE	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 5: 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 GIC-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	Y	Y	Y	Y	Y
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 6: 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 country, year, and firm fixed effects. We cluster standard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

	(1)	(2)	(3)	(4)
VARIABLES	UPGRADE_EXT	UPGRADE_INT	DOWNGRADE_EXT	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)
Country FE	Y	Y	Y	Y
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 7: 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	Y	Y	Y	Y
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***
	(0.000)	(0.000)	(0.000)	(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	Y	Y	Y	Y
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 8: Future Commitments and Internal Governance

e 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 l 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 firm fixed effects. We cluster ndard errors at the firm and year dimensions. ***1% significance; **5% significance; *10% significance.

Panel A: CDP Commitments with Industry Fixed Effect

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: CDP Commitments with Firm Fixed Effects

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
Country FE	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 C: SBT Commitments with Industry Fixed Effect

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

Panel D: SBT Commitments with Firm Fixed Effects

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
Country FE	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 9: 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	Y	Y	Y	Y
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	Y	Y	Y	Y
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: 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	Y	Y	Y	Y
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

Panel D: 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	Y	Y	Y	Y
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 10: 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 GIC-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		CDPCOM			SBTCOM	
INDC	0.091***	0.074***	0.022**	0.011**	0.009*	0.00032
	(0.027)	(0.027)	(0.011)	(0.005)	(0.005)	(0.00078)
NDC	-0.022	-0.024	-0.019*	0.005	0.004	0.003
	(0.017)	(0.017)	(0.010)	(0.010)	(0.010)	(0.006)
LOGS1TOT	0.008***	-0.003**	-0.009***	0.000	-0.002***	-0.003***
	(0.001)	(0.001)	(0.002)	(0.000)	(0.000)	(0.001)
LOGSIZE	0.053***	0.060***	0.010***	0.010***	0.012***	0.004***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
LOGPPE	0.016***	0.017***	0.003*	0.002***	0.002***	-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	-0.001	-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***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BETA	0.013***	0.017***	0.011*	0.002	0.007***	-0.008
	(0.004)	(0.005)	(0.006)	(0.002)	(0.002)	(0.005)
VOLAT	0.111***	0.111***	0.028	0.019**	0.025***	0.002
	(0.022)	(0.023)	(0.018)	(0.008)	(0.008)	(0.008)
MOM	-0.370***	-0.359***	-0.045	-0.059***	-0.059***	-0.021
	(0.040)	(0.040)	(0.030)	(0.016)	(0.016)	(0.016)
RET	0.011	-0.002	-0.007	0.001	0.001	-0.001
	(0.009)	(0.009)	(0.006)	(0.003)	(0.003)	(0.003)
MSCI	0.200***	0.196***	0.057***	0.025***	0.024***	0.005
	(0.005)	(0.005)	(0.007)	(0.002)	(0.002)	(0.004)
Constant	-0.486***	-0.491***	0.081***	-0.085***	-0.091***	0.025*
	(0.022)	(0.022)	(0.023)	(0.010)	(0.010)	(0.014)
Country FE	Y	Y	Y	Y	Y	Y
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 11: 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 GIC-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	Y	Y	Y
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 12: Commitments and Future Scope 1 Emission Levels

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. 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 GIC-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: 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	Y	Y	Y	Y
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	Y	Y	Y	Y	Y	Y	Y
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 13: 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 Panel A and *S1INT* in three years in Panel B. 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 GIC-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	Y	Y	Y	Y
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 14: 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 GIC-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	Y	Y	Y	Y
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	Y	Y	Y	Y
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

Table 15: Emissions and Commitments: DID

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*. 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 three years later. All control 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 GIC-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